Informing Health-Related Behaviour Change in Saudi Arabia: A Social Marketing Approach

Doctor of Philosophy

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Abstract

Many Arab countries, such as Qatar, Kuwait and Saudi Arabia have a high prevalence of non-communicable diseases (such as Type 2 diabetes) where obesity is a risk factor. In Saudi Arabia, 30% of men and 40-50% of women are classified as obese (Alquout and Reynolds, 2013). This has led researchers to question the factors that have led to the high incidence of obesity, and in particular, the food choices motives and food-related behaviors made by Saudi citizens. Understanding these underlying factors influencing food and lifestyle choice will help to underpin social marketing support recommendations to change food-related behaviours targeted at Saudi women. This research adopted a mixed method research design consisting of three components. The first, determined the food choice motives of Saudi Arabian adults aged 15-65 (n=377) using the Food Choice Questionnaire (Steptoe *et al*, (1995). The second phase examined the barriers and facilitators to healthy eating using focus group methodology (n=25) and thematic analysis. Focusing on Saudi Arabian females, the third component explored the opinions of health experts *via* semi-structured in-depth interviews (n=13) using findings from phase two as elicitation prompts, in order to identify potential solutions to improve eating habits and increase exercise in order to reduce health problems of Saudi women. Insights gained from the results of each study were used to develop social marketing recommendations aimed at encouraging and facilitating healthy eating behaviors and exercise among women in the Kingdom of Saudi Arabia.

Despite Saudi Arabian women being the target market for the recommendations provided by this thesis, both genders were included all stages of the data collection in order to allow comparative analysis. The results from the questionnaire identified 6 of factors as an important factors affecting food choice of Saudi Arabian adults. Significant factors included; taste, health and wellbeing, and convenience; while price, mood and sensory appeal were found to be less important to this cohort. The factors found to be motivating food choices of Saudi Arabian adults helped to inform the design, content and the participants' requirement for the second phase, which was to gain a deeper insight into the questionnaire using focus group methodology. The results of the focus group identified a number of barriers to healthy eating which were similar for both males and females, particularly in relation to taste, individuals' time constraints, will-power, culture and tradition and price. Although price and will-power were seen as major barriers for males, specific barriers for females included time constraints and customs and traditions, particularly at social events which hindered their ability to maintain healthy eating habits. Conversely, the predominant facilitator that encouraged both males and

females to opt for healthier foods was the support from others, availability of healthy food, reasonably priced healthy foods and education/awareness of health and wellbeing. In addition, Saudi Arabian females viewed changes to diet and exercise and an investment in public transport to be vital facilitating factors. Health professionals interviewed highlighted additional psychological factors such as depression as a significant barrier to healthy eating. Structural solutions such as health centers with an educational focus and Governmental policies to support healthy behaviors were also identified.

The results of the data collection culminated in the development of social marketing recommendations to encourage women to maintain healthier behaviours. Recommendations included both short-term and long-terms initiatives such as, improved health facilities including the provision of gyms, educational classes, dietitian support, subsidised transportation and smart phone applications, and an associated decision support tool to inform future implementation options.

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Publication List

Conferences

1- Alharthi, B., Frewer, L., Kendall, H., Kuznesof, S. (2015) Exploring barriers and facilitators to healthy eating amongst urban-dwelling Saudi citizens. 8th Saudi student Conference , London , UK

2- Alharthi, B., Frewer, L., Kuznesof, S. (2014) An Evaluation of Food Choice Motives and Possibilities of Promoting Healthy Eating Behaviour through Social Marketing in Saudi Arabia. ASBBS 17th International Conference in Paris, France

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Abbreviations

(WHO) World Health Organisation

(GDP) Gross Domestic Product

(NCD) Non-Communicable Diseases

(MOHE) Ministry of Higher Education

(BMI) Body Mass Index

(NICE) National Institute for Health and Clinical Excellence

(CCS) Country Cooperation Strategy

(MOH) Ministry of Health

(SMOH) Saudi Ministry of Health

(IHME) Health Metrics and Evaluation

(PCA) Principle Component Analysis

(CFA) Confirmatory Factor Analysis

(FCQ) food choice motivation using the

(NSMC) National Social Marketing Centre

(NCC) National Consumer Council

(DOH) Department of Health

(HOE) Hierarchy of Effects

(HOEM) Hierarchy of Effects Model

(PHC) primary health care

(PHCC) Primary Health Care Centres

(TPB) Theory of Planned Behaviour

(CRS) child restraint systems

(SLT) Social Learning Theory

(χ^2) Chi-Square

(CFI) Comparative Fit Index

(RMSEA) Root Mean Square Error of Approximation

(BIC) Bayesian Information Criterion

(AIC) Akaike Information Criterion

(PCA) Principal Component Analysis

(TfL) Transport for London

Chapter 1 Introduction

1.1 Introduction

Being overweight and/or obese are risk factors for chronic diseases, which are increasing in many parts of the world, particularly Western countries like USA (with 33.7% of the total population being classed as obese) and United Kingdom (28.1% of the total population) (WHO, 2015), as well as many Arab countries, such as Qatar, Kuwait and Saudi Arabia (Zaghloul *et al*., 2011). More specifically, in Saudi Arabia, 30% of men and 40-50% of women are classified as obese (Alquot and Reynolds, 2014). This has led researchers to question the factors that have led to these problems, and in particular, the food choices made by Saudi citizens (Musaiger *et al*, 2011). Understanding these issues is an important step in informing health promotion policies as a means of resolution and to improve health in general (MOH, 2014).

When elaborating upon the extent to which obesity has affected individuals and communities across the globe, the World Health Organisation (WHO) has clearly stated that obesity affects women more than men (WHO, 2011). Saudi Arabian women, specifically middle-aged housewives have been identified as a high-risk group for obesity (Shammari *et al*, 1997); however, empirical research pertaining to the underlying psycho-social factors affecting obesity amongst Saudi Arabian women has been described as a limited and neglected area (Aliquot and Reynolds, 2013). Therefore, in order to inform behavioural change interventions, the purpose of this thesis is to provide an empirical insight into the food choice motivations of Saudi Arabian citizens, and the attitudes, perceptions and perceived barriers and facilitators to attaining a healthy diet, with the purpose of recommending interventions as part of a social marketing plan targeted at Saudi women to encourage healthier behavioural changes. One should that, whilst the research set out to examine 'barriers and facilitators' to food behaviour changes amongst the adult population, the progression of the research identified gender differences in food choice barriers, and Saudi adult females became the focus of the social marketing recommendations. Moreover, in the qualitative phase of the research, discussions about food were inextricably linked to health in general and also exercise. Therefore, recommendations for social marketing interventions are based upon addressing food and exercise.

In introducing this thesis, this chapter presents the background for this research, beginning with an overview of Saudi Arabia in terms of its key demographics and socio-cultural factors (in *Section 1.2*). *Sections 1.3-1.6* contextualise the health problems including obesity that are

present within Saudi Arabia; the role of the Saudi Ministry of Health (SMOH) in tackling NCDs; and provides an overview of empirical insights into the underlying reasons for health problems in Saudi Arabia. An explanation of the social marketing disciplinary approach to this thesis and underpinning theories of behavior change are presented in *Section 1.7* and justify how a social marketing approach to changing behaviour is relevant and necessary for supporting behaviour change. The thesis rationale, aims and objectives, research design and anticipated contribution are described in *Sections 1.8 to 1.11,* providing the justification and rationale for the thesis, particularly in the investigation of food choice motives and barriers to healthy eating behaviour, which are used to inform social marketing recommendations to improve healthy food choices in Saudi Arabia. Finally, the structure of the thesis is outlined in *Section 1.12.*

1.2 Saudi Arabia – Location, Population and Income

Saudi Arabia (KSA) is located in Western Asia and is bordered by a number of other Arab countries and states (Bowen, 2008). It is the largest of the Arab states; encompassing the bulk of the Arabian Peninsula as shown in Figure 1.1.

Figure 1.1 Geographical location of KSA

Source: Kluijver and Van der Linden (2012)

Since the discovery of oil in the Middle East in 1938, there has been rapid economic development and socio-cultural change (Rethaiaa, 2010), resulting in Saudi Arabia becoming one of the richest countries in the world (Al-Assaf and Al-Numair, 2007). According to the International Monetary Fund (2014), Saudi Arabia is ranked 14th on the World's Richest

Countries by Gross Domestic Product (GDP) and is 11th by GDP per capita based on population size (World Richest Countries, 2016). Furthermore, in the Global Wealth Report from the Credit Suisse Research Institute, the average income of Saudi nationals per capita was $35,959 in 2011, which represents a 56% increase from 2000 (Oxford Business Group, 2013).

In terms of its topography, Saudi Arabia has a common dessert climate, which is characterised by an extreme heat during the daytime and little annual rainfall (Bowen, 2008). Temperatures can reach up to 54 degrees during the summer with approximately 59mm annual average precipitation per year (World Bank, 2016)[1]. According to Bowen (2008), these arid conditions have made over half of the country uninhabitable; however, the Saudi Arabian Government has made considerable investments into restructuring and reshaping the landscape, in order to build and develop cities across the country. Arab society is therefore no longer perceived as a secluded desert that is isolated from other civilisations (Luqmani, Yavas and Quraeshi, 1989) nor is the typical Bedouin lifestyle (i.e. nomadic desert dwellers herding cattle) - a common trait amongst its inhabitants (Bowen, 2008). This nomadic practice has decreased significantly over the latter half of the twentieth century and it often seen as forgotten tradition (Bowen, 2008). Today, Saudi Arabia has a population of 28 million people (WHO, 2014), with an annual population increase of 2% (Bowen, 2008). Moreover, 82% of the population reside in urban areas (WHO, 2014), with approximately 7.5 million categorised as expatriate migrant professionals (Arab News, 2013). The average life expectancy for males is approximately 72.8 years and 75.2 for females (Central Department of Statistics and Information, 2012). According to World Bank trend data, this represents an increase in life expectancy of about 20 years since 1970 (53 years) and is still increasing. At present, life expectance of Saudi Arabians is equivalent to the life expectancy of the UK and US during the 1980s, and an increase in aggregate life expectancy of 6 years would bring Saudi Arabia in line with the UK, which is 79.1 years for males and 82.8 for females (Office for National Statistic, 2015).

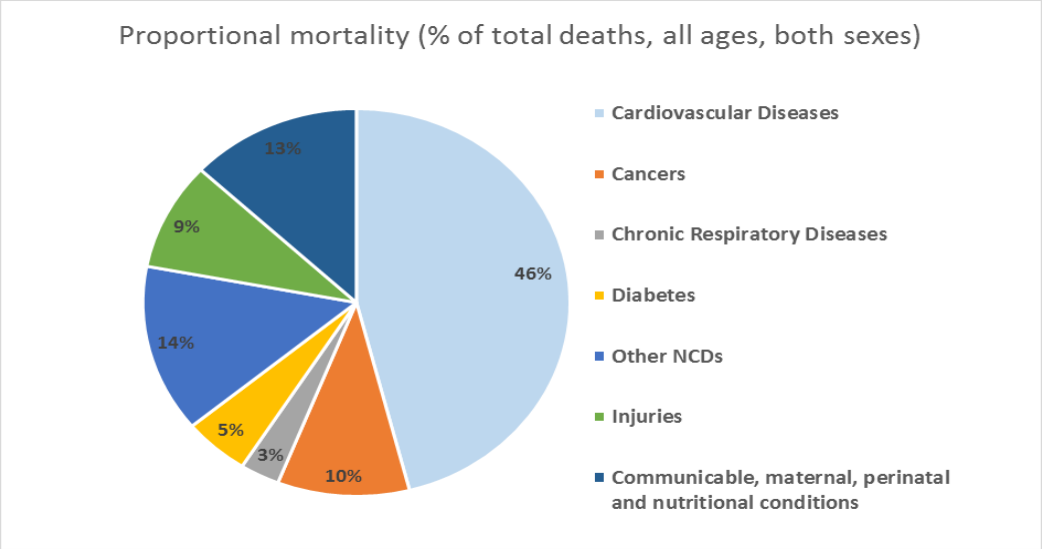
1.3 Key Health Problems in Saudi Arabia

In 2014, the WHO (2014) reported that an estimated 78% of all deaths in Saudi Arabia were due to Non-Communicable Diseases (NCD), which refer to medical conditions or illnesses that are non-transmissible or non-infectious such as cancer, cardiovascular diseases, obesity or diabetes. Many of these are well established as being directly related to lifestyle and diet (Booth

[1]http://data.worldbank.org/indicator/AG.LND.PRCP.MM, 2014

et al, 2001; Newlove *et al*, 2012; Steyn and Damasceno, 2006). As shown in Figure 1.2, cardiovascular diseases account for 42% of total deaths attributed to NCDs across all ages.

Figure 1.2 Proportional mortality of NCDs in Saudi Arabia in 2014



Source: Adapted from WHO, 2014

Table 1.1 Adult risk factors for NCDS in KSA

Adult risk factors	Male	Female	Total
Current tobacco smoking (2011)	38%	<1%	22%
Total alcohol per capital consumption in liters of pure alcohol (2010)	0.3	0.1	0.2
Raised blood pressure (2008)	26%	21.5%	24.2%
Obesity (2008)	28.6%	39.1%	33%

Source: Adapted from World Health Organisation, 2014.

In light of the issues pertaining to NCDs in Saudi Arabia, Table 1.1 highlights the key risks factors that have been identified as contributing to the development of NCDs. As indicated, obesity is the largest risk factor, accounting for 33% of the total population in 2008, with 28.8% and 39.1% affecting males and females respectively. This is relevant to this thesis which identifies a gender difference in barriers towards healthy eating and focuses its recommendations on an adult female target audience.

1.4 Obesity and Lifestyle

Obesity has been identified as a pre-cursor to NCDs and defined as *"abnormal or excessive fat accumulation that presents a risk to health"* (WHO, 2016). It is also a multi-faceted disorder and is a risk factor in a number of diseases including hypertension, diabetes mellitus, arthritis,

gout and gall bladder diseases (Qauhiz, 2010). There are a number of measuring tools that can be used to categorise individuals in terms of whether they are classed as overweight or obese. One particular approach to assess levels of obesity is the Body Mass Index (BMI), which determines the relative weight of an individual based on their height in relation to overall body mass (WHO, 2004; Pietrobelli *et al*., 1998). Although there has been much discussion over the accuracy in using BMI as a means of assessing the status of obesity and overweight in adults, BMI continues to be the most common tool that is used for such purposes (Must and Anderson, 2006). More specifically, it has become broadly accepted as a standard, with the WHO developing the Global Database on Body Mass Index and setting out criteria based on this data, in order to classify underweight, overweight and obesity of both male and female adults in accordance to their BMI (see Table 1.2). This standard has also been used in Saudi Arabia (WHO, 2014).

As indicated, individuals with a BMI between 25-30kg/m2 are classed as overweight, whilst those over 30kg/m2 are obese. In addition to this, other methods have been shown to complement the BMI measurement, such as measuring the waist circumference (WHO, 2008). According to UK Faculty of Public Health, measuring an individual's waistline has a positive correlation to outlining certain health risks (NHS, 2008) (Table 1.3). More specifically, the health risks relating to those that carry excess weight within the abdominal area (also referred to as "central obesity") are linked to type 2 diabetes or cardiovascular diseases (NHS, 2008; Zhu *et al*., 2002).

Table 1.2 The International Classification of adult underweight, overweight and obesity according to BMI

Classification	BMI (kg/m2)	
	Principle cut-off points	Additional cut-off points
Underweight	<18.50	<18.50
Severe thinness	<16.00	<16.00
Moderate thinness	16.00 - 16.99	16.00 - 16.99
Mild thinness	17.00 – 18.49	17.00 – 18.49
Normal range	18-50 – 24.99	18.50 – 22.99
		23.00 – 24.99
Overweight	>30.00	>30.00
Pre-obese	25.00 – 29.99	25.00 – 27.49
		27.50 – 29.99
Obese	>30.00	>30.00
Obese class I	30.00 – 34.99	30.00 – 32.49
		32.50 – 34.99
Obese II	35.00 – 39.99	35.00 – 37.49
		37.50 – 39.99
Obese III	>40.00	>40.00

Adapted from WHO, 1995; 2000; 2004

Table 1.3 Waist circumference thresholds used to assess health risks in the general population

At increased risk	Male	Female
Increased risk	94cm (37 inches) or more	80cm (31 inches) or more
Greatly increased risk	102cm (40 inches) or more	88cm (35 inches) or more

Source: National Institute for Health and Clinical Excellence, 2006, International Diabetes Federation (2005), WHO/IASO/IOTF (2000), World Health Organization (2000)

The National Institute for Health and Clinical Excellence in the UK (NICE) state that waist circumference can be used in addition to measuring BMI and that those with a BMI of less than 35kg/m2 may benefit more from measuring their waist circumference to assess the full health risks they could be facing (NICE, 2006) (Table 1.4).

However, regardless of how it is measured, obesity is an excessive imbalance of energy intake over expenditure, causing energy storage or fat (Hill, Wyatt and Peters, 2012), and as a disorder that is related to lifestyle related behaviours, it can also be managed and reduced by modifying behaviours such as energy intake. Consequently, in order to reduce overweight and obesity (which should reduce the prevalence of NCDs), it is important to tackle the underlying factors that are the cause of increasing food intake.

Table 1.4 Combining BMI and waist measurement to assess obesity and the risk of type 2 diabetes and cardiovascular disease – general adult population

Classification	BMI (kg/m2)	Waist circumference and risk of co-morbidities	
		Men: 94–102cm	Men: More than 102cm
		Women: 80-88cm	Women: More than 88cm
Underweight	Less than 18.5	–	–
Healthy weight	18.5–24.9	–	Increased
Overweight (or pre-obese)	25–29.9	Increased	High
Obesity	30 or more	High	Very high

Source: National Institute for Health and Clinical Excellence, 2006

The most recent data on overweight and obesity in Saudi Arabia was collected in 2013 and was a collaborative effort between the Institute for Health Metrics and Evaluation (IHME) and the SMOH as part of a national survey on chronic diseases and their risk factors (Memish *et al*., 2014). The survey entitled '*The Saudi Health Information Survey'* (SHIS), focused on investigating both males and females over 15 years old, across 13 health regions divided by the SMOH and randomly selected them using a national sampling frame that is monitored by the KSA Census Bureau. In total, 10,735 Saudi Arabian citizens participated and the results

revealed that 28.7% were classified as obese, with a higher occurrence among females (33.5% as opposed to 24.1% for males).

1.5 The Saudi Ministry of Health (SMOH) strategies in tackling NCDs.

The Saudi Arabian Government via the Ministry of Economic Planning (MEP) and particularly the Ministry of Health (SMOH) are responsible for the healthcare facilities and policies in Saudi Arabia. Since 1970, the Saudi Government has published 5-year national development plans which have included policy targets relating to aspects of economic development including health. The Ninth Development Plan 2010-2014 aimed to improve the general health of the population with a particular focus on youths (Ministry of Economy and Planning, 2014). Additionally, the Saudi Ministries have been actively involved in the Global Conference on Healthy Lifestyles and Non-Communicable Diseases in the Arab World and Middle East in 2012, and have worked with the WHO to identify priority areas for health (WHO, 2013). Tackling obesity continues to be an important issue for the Government, with MOH Spokesman, al-Merghalani (MOH, 2012) identifying that if prevention of NCDs are not effectively addressed, it could result in over 80% of mortalities over the next ten years. However, much of the significant budget on health and social care which in 2015, was 22% (SR42.7billion) of the total Saudi budget (SR715 billion) (Saudi Arabian Business Council, 2015), will be spent on major infrastructural projects such as building new hospitals, primary care facilities and specialist clinics (FCO, 2015), as occurred during the Ninth National Development Plan (MEP, 2010). However, no data has been released by the SMOH relating to how much of this budget will be spent on tackling obesity specifically.

Whilst there have been a number of public health programmes to raise awareness of obesity and ill-health, these have not been evaluated to date (Memish *et al*, 2014). Moreover, WHO (2013) recommendations to undertake applied research on the behavioural factors for reducing NCDs are not apparent in the literature, thus necessitating the need for this research to be undertaken. In discussing policy limitations, Memish *et al* (2014) argue that the focus on obesity does not mean that those that are overweight should be ignored, as methods in prevention and intervention for Saudis that are overweight would be equally important to address in order to stop them from becoming obese. This means there is an equal need to explore preventative measures and behavioural changes towards losing weight as opposed to devising strategies and tips on how to lose weight (i.e. prevention is better than cure).

1.6 Insights into the Underlying Reasons for Health Problems in Saudi Arabia

The nutrition transition associated with economic development and globalisation have been identified by Bakhotmah (2012) as important in influencing the dietary behaviour of Saudi citizens, where he states, "*A shift in food consumption patterns from a traditional "Arabian Peninsula" diet, which was composed mainly of dates, cereals and dairy products towards a more westernized "North American" diet has been extensively reported in recent years*" (Bakhotmah (2012:314). This shift is due to a rise in income and affluence within the country, enabling citizens to afford a wider range of domestic and imported food and food services (Baldwin, 2015). This nutrition transition has been observed in other countries and regions where their GDP has increased, such as other Middle Eastern countries like Qatar (Musaiger, 2012).

However, in order understand individual behaviour change appropriately, both internal and external factors that fundamentally influence the individual's food and lifestyle choices that lead to obesity. For example, middle-aged housewives, who are identified as a high risk group for obesity, (Shammari *et al*, 1997), factors contributing to obesity include internal factors such as self-esteem and confidence, and external factors such as social and cultural practices and dress code. Cultural and social practices, such as traditional family practices and restrictions on travel, have been argued to considerably affected diet and food choices for women in Saudi Arabia in general and across the Middle East (Donnelly *et al*, 2011). One of the main aspects of this relates to an emphasis of taste of foods, leading to a high consumption of sugars, salts and fatty foods. These factors are discussed more fully in *Chapter 3*.

1.7 Social Marketing and Health Behaviour Change

One approach to addressing behaviour change within a public policy perspective is through social marketing (Evans, 2006); and this thesis uses a social marketing approach as its disciplinary perspective. Social marketing to encourage behaviour change to a socially and politically more desirable 'healthy' position, has become an established discipline over the past 20 years. French and Blair-Stevens (2006) define it as, "*the systematic application of marketing, alongside other concepts and techniques to achieve specific behavioural goals, for a social good*" By applying commercial marketing strategies, social marketing can be successfully implemented to promote public health and change behaviour. Andreasen (1995) also identified other concepts and techniques that are used alongside marketing, referring to them as "*proven concepts and techniques drawn from the commercial sector to promote changes in diverse*

socially important behaviours such as drug use, smoking, sexual behaviour". Thus the techniques have been used in social psychology and marketing science to influence behaviour that affects diet and health (Evans, 2006).

This has been demonstrated in a number of previous social marketing campaigns aimed to increase health awareness and positively influence health behaviour. In such instances, communication becomes the key focus to distribute relevant information, whether this is through the mass media, social media, message placement in clinics or promotional materials and engagement on a community level (Evans, 2006). Thus, the channels for communication are multifaceted and equally require a multi-modal approach if social marketers are to ensure their campaign reaches the desirable target markets with the necessary exposure, particularly if they are competing against other public health issues (Backer *et al*, 2002).

In addition to the implementation of a social marketing strategy, it is also vital to explore the underlying motives that may cause an individual to change their behaviour, which, in this case, is changing their behaviour from consuming foods that are unhealthy, to adopting a healthier diet and lifestyle. Theoretically underpinning such behaviour changes are behaviour change theories (BCT) such as Health Belief Model (Rosenstock, 1966), the Theory of Panned Behaviour (Fishbein and Ajzen, 1975), the Social Cognitive Theory (Bandura, 1986) and the Transtheoretical Model (Prochaska, Norcross, and DiClemente, 1994), which will be discussed in Chapter 3. These BCTs have been applied to the context of food choices and social marketing, and an integration of them both can be used in the planning, development and implementation stages of a social marketing campaign/health programme (Thackerey and Neiger (2000). This is necessary, as Andersen (1997) explains, within the majority of social marketing planning models, to shed light on the barriers and facilitators that can influence specific behaviours. Within this thesis, concepts underpinning both the Health Belief Model and the Transtheoretical Model have used in the analysis of primary data and in the development of a social marketing recommendations in Chapter 7.

1.8 Rationale of this study and its importance

As argued within this chapter, the rising prevalence of NCDs that are related to an increase in obesity are significant policy concerns within Saudi Arabia. Notwithstanding the recommendation to understand the social determinants of food choice behaviours by the WHO (2013), these remain unaddressed. Many food-related studies have focussed on the issue of obesity and have investigated its relationship to dietary habits or food consumption patterns,

identified socio-demographic factors relating to obesity, such as age and gender (Rethaiaa, 2010; Washi and Ageib, 2010). However, none of the studies have examined food choice motivations or explicitly examined the barriers and facilitators to healthy eating. Hence, a systematic study including various aspects related to food habits and preferences is generally lacking. Similarly, motives behind food preferences and their impacts on health and lifestyles of Saudis remain largely unknown (Washi and Ageib, 2010). This research, therefore, will begin to fill this vital knowledge gap by including various segments of Saudi society segregated on the basis of gender, age groups, educational level and economic activity.

Amin, Al-Sultan and Ali (2008) further assert that there is very little association made between the eating habits and socio-demographics that have led to obesity amongst Saudi citizens. Therefore, this forms a robust foundation to base this research upon, by ensuring such an analysis of food choice motives is well documented and examined.

From this, a detailed analysis of the various barriers and facilitators that influence Saudi citizens from healthy diet and lifestyle will be conducted, which in turn will be used in planning a recommended social marketing strategy. With regards to perceived barriers, this can be anything that the individual feels may hinder them from changing their behaviour (Raingruber, 2014). These can include financial costs, negative consequences or associated dangers that can arise from the action, such as side effects or pain.

It should be noted that studies in a number of other countries have highlighted how social marketing can be effectively used to change health behaviour in different countries, but there has been little or no implementation of this in Saudi Arabia. The majority of existing campaigns are regarded as health promotional campaigns and not social marketing, which further shows a gap in this area of study that this research can address.

1.9 Research Questions: Aims and Objectives

In order to provide an evidence base as a precursor to the development of public health behaviour change initiatives, this thesis examines the food choice motivations of Saudi Arabian citizens, identifies the barriers and facilitators to food behaviour changes and identifies potential social marketing initiatives to encourage dietary behaviour changes. In order to achieve this aim, a number of central research objectives and sub-objectives were developed:

1. To review the literature regarding food choice to examine the factors that influence individual food choice, and to explore behavioural theories that define food choice and provide insights into behavioural change.

2. To apply the Food Choice Questionnaire (Steptoe, *et al*., 1995) to determine the food choice motivations of Saudi Arabian citizens.

3. To qualitatively explore the barriers preventing Saudi Arabian citizens from conforming to healthy diet and lifestyle recommendations and to identify what factors might facilitate healthier food and lifestyle choices in this population.

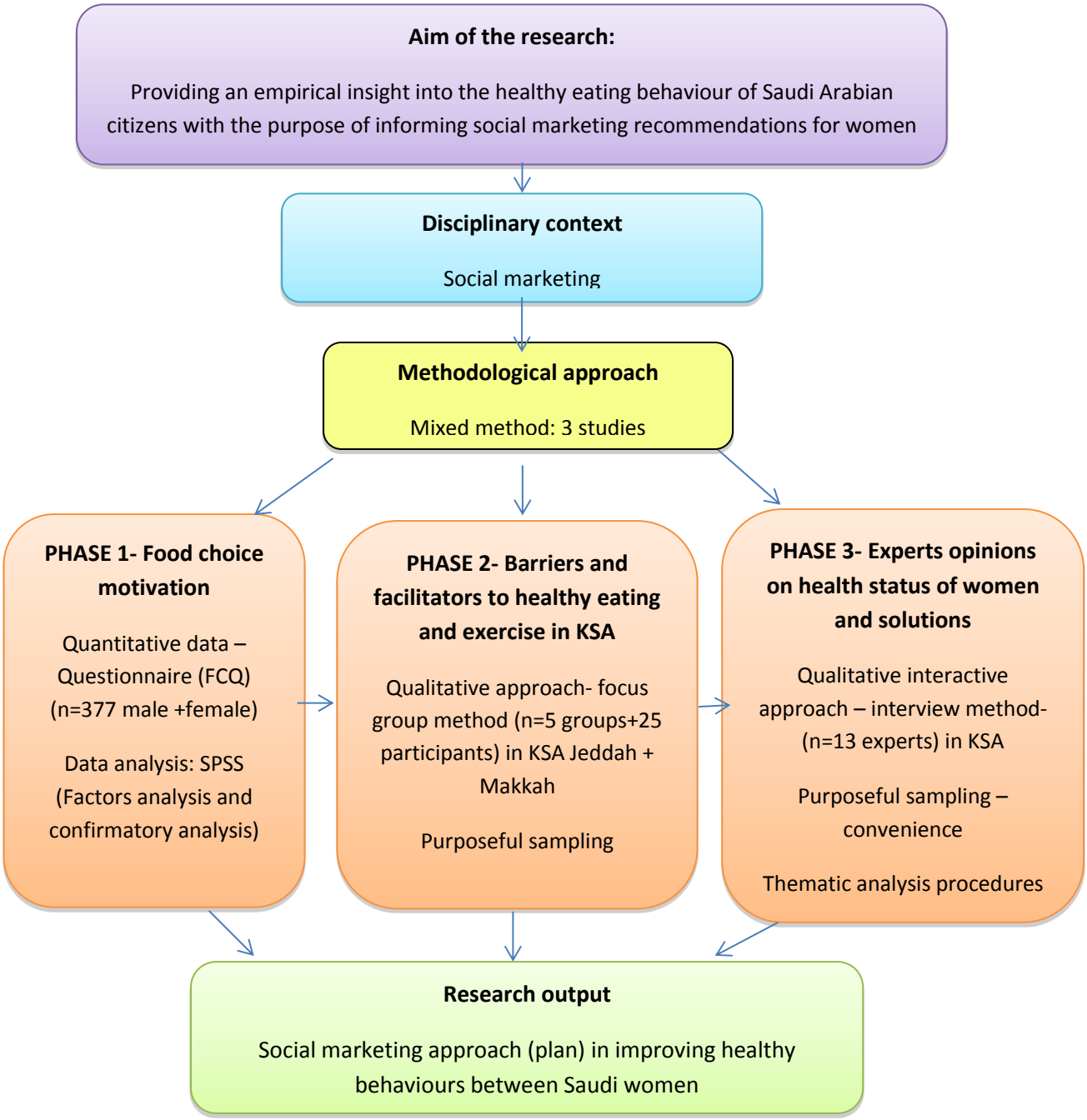
4. To explore health professional's perception in Saudi Arabia, to explore possible behaviour change initiatives to improve the dietary lifestyle habits of the population.

5. To develop a targeted social marketing plan and decision support tool for Saudi Arabian public health policy makers to provide recommendations aimed at achieving lasting dietary and lifestyle behaviour change amongst Saudi Arabian females.

1.10 Research Design

In order to examine the food choice motivation and barriers to health eating amongst Saudi citizens for the purpose of developing a social marketing plan, a research design was developed that included three interrelated and sequential phases. The design adopted a mixed methods approach of both positivist and interpretivist elements, in order to better understand Saudis' food choice motivations and behaviours. Figure 1.4 provides a diagrammatical representation of the research design framework, including how the three phases were conducted. The first phase focused on the general perceptions and motives for food choices made by Saudi citizens. A Food Choice Questionnaire adapted by Steptoe *et al* (1995) was used to provide quantitative data concerning the food choice motives that are made by Saudi Arabian citizens. This informed the design and content of the second phase, which was to gain a deeper insight into the questionnaire findings and the underlying factors that promote or hinder healthy food choices. The focus group technique was used to generate this data. Identification of potential initiatives to improve healthy food choices and healthy behaviours more generally informed the third data collection phase which involved in-depth interviews with health experts to explore the context and practical implementation of potential behaviour change initiatives. Having expert advice provides the relevant focus, planning and ideas for the subsequent social marketing campaign to help citizens adopt healthy eating habits. Thus these iterative and additive data collection phases enable the development of a fuller picture of the research problem, justifying the choice for using a mixed methods approach (Cresswell, 2008).

Figure 1.3 Research Design



As noted in Figure 1.4, this thesis is approached from a social marketing disciplinary perspective and draws upon theories of food choice and behaviour change in approaching the research problem. Thus the research output will be social marketing recommendations based upon the secondary literature and primary data generated in this thesis.

The three phase mixed methods approach begins with an empirical quantitative study that applied Steptoe *et al*'s (1995) Food Choice Questionnaire (FCQ) to provide baseline understandings of the food choice motivations of the Saudi Arabian population. The questionnaire consists of 36 items identified to influence consumer's food choices and reduces

these to 9 factors that are argued to motivate consumer's food choices, these factors Include; health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity, and ethical concern (Steptoe *et al*., 1995). The aim of this phase was to confirm the extent to which the factors defined by the FCQ applied to the Saudi Arabian population and identify the prioritisation of factors in the Saudi Arabian context.

Elaborating upon Phase 1, Phase 2 was an exploratory qualitative study, adopting a focus group methodology to un-pick the factors identified as influencing food choice and provide an opportunity to explore in-depth the perceived barriers to adherence to healthy eating and lifestyle recommendations from an individual perspective. In addition, the focus group discussions also considered factors that would facilitate healthier dietary and lifestyle decisions. The use of focus groups allowed participants to share their opinions and experiences in an open and honest, supportive and non-threatening environment (Krueger, 2000).

The insights gained in Phase 1 and 2 provided the basis for Phase 3. During this phase, in-depth semi-structured interviews with health practitioners working in Saudi Arabia were conducted (n=13). Experts provided an aggregated overview of the contributing factors to obesity and overweight in Saudi Arabia and provided further insights as to the barriers preventing consumers from adhering to healthy dietary and lifestyle guidance. This allowed comparative analysis of consumer perception (collected in Phase 2) with expert perceptions regarding the perceived barriers and facilitators towards adherence to healthy eating and lifestyle recommendations. The expert interviews also provided an opportunity to explore current initiatives and potential future public health strategies aimed at facilitating healthier dietary and lifestyle habits in Saudi Arabia. They were further used as a consultation mechanism to ensure the suitability and feasibility of the social marketing approach to behavior change in Saudi Arabia. Experts were purposefully sampled by selecting individuals from local health clinics that represented the Western region of those working in public and private hospitals.

There are two primary outputs of this research. First, the provision of detailed baseline data regarding food choice motivations, barriers and facilitators to healthy dietary and lifestyle choices of Saudi Arabian citizens. Such insights are an essential foundation upon which future dietary related health policy can be built. Second, the provision of a targeted social marketing plan and public health policy recommendations that can be implemented in order to achieve lasting dietary and lifestyle change and contribute to the reduction of obesity and overweight prevalence in the Saudi Arabian population.

1.11 Anticipated contribution

In addition to increasing knowledge on the substantive area of food choice in Saudi Arabia, this thesis is anticipated to have both a policy contribution and a potential methodological contribution. From a policy perspective, the qualitative findings will provide evidence of the barriers to healthy eating and support evidence-based behaviour change interventions from a social marketing perspective. This could benefit educational institutes, employers or nutritional experts in raising awareness of the specific barriers and facilitators that they should be made aware of, in order to combat the health problems that are prevalent. Also facilitate the potential prioritisation of the social marketing recommendations, a decision support tool is provided, which make be of use to stakeholders involved in wanting to encourage dietary behaviour change.

From a methodological perspective, administration of the FCQ in Saudi Arabia will be the first time it is applied within the Middle East and will inform its applicability within this context. To date, the FCQ has been shown to have cross-cultural validity amongst adults in Western nations, but has been questioned in other age groups and national contexts (Trew *et al.*, 2005; Eertmans *et al*, 2006; Milosevic *et al.*, 2012). It is therefore anticipated that this thesis will be able to comment upon including the culture factor in the FCQ when apply it in Middle East/Islamic context. Moreover, this study will be the first to devise and adopt a social marketing approach in promoting healthy eating behaviours within Saudi Arabia.

1.12 Structure of the thesis

The overall structure of the thesis has been divided into sections that correlate to chapters as illustrated in Table 1.5.

Table 1.5 Thesis structure

Objective	Section	Chapter	Explanation
1	1	2 & 3	Comprises of the literature review, the second chapter include a review of social marketing approach in addition to health policy in Saudi Arabia. The third chapter consist of food choice and review of the common behavioural theories that used in social marketing
	2	4	This chapter contain of research methodology of this research which include description of research paradigm, research methods, data collection, analysis and ethical consideration.
2,3,4	3	5 & 6	Chapter 5 explains the results from quantitative data (FCQ), while chapter 6 explains qualitative findings from both focus group discussions and health expert's interviews.
5	4	7 & 8	Chapter 7 is the discussion chapter which examines the results from the previous chapters. Chapter 8 outlines the recommendations for the design of health-related interventions to improve eating habits among Saudi women.
	5	9	This is the final chapter of the thesis which outline the main recommendations and contributions of the research.

Section 1 comprises of the literature review, which is made up of the first two chapters that critically analyse of key theories and research relating to different areas of the study. Section 2 focuses on the research methodology for the 3 phases of the study and details their associated research design. This is comprised of one chapter, followed by Section 3, which provides the results for each of the phases respectively and outlines their interrelationship with one another. Section 4 contains the thesis discussion, social marketing plan and reflections of the research. Lastly, Section 5 includes the main recommendations and contributions of the research. In light of this, the structure and content of each chapter is as follows:

Chapter 2 provides a detailed overview of the use of social marketing for behaviour change and health promotion objectives. Definitions of and distinctions between social marketing and health promotion are given. Furthermore, the effectiveness and key benefit of social marketing are reviewed within this chapter. Finally, this chapter provides a detailed overview of the government actions and strategic plans to improve health care in the country. A review of the existing health policies in Saudi Arabia and the role of the Ministry of Health and the Saudi Health Care system in the development and administration of public health imitative are also discussed.

Chapter 3 analyses the factors affecting individuals' food choices and theories of behaviour change to inform the subsequent research design (*Chapter 4*) and social marketing recommendations (*Chapter 8*) of this thesis. To contextualise the constituents of a healthy diet, the chapter explore dietary guidelines, the factors affecting food choice, the descriptive and predictive models with which they are associated, and then discusses the theories of behaviour change and underpinning concepts which will be necessary to explore in primary data collection.

Chapter 4 justifies the research methodology and details the data collection and analytical approaches of each of the three empirical phases. The chapter contextualizes the epistemological positions commonly used in social research, and then discusses how the use of a mixed methods approach can positively contribute to the outcome of social marketing research. A detailed description of the sample, data collection methods and analytical approach for the three phases of this work is then given (i.e. food choice motivation, barriers and facilitators to healthy eating, and experts' perspective on health promotion).

Chapter 5 is the first of two results chapters within Section 3. This chapter provides results in relation to Objective One of this research, the empirical quantitative research and the application of the FCQ to a Saudi Arabian cohort. In addition to outlining the factors that influence food choice, the results also consider the extent to which the FCQ is an appropriate tool for the identification of the food choice motivations of Saudi Arabian population.

Chapter 6 provides the results in relation to objective 3 and 4 of this research and provides the results from both the focus groups discussions with Saudi Arabian citizens and the expert interviews with health practitioners. A comparative analysis of the perceived barriers to the

adherence of healthy diets and lifestyles and the potential factors that would facilitate improved uptake are presented.

Chapter 7 and 8 are discusses the main findings, presents the social marketing recommendations and decision support tool for policy stakeholders and offers research reflections on the research process. The chapter relates to objective 4 and this examines the results from the previous section and considers these in relation to the literature reviewed in Chapter 2 and 3.

Chapter 9 is the final section of this thesis which concludes the thesis, by outlining the main recommendations and contributions of the research. The chapter concludes by providing a detailed overview of the associated limitations of the study and provides further research recommendations.

1.13 Summary

This chapter has identified the rising NCD health problems in Saudi Arabia that are associated with an increase in overweight and obesity, and the need to undertake applied research to understand the behavioural factors influencing eating behaviours that are contributing to this situation. In the face of limited baseline data, this thesis has identified its aim to produce evidence-based social marketing recommendations to encourage dietary behaviour change. The chapter has outlined a three phase mixed methods research design to address the research aim and identified the anticipated policy and methodological contributions.

Chapter 2 Social Marketing and Saudi Arabian Health Policies

2.1 Introduction

Social marketing, which is the disciplinary basis for this thesis, is a derivative of marketing and has been defined as *"the systematic application of marketing concepts and techniques to achieve specific behavioural goals relevant to improving health and reducing health inequalities"* (NCC, 2006:31). This approach has been successfully applied to achieve lasting behavioural change in a number of countries including the UK (Hopwood and Merritt, 2011), USA (Kotler and Zaltman (1971), and New Zealand (Thornley *et al*, 2007). In Saudi Arabia, there are only two documented social marketing programmes relating to littering behaviour (Faour, 1989), and one of which is unpublished (Al Mosa, ND). This chapter aims to explain the social marketing concept and justify its potential suitability as a viable approach to improving the eating habits of Saudi Arabian citizens, by promoting healthy eating and ensuring lasting behavioural change.

This chapter first seeks to define and conceptualise social marketing by providing a broad understanding of marketing in general, which addresses how social marketing fits within this discipline. Second, this chapter analyses the social marketing concept by analysing the development of the concept's definition and outlining its core principles and concepts. Thirdly, the chapter then considers how social marketing can be implemented for the purpose of health promotion, with successes of this approach illustrated through the presentation of a number of case studies (i.e. Change4Life, Food Dudes etc.). Lastly, an analysis of the absence of existing social marketing campaigns in the Saudi context is discussed.

2.2 Marketing

Social marketing is a sub-discipline of marketing, where the core principles of marketing are applied for the purpose of helping to resolve public health or social problems (i.e., for a social good, as opposed to its traditional purpose of profit maximisation for stakeholder benefit). Thus, it is appropriate that this section begins by describing the historical antecedents of social marketing, by first defining the concept of marketing and its central analytical commitments. It should however be noted, that as a discipline, it and its definitions have evolved over time.

In defining marketing, Barwell (1965, p3) refers to it as follows:

> "*The marketing concept is a philosophy, not a system of marketing or an organisation structure, it is founded on the belief that profitable sales and satisfactory returns on investment can only be achieved by identifying, anticipating*

> *and satisfying customer needs and desires – in that order. It is an attitude of mind which places the customer at the very centre of the business activity and automatically orients a company towards its markets rather than its factories."*

This early definition identifies marketing as focusing primarily on the customer, whose needs are typically at the centre of an organisation's activities. A more recent definition offered by Kotler and Armstrong (2010, p29) further extends upon Barwell's (1965) definition, referring to it as, *"the process by which companies create value for customers and build strong customer relationships in order to capture value from customers in return".* Sheth and Uslay (2007) describe value creation to be a paradigm that is made up of various stakeholders within the marketing process. The objective and importance behind this paradigm is for stakeholders to work together at different stages within this process, in order to create a better value for the customer and the organisation.

Moreover, within the context of marketing, the 'market orientation', has been identified as generating a positive impact on business performances (Jaworski and Kohli, 1993) and on profits (Narver and Slater, 1990). Kohli and Jaworski (1990) elaborate upon this, noting that a 'market orientation' comprises of three sets of activities: 1) a comprehensive analysis of market intelligence, specifically related to understanding the customers' needs; 2) an effective means of circulating this knowledge to all relevant departments; and 3) how well the organisation responds to this intelligence. It is therefore evident that the customer and information about the customer has traditionally played a central role to ensure businesses achieve commercial success. Marketing has therefore, historically drawn attention to identifying and understanding consumers' needs, wants and desires. Within the traditional marketing concept, the means by which companies create value and maintain relationships with their customers is by implementing the marketing mix. Borden (1965) refers to the marketing mix as the "4Ps", which represents a conceptual framework that describes the various strategic decision areas that need to be considered by organisations or individuals when they wish to bring a product or service to market for the purpose of meeting their customer needs (Goi, 2009). These elements of the marketing mix include those that are commonly related to: 1) product; 2) price; 3) promotion; and 4) place. These elements will be discussed in detail later within this chapter, yet it should be noted that these are tools that have been effectively adopted and adapted within social marketing for the purpose of achieving and generating a social benefit. The next section describes how these tools and concepts have been utilised within social marketing for such objectives.

2.3 Social Marketing

The emergence of social marketing is considered to have come from a natural and 'logical outgrowth' of marketing, which occurred as a way of broadening this discipline into other areas (Elliott, 1991; Andreasen, 1994). Brown (1986) argues that this included specific areas, such as: 1) a need for non-businesses to have a robust marketing strategy and services; 2) a means of combating the negative sentiments towards marketing; and 3) the advent of the exchange theory.

Kotler and Zaltman (1971) were the first to introduce and initiate the concept of social marketing in America (USA) in their article entitled '*Social Marketing: an approach to planned social change'.* During this time in America, there was a significant change in public health policies, which saw a greater inclination towards preventing diseases proactively, rather than reactive attempts to deal with ill-health (Wallack, 1984). Moreover, not only did these health campaigns focus on educating individuals about how to improve personal health and wellbeing, but they also began to implement marketing strategies and techniques to effectively generate public awareness. The definition provided by Kotler and Zaltman (1971:5) to describe this new marketing approach was:

> *"…the design, implementation and control of programs calculated to influence the acceptability of social ideas and involving considerations of product planning, pricing, communication, distribution and marketing research."*

According to Andreasen (1994), the translation of traditional marketing principles in non-profit and governmental establishments expanded the application of marketing into being "socially relevant" to create social change (Andreasen, 1994:109).

However, Andreasen (1994) further states that the definition provided by Kotler and Zaltman (1971) is somewhat problematic. He explains, as noted by Rangun and Karim (1991), that the term itself was initially confusing as it led to misunderstandings between social marketing and societal marketing, which are distinct in their approach, principles and application. For instance, societal marketing deals with *"regulatory issues and other efforts to protect consumers from what Hirschman terms the 'dark side of the marketplace'*" (Andreasen, 1994:109). Moreover, there was confusion in regards to the implementation of social marketing and whether there were any limitations placed over its usage for public and non-profit marketers only. Lastly, another issue that was highlighted with this definition was that the objectives seemed to be limited to only influencing "*the acceptability of social ideas*." (Kotler and Zaltman, 1971:5). While this argument gathered some support (i.e. Fine, 1981), the opposing view was that social marketing involved more than ideas, as it also sought to change attitudes and behaviours. By

incorporating this element to Kotler and Zaltman's (1971) definition, Kotler and Roberto (1989:6) provided a broader definition of social marketing, which was defined as:

> "*An organized effort conducted by one group (the change agent), which intends to persuade others (the target adopters) to accept, modify, or abandon certain ideas, attitudes, practices, and behaviours*"

Although this definition elaborates upon the areas that were missing by Kotler and Zaltman's (1971) original definition, it also does not address other key aspects within social marketing. For instance, it does not seek to make any distinction between social marketing and health promotion or health education, or that marketing principles should be utilised within this context. Thus, in addressing these various contentions, Andreasen (1994:110) proposed a more succinct definition, which is the definition that is adopted herein for this thesis:

> *"Social marketing is the adaptation of commercial marketing technologies to programs, designed to influence the voluntary behaviour of target audiences to improve their personal welfare and that of the society of which they are a part."*

It is important to note that due to its popularity, social marketing has been continually redefined since its original inception. This is quite evident in the UK, where a national UK body, the National Social Marketing Centre (NSMC), was established in 2006 under the partnership of the National Consumer Council (NCC) (now known as Consumer Focus) and the Department of Health. The purpose of its formation was to *"maximise the effectiveness of behaviour change interventions through policy, training and practice"* (Hopwood and Merritt, 2011:2), which was to be achieved through the use of social marketing. In the National Consumer Council's 2006 report entitled '*It's our health!*' the case was made for the implementation of social marketing as a direct response to the Government's white paper, Choosing health. As a result, the NCC's (2006) report aimed to illustrate how prevention and the promotion of healthier lifestyles would be a more effective approach to improving health and sustaining this behaviour, by citing that such approaches could prevent "…*four out of five deaths in the UK of people under 75* [with a] *total annual cost [saving] to the country of preventable illness …of £187 billion*" (NCC, 2006:3). They also stated that historic UK health promotion campaigns were not reaching those who needed it the most (i.e., those who continue to eat and drink unhealthily or those who smoke).

In defining social marketing, the NSMC (2006) further explains that this is "*an approach used to develop activities aimed at changing or maintaining people's behaviour for their benefit*." This definition advances the idea of ensuring social marketing is a carefully planned process that involves various short-term and long-term goals. Moreover, Grier and Bryant (2005:321)

regard social marketing to be a means for facilitating the "*acceptance, rejection, modification, abandonment, or maintenance of particular behaviours by groups of individuals, often referred to as the target audience*." They go on to further state that while this target audience normally refers to consumers, it can also include policy makers within governments that are able to deal with issues pertaining to health.

Lastly, in adhering to a definition that is specifically related to health and wellbeing, the definition provided by the Department of Health (DOH) (NCC, 2005:31) is also appropriate and relevant in this context. The DOH defines social marketing as:

"...the systematic application of marketing concepts and techniques to achieve specific behavioural goals relevant to improving health and reducing health inequalities."

In regards to the various aspects within social marketing, Kotler and Zaltman (1971) state that, similar to marketing in general, this approach is not just a theory, but that it extracts knowledge from various sources such as sociology, communications theory, psychology and anthropology, in order to formulate a structure for the purpose of understanding how behaviour can be influenced. This is apparent when analysing the progression of social marketing campaigns, wherein they take advantage of whatever media is available in order to reach its objectives. For instance, traditional mass media campaigns commonly use printed materials (i.e. brochures and flyers), or even the use of television or radio to raise awareness. However, it is interesting to note that, due to the popularity of online facilities from the Internet, the incorporation of Web 2.0 tools, such as social media, blogs or video sharing content, it has increased the potential to widen the scope for how social marketing campaigns are implemented. Thackeray *et al* (2008:339) explains, "*Web 2.0 allows for sharing, linking, collaborating, and inclusion of use-generated content*", which subsequently enables consumers to engage directly in the distribution of information and has the potential to generate viral marketing of a particular campaign.

It should be noted however, that even though social marketing may comprise of these various effective tools and techniques, social marketers will always emphasise that its theoretical underpinning is firmly extracted from the conceptual framework of traditional marketing (Grier and Bryant, 2005). In addition to this, this framework is subsequently applied in order to influence behaviour and promote beneficial behavioural practices amongst individuals and the wider community (Daniel, 2009). These include elements such as competition, the "marketing mix", audience segmentation, continuous monitoring, consumer orientation and the exchange theory (Grier and Bryant, 2005). However, there are also arguments that challenge this view.

For instance, although an objective of generic marketing is to see how this translates to effective performance and profitable return for an organisation, within the area of social marketing, it is more complex as it involves altering behaviour that is often unwilling to be changed (Lefebvre and Flora, 1988). Thus, in contrast to commercial marketing, social marketers focus on persuading individuals to change their behaviour voluntarily, as opposed to persuading them to purchase a particular product or service. Additionally, researchers such as Peattie and Peattie (2003:321) have argued that by directly translating and applying principles and practices of traditional marketing to the context of social marketing, it "*may create practical problems and also confusion regarding the theoretical basis of social marketing*". For example, Glenane-Antoniadis and Whitwell (2003) queried the effectiveness of the exchange theory within social media campaigns, while there are others that dispute whether branding (McDivitt, 2003), competition analysis (Hastings, 2003) or relationship marketing (Hastings, 2003) are all necessary for marketing campaigns that specifically address health needs. While these are all somewhat valid arguments, the core principles and concepts of social marketing will be discussed later within this chapter to demonstrate how this approach utilises the marketing principle. However, before this, it is important to illustrate the context for which social marketing has been conventionally devised.

2.4 Social Marketing within Health

Social marketing has traditionally been used within a health context, where the principles of this approach have been applied to address serious public health concerns such as obesity, family planning, HIV prevention, smoking or the misuse of alcohol. Sowers, *et al* (2007) explains that the overlying principle of social marketing is the concept of voluntary exchange, which is where individuals will accept and implement specific behaviours, ideas or products that they can find benefit in. According to Daniel (2009), in such instances, the result of a more long-term, sustained change in behaviour is more likely. Thus, coupled with health communications, the use of social marketing is often regarded as a viable means of promoting and improving health, and as an intervention towards issues pertaining to health and wellbeing (Kotler, 2009).

Knowing the target audience is vital for these social marketing programmes to succeed, particularly in terms of understanding the societal context, as it is recognised that not every audience will be the same. This is equally relevant to health and wellbeing, as diversity in preferences, attitudes, ideologies and behaviour can also foster diversity in how they overcome and improve certain health issues (Wansink, 2005). Effectiveness in improving public health

has also been identified as dependent upon how consistent public health practitioners are in adopting these principles (Daniel, 2009). This consistency has the potential to facilitate long-term solutions and the resolution of many of the problematic issues pertaining to public health, such as smoking, obesity and communicable diseases (Hopwood and Merritt, 2011). However, these are unlikely to become long-term solutions unless the root cause is resolved and addressed.

In a review conducted by the Health Sponsorship Council in New Zealand (Thornley *et al*, 2007), it was revealed that nutrition social marketing interventions to prevent obesity were effective, regardless of specific demographic and economic characteristics within the target groups (i.e. ethnicity, age or income) or environment (i.e. workplace or schools). Within their review, Thornley *et al* (2007) identified a number of process factors to ensure social marketing campaigns for obesity prevention are successful. These included: tailoring the message to the target group and ensuring it is culturally acceptable; incorporating multiple channels for communication; and intervention strategies that build strong relationships and partnerships with relevant organisations, community groups and governmental departments, in order to maximise campaign potential and awareness. Thus, for a social marketing campaign to be robust and successful in getting individuals to achieve and maintain behavioural changes, it is important to understand the target audience and, as shown in traditional marketing, form a strong consumer focus (Griffiths *et al*, 2008). The nature of social marketing for health prevention is often seen as targeting the customer, which in some instances, has led to certain criticism of "blaming the victim" (Griffith *et al*, 2008:2). However, it should also be noted that this could also be used to improve health beyond the target group; this can be achieved by creating a climate that modifies the social norms, particularly amongst policy-makers (Griffiths *et al*, 2008)

However, it is necessary for behaviours to first change within individuals if public health interventions are to succeed long term. The framework provided by social marketing can be used to gain a better insight into those factors that are often viewed as barriers to behavioural change, and address why and how these behaviours occur.

2.5 Conceptualising Social Marketing

When organisations or individuals seek to implement social marketing campaigns or initiatives, it is imperative that they meet specific benchmark criteria. These criteria were first devised by Andreasen (1994) and then later revised by the NSMC (French and Blair-Stevens, 2006). The criteria used by Andreasen to define a campaign as being within social marketing is, that it

should "*apply commercial marketing technology, have as its bottom line the influencing of voluntary behaviour, and primarily seek to benefit individuals/families or the broader society and not the marketing organization itself.*" (1994:112). Table 2.1 outlines the criteria, which are related to the core concepts and principles that need to be adhered to in order for a campaign to be considered as 'social marketing'. These concepts and principles are primarily found within the generic marketing domain, where they have been incorporated with other theoretical disciplines for the purpose of developing behavioural intervention strategies.

Donovan and Vlais (2005) elaborates upon this, by stating social marketing occurs on different levels, including:

1. Identifying and targeting individuals to change behaviour using information and persuasion
2. Identifying environmental factors that can reduce harm to individual and societal health concerns.
3. Identifying those in a position of power, who are able to amend laws and create structural changes in removing barriers, as well as facilitating and providing individuals with the ability and resources to change and implement socially desirable behaviours.

Table 2.1 Summary of the core concepts and principles in social marketing

Core concepts	
Insight	Having a clear insight into the target audiences' attitudes, experiences and behaviours, in order to contextualise their environment and understand what motives them.
Exchange	Baker (2003) interprets exchange to be "an exchange of resources or values between two or more parties with the expectation of some benefits". This also refers to knowing what an individual has to give in exchange for the benefits that are being offered.
Competition	This is to acknowledge that, regardless of the offer that is given, there will always be factors that seek to compete with this – whether they are internal or external to the individual. For instance, internal may refer to psychological factors, whereas external could be the environment or availability of necessary facilities.
Core principles	
Behavioural goal and theory	It is established that social marketing is not solely able to explain behaviours of individuals. This requires references to biological, psychological and social theories (NSMC, 2007). Consequently, there are a number of theories that have been proposed to explain behaviour of individuals, such as The Health Belief Model (Becker *et al*, 1977) and the Stages of Change Model (Prochaska and DiClemente, 1992).
Audience segmentation	Adopting various activities to segment the target audience.
Marketing mix	Implementation of the 4 P's

2.5.1 Core concepts:

The core concepts of social marketing include: i) insight; ii) exchange; and iii) competition. This section explores each of these concepts in turn.

a) Insight

Social marketing can be considered to be a technique that is intelligence-led for the purpose of informing health promotion strategies and awareness. Thus, in order to maximise the effectiveness of a social marketing campaign, it is imperative that a detailed insight into the intended audience, and that their preferences, attitudes, behaviours, perceptions, barriers and facilitators as a whole, be the primary focus (Hasting and Haywood, 1991; Grier and Bryant,

2005). This allows social marketers to have a greater comprehension of the group, which can aid them in conveying the appropriate and relevant messages to the correct people (NWPHO, 2006). Without it, any social marketing campaign will only be based on preconceived ideas, prejudices or assumptions from the social marketer and in turn, will not fulfil the objectives and needs for the target consumer. In relation to this, The North West Public Health Observatory (NWPHO, 2006) recommends the use of focus groups or other qualitative methods as a means of gaining an in-depth knowledge and understanding of the intended target group. Furthermore, by focusing upon the consumer, this approach also opposes the notion that a "one size fits all" message is suitable within social marketing campaigns, as the attitudes and preferences of groups within society will differ. This further justifies the research design and methodological approach that has been adopted for this thesis.

b) Exchange

A core concept within social marketing is that of exchange, which refers to the notion that individuals will exert effort in changing their behaviour, provided that they receive some sort of value or benefit in exchange (Andreasen, 2002), thereby generating positive reinforcement towards the changed action (Siegel and Doner, 1998; Grier and Bryant, 2005). This exchange theory is found in traditional marketing techniques, which is based on the premise of self-interest (Bagozzi, 1978). That is, consumers will purchase goods or services in exchange for money, if they feel there is a benefit for them and at a minimal cost (Grier and Bryant, 2005). It is therefore necessary for social marketers that, once they have gained a deeper insight into their target audience, they identify what benefits their intended target group would accept in return for changing their behaviour. This relates back to Research Objective 3 and provides a rationale for using qualitative methods to explore the barriers and facilitators for food choices amongst Saudi citizens, in order to identify what individuals are willing to "exchange" for their behaviour (i.e. adopting a healthier diet and lifestyle). Moreover, in the final phase of this study, experts were also consulted to see what they would consider as appropriate 'exchange propositions'. This in turn allowed a more comparative analysis to be made and ensured the recommendations were appropriate.

The NWPHO (2006) admit that this can be somewhat more difficult to recognise in comparison to traditional marketing principles. Grier and Bryant (2005) also recognise that behaviour change is a voluntary action on the part of the target group and therefore, the cost implication of this must be borne by the individual themselves in order to improve their health (i.e. the financial cost associated with joining a gym or having to exert more time and effort to find

and/or cook fresh foods) (NWPHO, 2006). This is important because, unlike exchanges in retail, customers generally receive goods or services instantly after making payment, but payback for health-based social marketing is not necessarily immediate and therefore requires individuals to "buy into" the long term gain (Grier and Bryant, 2005). In response to this, Kline (2005) suggests that rather than focusing a campaign on changing behaviour against certain prohibitions, it should focus on giving individuals an informed choice of the health risks of the intended issue, and to also make alternatives be seen as acceptable. This, Kline (2005) believes, will create a greater change in behaviour. In turn, Grier and Bryant (2005) assert that social marketers must ensure they offer and ensure consumers will receive significant and viable benefits in return for changing their undesirable behaviours, as well as acknowledging that consumers will have to "pay" the associated intangible costs, such as their time, money or even seemingly minor issues like healthy, but potentially perceived tasteless foods.

c) Competition

When referring to competition in the traditional marketing sense, if a product is being promoted, then competition refers to organisations or products that also aim to fulfil the same desires and needs for the individual (Grier and Bryant, 2005). Within social marketing, competition is defined as *"behavioural options that compete with public health recommendations and services*" (Grier and Bryant, 2005:322). Using baby milk as an example to illustrate this point, although traditional marketing will focus on brand competition within the infant milk formula market, social marketing focuses on the competition between breastfeeding versus bottle-feeding; wherein health recommendations would favour the former over the latter (Hastings, 2003).

Thus, questions pertaining to competition arise within the scope of social marketing, such as, what products (i.e. services or behaviours) are available that compete with the healthy option that are being promoting? This subsequently allows marketers to identify and provide suitable incentives for exchange, whilst also helping to devise and identify the advantages of the 'healthy behaviour' to make their offering more appealing to consumers (Hastings, 2003). Moreover, assessing the competition can also aid social marketers in deciding which behaviours should be promoted, as well as conducting a more critical analysis in identifying the target group.

2.5.2 Core principles

The core principles within social marketing are applied when a campaign is to be implemented and to ensure it is effective in achieving the goals of behavioural change for social good. The principles have been identified as follows: behavioural goals and theories, audience segmentation and the marketing mix; with the exception of behaviour change theories which are discussed in *Chapter 3* are discussed in the following section.

1) Behavioural goals and theories

For social marketing campaigns to be successful, the behavioural goals and the intended changes in behaviour need to be defined. In such instances, the 'social good' that is identified within health-related campaigns should be realistic, measureable and specific, so that one may monitor and evaluate the overall effectiveness of the campaign (NWPHO, 2006). This can be likened to the SMART principles that are applied within traditional marketing and in management, which provides a set of criteria for individuals or organisations when they plan certain objectives that they wish to achieve.[2]

2) Audience segmentation

As a fundamental principle of marketing, it is not feasible to expect social marketers to implement a campaign that addresses the needs and attitudes of all people, and even though public health professionals have attempted to categorise the population based upon common demographic factors, such as age, gender and ethnicity, social marketing seeks to be more precise in its identification of target consumers (Grier and Bryant, 2005). In such instances, various populations are segmented into those that share similar behaviours, lifestyles, needs and interventions (Grier and Bryant, 2005). Further divisions are also made based upon those particular behaviours or readiness to change within the context of health and wellbeing (i.e. heavy smokers and light smokers). In light of this, a great deal of attention is devoted to the research in audience segmentation, in order to effectively identify segments of the target group for the purpose of devising suitable social marketing and product strategies (Forthofer and Bryant, 2000), as well as allowing the marketing mix to be tailored accordingly (NWPHO, 2006). Evidence suggests that this subsequently improves the effectiveness of a campaign, as it is focused on the specific needs of the consumer, whilst also enabling social marketers to correctly allocate relevant resources and make necessary decisions (Forthofer and Bryant, 2000). Thus, the NWPHO (2006) recommend segmentation to first analyse homogenous 'at risk' groups within the population, which can then be used identify further differences or

[2]The SMART acronym stands for Specific, Measurable, Attainable, Realistic and Time-bound

segments within. A working example of this is the VERB [3]programme; a campaign that was implemented in America to increase and maintain physical activity amongst the target group. The campaign primarily identified the audience segment by age ("tweens" aged 9-13), but then went on to further segment this target group based on receptivity to physical activity, current activity level, as well as gender and ethnicity (Grier and Bryant, 2005; Thornley *et al*, 2007).

3) Marketing Mix

Similar to population-based public health interventions, social marketing aims to provide long-term solutions to health issues, as opposed to focusing on short-term goals or the implementation of one-off campaigns (MacFadyen, Stead, and Hastings, 1999). Thus, within this approach, the underlying premise is that an organisation or individual can incorporate a number of activities or techniques to influence behavioural change (Daniel, 2009). In so doing, the implementation of such activities should be designed in an organised and integrated manner, in order to maximise the effect for change to occur. These activities have been subsequently incorporated as part of the marketing model, which focuses on the consumer and are categorised into key elements referred to as the 'marketing mix'. These are traditionally made up of four categories, which are the four P's of marketing: Product, Price, Place and Promotion (Weinreich, 1999). Each "P' is defined with the target audience in mind as they are the focal point of marketing campaigns. Table 2.2 gives an outline of these categories, which is followed by a brief summary.

[3]It should be noted that VERB is not an acronym, but is used as its definition meaning of an action word.

Table 2.2 Marketing mix

Tools	Definition	Types
Product	The offer made to target adopters	Adoption of idea (belief, attitude, value) Adoption of behaviour (one-off, sustained) Desistence from current behaviour Non-adoption of future behaviour
Price	The costs that target adopters have to bear	Psychological, emotional, cultural, social, behavioural, temporal, practical, physical, financial
Place	The channels by which the change is promoted and places in which the change is supported and encouraged	Media channels Distribution channels Interpersonal channels Physical places Non-physical places (e.g. social and cultural climate)
Promotion	The means by which the change is promoted to the target	Advertising Public relations Media advocacy Direct mail Interpersonal

Adapted from Kotler and Roberto (1989, p. 44).

a) Product

Within the field of social marketing, the product is what is offered to individuals to help resolve their health issue. Subsequently, it is vital to have a clear insight into the customer's understanding and viewpoint so that the product is able to cater specifically for this (NWPHO, 2006). This is quite a broad term, as it can refer to either something physical (i.e. a pedometer), a service (i.e. a health check), a practice (i.e. a diet) or even a concept or idea (i.e. "do not drink and drive"). When referring to the product, Brown (2006:387) explains that,

> "*…viewing the product as more than just behaviour (actual product), by focusing on the core product (bundle of benefits), and by taking into account services and tangible objects (augmented product), social marketers will be more successful in their behaviour change efforts*".

Kotler *et al* (2002) makes the further distinction between the core product and the actual product, where the former refers to what individuals will gain if they change their behaviour, while the latter is the actual behaviour that is desired. For instance, eating healthier foods would be classed as the core product whereas implementing a healthier diet would be the actual

product. In light of this, it is vital that social marketers possess a product that can solve the consumer's problem and what they deem as being important, or at the very least, offer them some incentive that they will value (Grier and Bryant, 2005).

b) Price

Price refers to the exchange that the customer must make to receive the benefit that the marketer has promised them (Grier and Bryant, 2005). This may be monetary or non-monetary/intangible costs, such as applying effort or spending time or quitting a particular habit. From a behavioural perspective, if the individual must "spend" more than they gain in benefit, the perceived value will be low and it is not likely that change will occur, whereas if the benefit they receive is greater than what they spend, the individual is more likely to pay the necessary price (Weinreich, 2006). Within the social marketing strategy, careful consideration must be taken when deciding on the price of a product because if it is too low (or free), the customer may not take it seriously or value it as being low. Conversely, if is priced too high, consumers may not be able to afford it or be willing to enter into an exchange of their assets (i.e. time or energy) (Grier and Bryant, 2005). The same principle applies to intangible costs.

c) Place

Similar to generic marketing, the products for social marketing must be easily accessible for the consumer. The place therefore, refers to the location of the goods or services (Grier and Bryant, 2005). For instance, tangible products will require some form of distribution, whereas intangible products such as services are more complex as they may require a specific place that customers can physically go to. In reference to social marketing, place can be regarded as *"action outlets/channels",* or as Kotler, Roberto and Lee (2002:247) explain, place refers to "*where and when the target market will perform the desired behaviour, acquire any related tangible objects, and receive any associated services".* This can be, for example, a customer who needs to attend the doctors' surgery for a health check-up. Research is also important in relation to this because the accessibility and convenience for the target audience will be determined once researchers are able to identify what is suitable for them (Weinreich, 2006).

d) Promotion

Within the social marketing mix, promotion is the most dynamic and visible element and is the driving force behind the other 3 P's (Grier and Bryant, 2005). That is, promotion is comprised

of the advertising, marketing promotions and public relations, all of which generate a demand for the product. This means the knowledge of the target group and use of persuasive action and communications are implemented in order to influence and encourage the consumer into adopting the social marketing product (NWPHO, 2006).

Similar to the other P's, research is conducted here to establish which method of promotion will be the most effective way in reaching the target audience (Weinreich, 2006). Grier and Bryant (2005) explain that this requires a strategic design of activities, communicative objectives and guidelines to design messages that attract and appeal to the consumer. However, it should be noted that promotion does not just relate to raising awareness of the product; rather it can also be used to make products more acceptable to be used within the environment. In such cases, significant contributions from social, anthropological and psychological studies have been used, particularly the theories that address how human behaviour can be modified (NWPHO, 2006).

2.6 Expanded 4ps of Social Marketing: Publics, Partners, Purse string and Polices

In addition to the 4 P's, Weinreich (1999) explains that marketing mix can be expanded further to include other P's such as publics, partners, purse strings and polices. These are also important elements to consider within a social marketing campaign or programme. With regards to publics, because successful social marketing means dealing with different audiences, this relates to the internal and external groups that are involved in the social marketing campaign. Internal publics are those that are responsible for the direction, approval and implementation of the campaign (i.e. campaign manager), whereas external publics refer not only to the target audience, but also to the policy makers or secondary audiences (Weinreich, 2006).

As for partners, this relates to this cooperation of different groups, individuals or organisations to ensure the campaign is successful and effective. The purse string focuses on how much funding is available to rollout a social marketing campaign. Weinreich (2006) explains that the majority of organisations utilising social marketing programmes do so by using allocated funds from sources like governmental grants, foundations or donations. Lastly, if a social marketing campaign is implemented to improve public health concerns, then it must be in line with certain policies. Bycontrast, policies may be altered to suit a successful and effective social marketing programme.

2.7 Planning process in social marketing

An often-flawed aspect within social marketing campaigns is the failure to maintain the primary objective of changing behaviour (Andreasen, 1994). Many social marketers are extremely effective in raising awareness and getting their message out into the public domain or to even change attitudes, but they do not question whether these will actually lead to a change in behaviour, particularly in the long term. Thus, it is important that all the principles and techniques within the social marketing campaign are strictly adhered to and steps to implement the campaign are followed accordingly.

As previously stated, social marketing adopts many of the techniques that are found in generic marketing; however, a distinction is made in the overall process of these techniques. Many researchers have therefore devised a specific strategy for how social marketing campaigns should be implemented, specifically focusing on how to effectively convey and promote the campaign message, as well as providing a recommended framework on how to plan and evaluate its overall success. Table 2.3 provides a systematic overview for a number of different strategies that have been put forth within social marketing research. What is interesting to note with all these planning models is they do cover the same areas. This is understandable, as they must all cover the core concepts and principles pertaining to social marketing. However, as Table 2.3 highlights, although the same areas are covered within each model, certain models will provide a more detailed breakdown for each stage within the process. For instance, Walsh *et al*'s (1993) model consists of three stages in comparison to the eight stages found in the SMART model developed by Neiger and Thackeray (1998).

Table 2.3 Comparison of planning processes in social marketing

Stages	Authors and date				
	Lefebvre and Flora 1988	**Walsh *et al* 1993**	**Andreasen (1995)**	**Neiger and Thackeray (1998) (SMART model)**	**Bryant (1998)**
1	Consumer Orientation	Research and Planning	Background Analysis	Preliminary planning	Formative research
2	Audience Segmentation	Strategy Design Goals and Objectives	Marketing mission	Consumer analysis	Strategy Formation
3	Channel Analysis	Implementation and evaluation	Marketing organization, Procedure, Benchmark, and Feedback Mechanism	Market analysis	Program implementation
4	Strategy		Pretesting program elements	Channel analysis	Program monitoring and Revision
5			Monitoring and Evaluation	Develop and test	Program Evaluation
6				Intervention materials	
7				Implementation	
8				Evaluation	

Sources: Author's own construction

Table Continued:

Stage	Authors and Date			
	Weinreich (1999)	**Gwynne (2003)**	**Grier and Bryant (2005)**	**Hopwood and Merritt (2011)**
1	Planning	Identifying the problem.	Initial planning	Getting started
2	Message and Material development	Perform background research	Formative research	Scope
3	Pretesting	Devise a suitable solution for the target audience	Strategy development	Develop
4	Implementation	Implement the solution	Program development pretesting of material and nonmaterial interventions	Implement
5	Evaluation and Feedback	Evaluate the campaign/programme	Implementation;	Evaluate
6			Monitoring and Evaluation	Follow-up

The common elements that are found amongst these models are problem and target market identification, strategy development, pretesting and implementation and evaluation which are now discussed.

2.7.1 Identifying the Problem and Background research

Before a social marketing campaign can be developed, it is necessary to first identify what the actual problem is and provide a compelling reason to find a solution for it. In many instances, this draws many parallels with commercial marketing as a SWOT[4] analysis is often conducted here to determine goals or targets (Turning Point, 2009). Similar to traditional marketing, conducting detailed background research on the target audience, environment and the actual problem itself is vital for effective and successful social marketing. This stands to reason, as the only real way to resolve a problem is to have all the necessary information that relates to it. For instance, if social marketers wish to influence eating habits, they must first understand the existing habits of the target group (Gwynne, 2006). This requires not only researching the social and cultural aspects of a group, but can also include sub-cultural differences. As alluded to earlier, within Neiger and Thackeray's (2002) SMART model (Social Marketing Assessment and Response Tool)[5], the first four phases cover the initial planning of the social marketing campaign. This involves a preliminary planning, which is identifying the problem, projecting programme costs and outlining goals of the campaign. The second phase is Audience Analysis, which provides the insight and segmentation of the target audience. After this, the third phase, Channel analysis, seeks to outline which methods of communication will be used to effectively market and distribute the campaign, whilst the fourth phase (Market Analysis) utilises marketing principles and defines the market mix (4 Ps). Walsh *et al* (1993) also cite the same four components within the first phase of their model (Research and Planning). Within the planning aspect, they advise the objectives of the campaign should be measurable and realistic, boundaries for the campaign should be defined (i.e. "go/no go" decisions), existing research should be reviewed and measures for progress and success are to be implemented. The other components (Consumer, Marketing and Channel Analysis) are similar to Neiger and Thackeray's (2002).

As previously identified, quantitative or qualitative methods, such as surveys, focus groups, interviews or observations (Brown, 1997; Walsh *et al*, 1993) can be used in background

[4]SWOT analysis is a planning method that is used to evaluate the Strengths, Weaknesses, Opportunities and Threats of a particular project or activity prior to its implementation.

[5]This is not to be confused with the SMART principles that are used in marketing for goal setting.

research. As an example of this, Gwynne, Roberts and Compton (1993) carried out background research during a social marketing campaign to improve public health care in St. Lucia. Their findings showed the majority of their participants had a strong inclination towards private health care over the public counterpart. This information was then used to devise a social marketing campaign to promote National Health Insurance.

2.7.2 Strategy development

Once background research has been conducted and the target group are defined, this information can be used to develop a suitable solution to the problem. Both Walsh *et al* (1993) and Hopwood and Merritt (2011) explain that social marketers should refer back to their marketing mix and plan and expand their strategy according to these areas (i.e. 4Ps). In addition, any solution that is provided must take into account cultural sensitivities, as well as specifically benefiting the target audience. During this stage, many social marketers will often focus on ensuring they avoid any oversights or barriers to success (Lefebvre and Flora, 1988). Consequently, before implementing the solution on a large scale, pilot programmes (or test cases) will initially be conducted on a small scale, which helps to identify any strengths and weaknesses of the campaign, whilst also minimising any potential mishaps or errors, and reducing any costs or resources (Brown, 1997; Hopwood and Merritt, 2011). In Neiger and Thackerey's (2002) model, the fifth phase is to develop and test intervention materials; this acts as a pilot campaign to evaluate whether there is any further refinement or development that is necessary to make the campaign a success.

With regards to the product itself, the solution that is devised must fit certain criteria, which considers the consumer during the whole process (Lefebvre and Flora, 1988; Hopwood and Merritt, 2011). For instance, the product should be appealing and attractive to the target group, both in name and packaging, so that they will invest in it (Gwynne, 2003). In such instances, social marketing relies greatly upon theoretical concepts that are found in commercial advertising and behavioural psychology, where the individuals will go through a decision-making process to reach a final outcome. These steps are referred to as a Hierarchy of Effects (HOE) (Dudley, 1993), which Lavidge and Steiner (1961) outline the following seven steps: (1) Unawareness, (2) Awareness, (3) Knowledge, (4) Attitude from who likes the product, (5) Preference, (6) Conviction, and (7) Actual Purchase. These steps are not restricted to the seven that are highlighted above, as other researchers have redefined and simplified them into lesser steps (Tian and Borges, 2012). Moreover, McGuire (1968) has devised a Hierarchy of Effects Model (HOEM) that is based upon the theoretical principles from HOE, and identified six information-processing stages that can be used to evaluate whether behaviour has changed. These stages are presentation, attention, comprehension, yielding, retention, and behaviour. An example of how this model was used for evaluation will be given in section 2.8.5.

2.7.3 Implementation

It is imperative that the solution is effectively implemented so that target groups see it as a viable answer to their problems. Gwayne (2003) states this is achieved by first raising awareness for both the product and solution directly to the target group. Once this has been achieved, the second step is to generate a demand and persuade members from the target group to adopt the solution. In order to attain this level of success, the promotional strategy for the product must be robust and convincing. Thus, if the product is both appealing and culturally acceptable, the demand will increase (Gwynne, 2003). In contrast, Walsh *et al* (1993) state that the implementation phase should be to focused on ensuring the collaborators involved in the campaign are enlisted and aware of their overall involvement to ensure the campaign is successful. In addition, as part of the implementation stage, it is important to continue monitoring how the campaign is running so that potential problems may be observed and dealt with accordingly (Hopwood and Merritt, 2011).

2.7.4 Evaluation

Upon completion of a social marketing campaign, an evaluation is conducted to assess whether or not the campaign was successful in conveying the message effectively to the target group

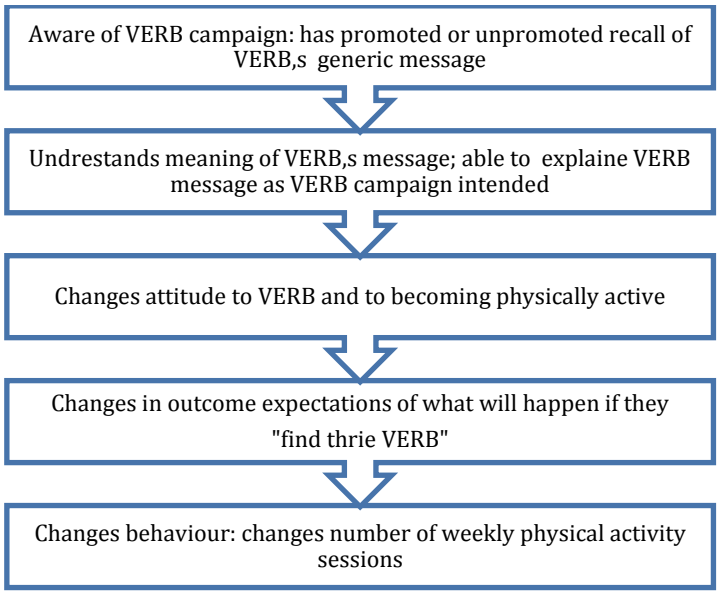
(Walsh *et al*, 1992; Neiger and Thackeray, 2002; Hopwood and Merritt, 2011), as well as determining whether the product was able to address the problem that was identified (James, 2012). Moreover, social marketers should be able to ascertain whether the effect of the campaign was proximal (i.e. awareness rising) or distal (i.e. changing behaviour) (James, 2012). In turn, evaluation is vital for social marketers, as it provides an opportunity to see what the actual strengths and weaknesses were within their campaign (Walsh *et al*, 1992), particularly if they wish to upscale the project to a national level (Hopwood and Merritt, 2011). James (2012:17) concurs, explaining that the planning and evaluation stages are both necessary for social marketing campaigns, stating, *"Planning provides a blueprint for evaluation, whereas evaluation provides evidence of program effectiveness."* Grier and Bryant (2003:332) have stated *"program evaluation poses yet another challenge"* because there is a lack of evidence that can be used to convince researchers that social marketing is better than traditional approaches. That said, they do acknowledge certain methods are able to provide an insight into the processes and performances of a social marketing campaign. This includes addressing whether or not the campaign was implemented as it was planned to be, finding the type of consumer that was meant to be reached by a campaign, and to show familiarity with the product by assessing whether or not consumers are able to recognise their brand and remember the primary message of the campaign.

In light of this, Walsh *et al* (1992) make the distinction between Process Evaluation, which ultimately assesses how effectively the delivery of the campaign was rolled out, and Outcome Evaluation, which looks at how the overall impact that the campaign had on the target group (i.e. reasons for using or not using the campaign product). Neiger and Thackeray (2002) have similar findings, particularly in assessing how well the product is being received by the consumer and if it has affected behavioural change; however, they refer to their assessment as either being formative or summative evaluation. According to Neiger and Thackeray (2002), feedback within formative assessment is often derived from observation and interviews, whilst summative assessment is achieved through non-parametric statistical data. Hopwood and Merritt (2011) also agree that data would be necessary to be able to analyse whether the campaign worked and it achieved its aims and objectives. They cite the example of Transport for London (TfL) "Smarter Travel Sutton", which was implemented to see how public transport in London could be sustained. Their aim and objective was to get more people using public transport and therefore aimed to reduce the use of cars in London by 5%. To measure this, they conducted a baseline survey with commuters, repeating it every three months in order to measure any differences. Consequently, their results showed the campaign was a success as

they surpassed their aim by 1%, where car use was decreased by 6%. Additionally, the results showed the campaign was well received by local residents.

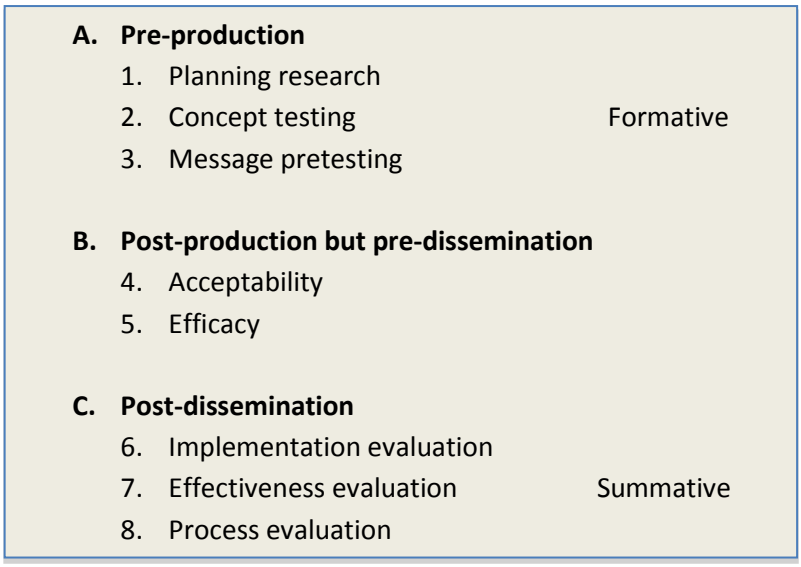
As stated earlier, one particular model that has been used in evaluation is the Hierarchy of Effects Model (HOEM) developed by McGuire (2003). The model suggests that social marketing campaigns are able to influence the intended target group through a hierarchy of steps, beginning with awareness and ending with implementing the behavioural change. In using this model, James (2012) asserts that it can be used to test social marketing campaigns for health related issues. An example that has been cited for this is the VERB campaign (Bauman *et al*., 2008), as mentioned in section 2.6.2, in which the HOEM was used to see if the participants were able to change their behaviour and become more physically active. Figure 2.1 illustrates how the model was adapted for this campaign.

Figure 2.1 McGuire's hierarchy of effects for mass-media campaigns; adapted to the VERB campaign, 2003



In addition to McGuire's (2003) model, Flay (1987) has outlined various phases within evaluation, which includes both formative and summative elements and various aspects of the campaign (i.e. implementation, effectiveness and processes) (Figure 2.2)

Figure 2.2 Phases of Evaluation



Source: Flay (1987) Health Education Research Theory and Practice

The process evaluation addresses how a campaign is to be conducted and utilises empirical data to evaluate the success of its deliverables (James, 2012). This is also achieved by addressing questions pertaining to the reason behind developing the campaign, how it was conducted and whether it met its objectives. Thus, this aspect of evaluation can ascertain a valid relationship between the campaign and the products, identifying which elements of the intervention are responsible for the desired behaviour change and to recognise any relationship between the context and process of the campaign. In addressing these issues, evaluating the campaign can significantly improve the quality of a social marketing campaign (Bliss and Emshoff, 2002).

After analysing the four common elements of the social marketing process, the relevant components for the recommended social marketing plan that will be addressed in this thesis will be the first two: Identifying the Problem and Background research and Strategy Development.

2.8 Social Marketing VS Health Promotion

Thus far, this analysis has focused on a discussion of social marketing to achieve public health benefits, which have the same outcomes as health promotion strategies. Table 2.4 identifies the differences and similarities between the approaches. With regards to social marketing, it is evident that this approach is characterised by a focus on encouraging the target audience, through marketing-informed activities, to adopt a particular behaviour to improve society. Moreover, this approach relies on social research techniques to determine what barriers and facilitators are present in relation to behaviour change. Additionally, social marketing capitalises on gaining an insight from their target audience, in order to develop practical and cost-effective intervention solutions, whereas, this is not necessarily the case for health promotion and education, which relies more on "demographic and epidemiological data" (Nieger *et al*, 2003:78). This means health promotion will occur where there is a need within that particular location, but historically did not seek to acquire any input from the target group (Nieger *et al*, 2003; Thackeray and Neiger, 2000). Lastly, social marketing works towards creating an environment that is necessary for individuals to adopt and sustain behaviour change. In contrast, health promotion focuses on improving the economic, social and environmental conditions by developing environments that support health and wellbeing, strengthening communities and how they act towards certain health issues, as well as building individuals' personal skills (Griffith *et al*., 2008). Thus, individuals, communities and organisations are empowered as a result of health promotions. In addressing whether these two approaches are able to be implemented together, the NSMC (2006:2) state, *"put simply, social marketing is an intelligence led health promotion technique, whereby developing a detailed understanding of the local population allows social marketing messages to be targeted effectively*". Thus, the evidence suggests that these two approaches are converging in the sense that they both have the same ideas in relation to the promotion of health, but use different methods and techniques to achieve this.

Table 2.4 Similarities and differences between social marketing and health promotion

	Similarities	Differences
General Approach and desired outcome	Both approaches share a focus towards changing behaviour of health issues	The primary focus for SM is changing behaviour, but not just specifically for health – this can relate to any issue to create a social good, whereas the aim of HP is to specifically on improving health.
	Both address short, medium and long term goals	SM is aimed to achieve sustainable long-term goals by focusing more on the success in short and medium goals than HP.
	Both require knowledge that is specialised in specific areas, in order to effectively plan and develop a strategy for behaviour change	SM also utilises knowledge from traditional marketing research, including psychology-based studies to develop strategies to improve and influence consumer needs.
Values and Ethics	Both focus on bringing about "social good"	SM is not restricted to the social good towards health issues, whereas HP is.
Focus on customers	They seek to gain an insight into the perceptions of individuals, in order to develop strategies and plans	SM addresses the individual needs within the context of a wider society, which in turn help give an insight into their motivations. Additionally, SM creates a relationship with consumers. In contrast, HP does not see individuals as consumers or customers, but rather they are co-producers in defining their own health needs.
Theory Base	Both approaches are evidence based and both shared a range of behavioural theories like stage of change model and Social Cognitive Theory	SM adopts a wider use of all theoretical aspects pertaining to behavioural change, whereas emphasizes more on the influences and determinants towards health issues.

Source: Griffith *et al*., 2008

2.9 Effectiveness of Social Marketing

To illustrate how effective social marketing has been used within different countries (including the UK and USA) within the past decade, a number of case studies are presented in Table 2.5.

Table 2.5 An example of social marketing campaigns

Campaign title	Date	Location	Aims	Campaign description	Results
Change4life	2009	UK	To change behaviour – both eating and physical – from children under 11, by helping parents to make healthier food choices for their children and to encourage them to make their children more active.	The Change4Life campaign primarily worked with families in helping them understand the health risks that were related to high fat diets and limited psychical activity for children. In doing so, they drew the parents' attention to eight behaviour areas: 1. Reducing sugar intake ('Sugar Swaps') 2. Increasing consumption of fruit and vegetables ('5 A Day') 3. Eating structured meals, particularly at breakfast ('Meal Time') 4. Reducing unhealthy snacking ('Snack Check') 5. Reducing portion size ('Me Size Meals') 6. Reducing fat consumption ('Cut Back Fat') 7. 60 minutes of moderate intensity activity ('60 Active Minutes') 8. Reducing sedentary behaviour ('Up and About')	A total of 413, 466 families joined the Change4Life campaign during its first year, with over 44,000 families still involved 6 months after this period. Three out of every ten mothers stated that the Change4Life campaign had a direct result in changing their children's behaviour (equating to over one million mothers making this claim).
Food Dudes	2005	Ireland	To improve and increase the consumption of fruit and vegetables amongst 4-11 year olds	The campaign was based on the "Three R's": 1) role-modelling, 2) rewards and 3) repeated tasting. Role modelling used positive role models known as the "Food Dudes" (hero figures featured on DVD adventures) who had a clear preference for fruit and vegetables	An increase of 54% and 48% in fruit and vegetable consumption respectively in 2009

				Once the children imitated their role models and tried new fruit and vegetables, they were given small rewards for participation. Finally, they were encouraged to repeatedly taste the same food in order to develop a preference and liking for it.	
Eat smart, Move More	2006	North Carolina	A strategic plan across all sectors within the society of North Carolina, creating norm practices of healthy eating and active living for all residents.	This campaign provides a strategic plan to encourage the adoption of six core behaviours: 1. Increase breastfeeding 2. Reduce consumption of energy-dense foods 3. Increase consumption of fruits and vegetables 4. Increase physical activity 5. Decrease consumption of sugar-sweetened beverages 6. Reduce screen time. The campaign then gives individual health care strategies to address these specific behaviours for each sector in society, such as child care, schools, colleges and universities, work-force, faith-based organisations and the local government.	A report entitled 'Final Report: North Carolina´s Obesity Prevention Plan 2007-2012 (Eat smart, Move more, 2013) as released by ESMM, highlighting the efforts of this campaign between 2007-2012. While the data shows they did not reach their many objectives in the specific six areas, there was significant improvement in all areas. For instance, the percentage of youth (10-17 years) that were obese/overweight in 2007 was 33,7%, which decreased to 30.1% in 2010.
VERB	2002	US	To increase and maintain physical activity among *tweens* (individuals aged 9 to 13 years)	Application of sophisticated commercial marketing techniques to address the public health problem of sedentary lifestyles of American children, using the marketing mix (4Ps)	Initial success (after year 1): 61% of those aware of VERB reported physical activity and engaged in 3.9 weekly sessions of free-time activity.

Source: Author's construction

a. Case Study 1: Food Dudes Programme

The Food Dudes Programme was initially piloted in 2005 in Dublin, Ireland, as an initiative dedicate to improving and increasing the consumption of fruit and vegetables amongst 4-11 year olds. The pilot spanned over two years across two primary schools, which saw an increase in fruit consumption amongst 5-6 year olds from 28% to 59% in over six months, and an increase in vegetable consumption of 8% to 32% in the same time period.

The success of this programme was credited to the social marketing approach that was applied, wherein the Food Dudes was based on the "Three R's". They are 1) role-modelling, 2) rewards and 3) repeated tasting. Role modelling was implemented by successfully using positive role models known as the "Food Dudes" (hero figures featured on DVD adventures) who were shown to have a clear preference for fruit and vegetables and not reluctant to try new foods within this category. By providing social and positive role models for children, it further encouraged them to imitate the Food Dudes in consuming fruit and vegetables in a similar fashion. Once the children tried new fruit and vegetables, they were given small rewards for participation, and then the final step was to encourage the children to repeatedly taste the same food to develop a preference and liking for it. In addition, letters and information packs were sent to pupils' homes to engage stakeholders and gatekeepers (i.e. parents) in the process of helping pupils to maintain behavioural change and support the programme within the home environment.

These techniques, particularly the strong branding of the Food Dudes, proved to make this programme highly successful, as it utilised peer pressure in a positive manner to make eating fruit and vegetables to be seen as something "cool" (Food Dudes, 2016). This in turn created a positive environment (both as home and school) and overcame certain barriers, such as taste. This was even the case when the children were presented with popular sweets and snacks alongside fruit and vegetables, where fruits and vegetables were still chosen due to the establishment of positive taste patterns.

By 2007, the Irish Government brought about policy change by making Food Dudes available across all primary schools in Ireland. This was shortly followed by 22 primary schools in Wolverhampton adopting the programme in 2009, which saw an increase of 54% and 48% in fruit and vegetable consumption respectively. This also led to the programme receiving a Gold medal award at England's Chief Medical Officer's Public Health Awards 2010. Further success of the programme was made where the programme was implemented not only in the UK (i.e.

Bedfordshire, Dudley, Yorkshire and Coventry) but also abroad in the USA in California and Utah.

b. Case Study 2: Change 4 Life

The Change4Life campaign is one of the more recognised social marketing campaigns that have been implemented in England. It is in fact the first national campaign that was government-led in 2009, wherein policy makers were keen to reduce the rising levels of child obesity across England by allocating £75 million to this end. The objective of this three-year campaign was to focus efforts on changing behaviour – both eating and physical – of children under 11, by helping parents to make healthier food choices for their children and to encourage them to make their children more active. More specifically, the target audience for this programme was to work with families most at risk, but also, the Change4Life programme sought to recognise the specific behaviours and attitudes that were necessary in order to intervene and prevent obesity in children. Moreover, another objective of the programme was to create a wider movement and support structure for families by addressing the changes that were necessary within the environment that negatively influences children's choices and behaviour towards healthy eating and physical activity.

The Change4Life campaign primarily worked with families in helping them understand the health risks that were related to high fat diets and limited psychical activity for children. In doing so, they drew the parents' attention to eight behaviour areas:

1. Reducing sugar intake ('Sugar Swaps')
2. Increasing consumption of fruit and vegetables ('5 A Day')
3. Eating structured meals, including breakfast ('Meal Time')
4. Reducing unhealthy snacking ('Snack Check')
5. Reducing portion size ('Me Size Meals')
6. Reducing fat consumption ('Cut Back Fat')
7. 60 minutes of moderate intensity activity ('60 Active Minutes')
8. Reducing sedentary behaviour ('Up and About')

In addition to this, those families that were identified as "at-risk" were given the opportunity to register on the Customer Relationship Management programme (CRM), which was developed to help support new behavioural changes. Those that registered were delivered information, encouragement and support resources and correspondence.

The campaign also saw partnerships with the private sector, as seven commercial organisations became involved and pledged their support for its success. This created a significant impact to the campaign and also resulted in certain incentives for the target audience, including:

- Tesco - Lower prices for fruit and vegetables.
- British Gas – Funding free swimming for customers.
- Kellogg's – Funding breakfast clubs across the UK.
- Asda – Selling 70,000 family bikes at cost price
- Unilever – Sponsoring the London Marathon as Flora Change4Life London Marathon

Due to the change in government in 2010, the new coalition government significantly reduced the spending budget for Change4Life by up to 50%. Subsequently, the 'Great Swapathon' campaign was launched as part of the Change4Life campaign in 2011, which saw families being encouraged to swap one unhealthy habit for a healthier one.

In terms of the impact that this programme had, figures state that a total of 413, 466 families joined the Change4Life campaign during its first year, with over 44,000 families still involved 6 months after this period. Additionally, in the UK as a whole, three out of every ten mothers stated that the Change4Life campaign had a direct result in changing their children's behaviour (equating to over one million mothers making this claim). In analysing these figures, although it is clear that the campaign had an impact on families, relatively speaking, it does not signify a hugely successful campaign, particularly in terms of how committed families were to adhering to the campaign after the first 6 months. However, this requires a deeper insight into the campaign itself, as the figures that are given do not provide the full picture. Table2.6 is a summary table after Year One of the Change4Life campaign.

Table 2.6 Summary of Change4Life achievements in Year One (DH, 2010)

	Year one Target	Year one Achievement
Reach (% of all mothers with children under 11 who had an opportunity to see the advertising campaign)	99%	99%
Awareness (% of all mothers with children under 11 who recalled seeing the Change4Life advertising)	82%	87%*
Logo recognition (% of all mothers with children under 11 who recognised the Change4Life logo)	44%	88%*
Response to *How are the Kids?* (total number of questionnaires returned electronically, by post or from face-to-face marketing)	100,000	346,609
Total responses (including website visits, telephone calls, returned questionnaires)	1,500,000	1,992,456
Sign-up (total number of families who joined Change4Life)	200,000	413,466
Sustained interest (total number of families who were proven to still be interacting with Change4Life six months after joining)	33,333	44,833

* Where the figure fluctuates month by month, the highest figure achieved is given; final figures for December were 77% for advertising awareness and 87% for logo recognition.

This table illustrates that, although the figures of sustained interest seem relatively low, the initial target figure of signing families up to Change4Life was almost doubled in the first place (DH, 2010). Additionally, the campaign reached the majority, if not all, their targets and in many cases, exceeded all expectation. Of further note is that, even though families did not maintain interaction with Change4Life, this does not mean a change in behaviour had not occurred. For instance, other results that were presented included a 16% increase in children engaging with all eight behaviours, with a high proportion of families also implementing a minimum of four of these behaviours (DH, 2010). Moreover, analysis of shopping baskets also saw a difference in purchasing behaviour of 10,000 families that engaged in the Change4Life programme, where low-sugar drinks and low-fat milk were purchased (DH, 2010). Thus, the social marketing branding and planning was able to create a strong message to the public and provided clear guidelines on how to improve healthy eating habits and physical activity amongst children.

2.10 Unsuccessful social marketing campaign

After identifying a number of successful social marketing campaigns, it is also important to examine campaigns that have been unsuccessful and understand the causes for such failures. In doing so, it can provide insight and lessons to be learnt for this campaign. However, it should be noted that, due to the lack of published academic research for social marketing campaigns related to healthy eating, those that are related to health in general will be discussed. An example of this is the "Done 4" campaign, which was conducted to educate university students on the misperceptions for the norms of drinking alcohol on campus; in turn, this would help to reduce alcohol consumption and any alcohol related issues by students. Much of the marketing campaign relied on print media advertising, where full page advertisements were taken out in the campus newspaper, 250,000 magnets were distributed, and over one thousand posters displayed across campus. These materials would have a provoking image and a clear message related to consuming alcohol responsibly (i.e. a picture of a young person vomiting into the toilet and the message: "Over 3/4 of [university] student's drink 4 or fewer drinks when they party.") (Russell, Clapp and Dejong, 2005). This approach, in terms of the diversity of communication strategies, should have been effective in ensuring the message reached maximum audience exposure (Zimmerman, 1997). However, an evaluation one month into the campaign found contrasting results, where only 13.9% of the surveyed students (n=409) were able to recognize the Done 4 slogans, with only 45.6% of those accurately identifying them as being related to alcohol. Moreover, the findings also showed an average of 4.3 drinks were consumed during a party, with most students felt it was an average of 5.6 drinks. This ultimately showed a failure in the campaign.

Russell, Clapp and DeJong (2005) state that the possible reasons why students were unable to remember the slogan and message was due to the prominence of the photograph, as well as the placement of the slogan itself (in the bottom right corner instead of the top). Moreover, they felt the social norms message was not reinforced by the photo or helped to make it more memorable. In other words, the artwork design for the campaign was poorly constructed and not carefully considered, subsequently leading to confusion over the message and its overall effectiveness.

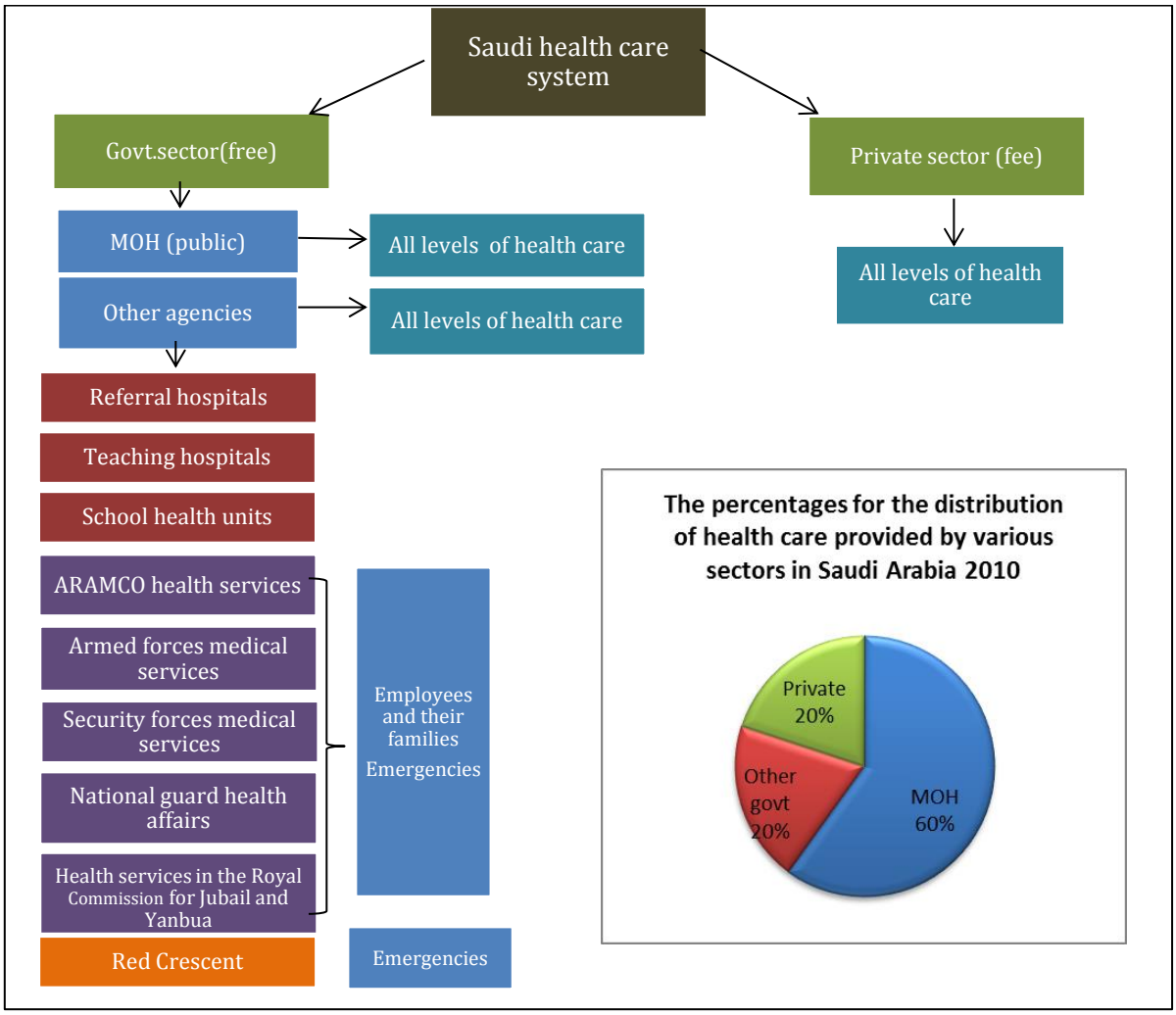
Another example is the "Got Milk" campaign that ran during the late 1990s in the United States, which aimed to increase the consumption of milk per person. Progressing for over five years, the advertisement campaign cost $110 million, but showed no correlation in the increase of milk sales. Smith (2006) explained that this was due to competition from the bottled water

industry, as well as a price increase for raw milk. Thus, one may propose that the competition during the marketing mix of the campaign was not meticulously evaluated.

2.11 Policies related to health in Saudi Arabia

There are currently no food-related social marketing campaigns in KSA. Therefore, an analysis of the health care system is provided. The current health care system in Saudi Arabia is under the responsibility of the Ministry of Health, who are the main financer for such services that are free for public access (Almalki, Fitzgerald and Clark, 2011). The annual budget that was spent on health care in 2011 was 68.7 billion Saudi Riyals, which accounted for 5.6% of the government's total budget. This accounts for 60% of the total health services, which, according to the figures provided by the MOH (2009), comprises of 244 hospitals and 2037 primary health care (PHC) centres. While the remaining 40% of health services belongs to other governmental agencies and private (non-governmental) health care organisations, it should be noted that because the MOH is ultimately responsible for formulating the health policies within Saudi Arabia, it means they are also responsible for advising these agencies and organisations (WHO, 2013). Figure 2.4 provides a detailed breakdown of the health care structure and the distribution percentage of health care providers. As shown, the Government sector is primarily comprised of public health care, which is funded by the Ministry of Health and covers all levels of health care, as well as other Government bodies such as referral hospitals, hospitals for teaching and training (i.e. Ministry of Higher Education hospitals), school health units (i.e. Ministry of Education and the Red Crescent Society) and Governmental special departments such as military, armed services and national guard hospitals and health services. Within each of these agencies, the services they provide are designated to a specific population (i.e. employees and their dependents) and deliver health services during times of emergency. Conversely, the private sector consists of private health care facilities for residents and is predominantly found in some of the larger cities and towns.

Figure 2.3 Current structures of the health care sectors in Saudi Arabia



Source: Ministry of Health, 2009.

In terms of identifying the extent at which the Saudi health care sector implements health promotion programmes or social marketing, an extensive research in this area of resulted in a significant lack of any official policies that outlines such campaigns. While there is documented evidence that the health centres across the country provide excellent health care services and research, as well as ensuring their service is patient-centred (WHO, 2013), there does seem to be a lack evidence to understand how effective the MOH is in promoting health and wellbeing, or indeed any form of social marketing. This is further evident in the MOH's own strategic documentation, where a SWOT analysis of the current health system highlighted a particular weakness in this area, wherein the MOH is highly focused on medical solutions and more concerned with "cure rather than prevention" (MOH, 2014)[6]. This is supported by a WHO

[6] A quote in the Arabic document, which translates as "prevention it better than cure@" التركيزعلى الجانب العلاجي مقابل الجانب الوقائي"

(2008:51) report entitled "*Integrating Mental Health into Primary Care: A Global Perspective*", which states, *"In Saudi Arabia, primary care physicians focus on the treatment of common mental disorders and refer complex cases to secondary care*". Interestingly, this does not seem to be restricted to Saudi Arabia within the Gulf States. In a report for the Khaleej Times concerning the Arab Health 2014 exhibition in Dubai, Basit (2014:2) quotes Abouzeid, the GE Healthcare President and Chief Executive Officer for the Middle East and Pakistan, as saying this focus on treatment as opposed to prevention has caused a huge impact on healthcare costs across the Arab world and thus, education on healthcare is necessary in such times. Therefore, although the MOH (2014) have established centres to address health concerns such as diabetes centres, they recognise that there is not a clear strategy in place to be pro-active in tackling health issues and are somewhat reactionary.

The data from the SHIS is a valuable asset for government officials to plan better measures in controlling the risk factors (IHME, 2012). For instance, this has enabled the Saudi MOH's Media and Health Awareness General Department to launch and implement their National Campaign to reduce prevalence of overweight and obesity, which is dedicated to developing and rolling out programmes in helping Saudi citizens lose weight by increasing physical activity and reducing calorie intake. This campaign is built around raising awareness and providing practical information (MOH, 2012). Moreover, in order to understand the health needs and services of each community within the country, there are further plans to find out the needs every clinic in the catchment area (IHME, 2012)

Nevertheless, this does seem to be a concern, as there has been little news from the Ministry of Health of any specific action for combatting obesity, or any specific indication over how they seek to implement their plans. This, coupled with the numerous aforementioned factors influencing obesity, as well as the obesogenic environment that is prevalent within Saudi Arabia such as a rise in fast food establishments and greater accessibility/availability to unhealthy food, and a sedentary lifestyle (Al-Rethaiaa, 2010, Bakhotmah, 2012; Al-Fawaz, 2012), could be a cause for conflict and ineffective resolution by the government.

2.12 The Current Situation for Social marketing in Saudi Arabia

Analysis of the types of health campaigns that are conducted within Saudi Arabia, suggest that social marketing has yet to become a popular means of improving health. There are an extremely small number of cases that highlight the implementation of social marketing

campaigns and even those that are applied do not specifically address health needs. For instance, Faour (1989) used social marketing to discuss the government's fertility and family planning policies in order to lower high birth rates. The focus was given to family planning programmes and greater awareness to methods of fertility regulation.

That said, the fact that the MOH have acknowledged their lack of activity in addressing health prevention is an important foundation for them to build upon. This is highlighted in their latest cooperation strategy with the WHO (2013:21), where one of the key strategic points is as follows: "*Implementing the reform programme for service delivery and strengthening the primary health care strategy on health promotion aimed at promoting healthy lifestyles and at reducing risk factors*." This highlights that Saudi Arabia is constantly seeking to improve their health care system, as also evident from their 8th national development plan for 2005-2009, which sought to address many of the issues that were highlighted. For instance, an 8.9% increase of primary health care centres from 2004 was implemented, including an increase in hospital and nursing staff (WHO, 2013). More importantly, in their recent SWOT analysis of health issues for Saudi Arabia, the MOH (2014) have identified that there is a lack of interest in research and social marketing, which further justifies the need to establish social marketing as a viable solution to improve health within Saudi Arabia (MOH, 2014).

Furthermore, when analysing the health campaigns run by the Ministry of Health, what is found are health promotion programmes, wherein the focus is on raising awareness and to provide information on how to improve health. The only example that has been found from the MOH (2012) website is a National Campaign against Overweight and Obesity, which is a webpage that has been launched by the Ministry of Health's Media and the Health Awareness General Department, developing programs for weight loss and increase in physical activities, as well as providing different links to various aspects of obesity, such as how to measure BMI or waist circumference. However, it provides no information on how individuals should go about changing their behaviour, nor is there any other means of distributing this information. Despite the fact that such health promotion campaigns exist, they cannot be regarded as social marketing campaigns due to the lack of focus on changing behaviour and the inability to measure the outcomes. The situation of NCDs in Saudi Arabia is well known and this is the apparent catalyst for why this campaign has been launched. Nevertheless, from a different perspective, there is a lack of insight into identifying what people want from this campaign. That is, there is no evidence to suggest individuals wanted the information that has been provided on the webpage. Moreover, as highlighted, there is no exchange taking place; the flow of communication is one-way and not a dialogue, which subsequently leads individuals to not becoming involved or

buying into the campaign, particularly if they are not aware of the benefits they can receive in exchange for changing their behaviour.

2.13 Summary

Although the definitions that have been provided within this chapter show social marketing has been defined in different ways, the core principles and concepts have continued to remain the same. That is, the focus for social marketing is to change behaviour. This chapter has outlined the literature review in relation to social marketing, providing an overview of its origins from the discipline of marketing, as well as expounding upon the core concepts and principles of how it is used to improve health and wellbeing. Thus, the chapter has provided an insight into the processes and implementation for social marketing campaigns, particularly how they can be evaluated to determine their success. A number of case studies have been presented to illustrate the effectiveness and impact that can be achieved by conducting social marketing campaigns, specifically within a structured approach.

In relation to how social marketing has been implemented within the context of Saudi Arabia, it is clear that this extremely limited and that there is a significant absence of such campaigns. This is somewhat concerning, seeing as though the MOH clearly identifies the need to prevent health issues and focuses on permanently changing health-related behaviour, particularly against NCDs. This further emphasises the need to implement social marketing as a viable solution to health care issues such as NCDs, which in turn, illustrates how this thesis may significantly contribute towards this area of research.

Chapter 3 Food Choice and Behaviour Change Theory

3.1 Introduction

As identified in Chapter 1, many non-communicable diseases are caused by food choices that contribute to an overall unhealthy diet (Booth *et al*, 2001; Newlove *et al*, 2012; Steyn and Damasceno, 2006), and in Saudi Arabia 78% of all deaths are caused by non-communicable diseases, and 46% of them as a result of cardiovascular diseases (WHO, 2014). Such negative health outcomes are preventable through changes in both energy intake and food profile *via* food choices (which will impact the health profile of the overall diet), and energy expenditure *via* exercise. As discussed in *Chapter 2*, social marketing is an intelligence-led health promotion technique (NCSM, 2006), which relies upon a detailed insight into the attitudes, perceptions and behaviours of a target population group or sub-group to enable the planning of interventions to change (unhealthy) behavioural patterns (Hasting and Haywood, 1991; Grier and Bryant, 2005). The purpose of this chapter is therefore to analyse the factors affecting individuals' food choices and theories of behaviour change to inform the subsequent research design (*Chapter 4*) and social marketing recommendations (*Chapter 7*) of this thesis. To contextualise the constituents of a healthy diet, this chapter begins by exploring dietary guidelines in different countries which are intended to influence healthy food choices. The chapter then analyses factors affecting food choice and the descriptive and predictive models with which they are associated, and then discusses the theories of behaviour change and underpinning concepts which will be necessary to explore in primary data collection.

3.2 Food choice

Prescott *et al*. (2002:199) define food product choice (also referred to as food choice) to be "*a complex function of preferences for sensory characteristics, combined with the influence of non-sensory factors, including food-related expectations and attitudes, health claims, price, ethical concerns and mood*". It has been a core feature of an individual's everyday life in terms of making a choice and developing a taste for or against any type of food. Thus food choice is the conscious (or in some cases, subconscious) decisions that individuals make in relation to the food they wish to consume. As stated, these food choices are motived by certain factors or influences, including intra-individual factors, such as physiological and psychological elements towards food preference (Eertmans *et al*., 2001), or due to ones' personality and lifestyle

(Honkanen and Frewer, 2009). The outcome of food choices includes the significant impact on health and dietary practices. These practices usually affect daily food consumption habits, which later result in the dietary issues if not adhered to properly (Share and Knox, 2012; Steptoe, Pollard and Wardle, 1995, Brindal E, Freyne J, Saunders I, 2012). This analysis begins by determining what foods are considered healthy and unhealthy from a public policy perspective.

3.3 Healthy and Unhealthy Foods

According to Paquette (2005), the definition of what is classified as healthy and unhealthy foods has changed over the last century and become more complex due to developments in nutritional science. For instance, there are a number of nutritional components that are now considered when determining whether a type of food is classed as healthy or not including the type of fat (saturated, unsaturated or trans-fats) sugar and salt content, energy content (all of which are typically included on nutrition labels), micronutrient levels and profiles. In terms of early literature regarding individuals' perceptions of what constitutes 'healthy eating', Povey *et al* (1998), and Wiecha, *et al* (2006) state that much of this is based upon qualitative research, predominantly developed from interview data. For instance, in a study by Keane and Willetts (1996), and Jalleh and Donovan (2001) their participants described healthy eating to be based on certain foods and food groups, such as pasta or fresh fruit and vegetables. In addition to this, broader terms were used to define healthy eating, such as 'a balanced diet' or 'moderation'.

Similar findings have also been made in recent literature, such as Bisogni *et al* (2012), who examined consumers' perceptions of healthy foods and highlighted a significant diversity and complexity that is associated with this concept. They identified 26 meanings that people associate with healthy foods and healthy eating. These are referred to in terms of the type of food itself (i.e. fruit and vegetables, animal food, safe food and functional food), in relation to the nutrients or other elements found in such foods (i.e. general nutrients, fibre, vitamins and minerals and fats, carbohydrates, contaminants or toxins), how they are produced and processed (i.e. natural, homemade, organic), or in relation to how food is consumed (i.e. balanced diet, variety, moderation or regular meals). In terms of how food is consumed, this concept of a 'balanced diet' also sparked much debate, as the notion of 'balanced' or 'moderation' has led to different definitions. Within Keane and Willetts' (1996) study, some described this as not eating a specific food excessively, while those in Charles and Kerr's (1988) study referred to it

as a meal that was 'proper', whereby it consisted of equal proportion of certain food groups (i.e. meat and vegetables). 'Proper meals' were also considered in this study to be food that was homemade or fresh as opposed to food that had been processed or ready-made meals, which is consistent with other studies of this nature (i.e. Lake et al, 2007; Calnan, 1990; Santich, 1994).

Upon analysis of the various perceptions of what constitutes as healthy and unhealthy eating, even though there are certain differences, there does seem to be a general consensus over what these terms refer to and as Povey (1998) surmises,

> "*Some of these meanings are more or less in line with the dietary guidelines (such as the consumption of fruit and vegetables), whereas others (such as the idea of a 'balanced diet') are more open to individual interpretation, some of which may not correspond with the views of nutritionists*."

One could therefore argue that this is a valid opinion even by today's standards, and further highlights the need to explore perceptions and meanings of food amongst target population groups and individuals; it is important to understand their interpretations of what constitutes as a healthy diet, particularly in an information environment with multiple sources of food and nutrition information, such as television advertisements, manufacturers and food labels (Paquette, 2005). As Povey (1998) states, one key area for determining this is by adhering to dietary guidelines set out by the governmental agencies.

3.4 Dietary Guidelines

The objective behind devising dietary guidelines for a particular country is to provide an ideal outline of foods that should be consumed by the population, which will provide them with the necessary nutrients for body growth, development and protection against chronic illnesses (Sylvia and Robert, 2011; Martha *et al*., 2005). Many different countries have devised a graphical representation of their dietary guidelines in order to make it easier for individuals to understand. Examples of these include the Food Guide Pyramid, developed in 1992 by the Department of Agriculture in the US (Figure 3.1), the Eatwell Guide that is designed by the Department of Health in the UK (originally introduced as the Balance of Good Health in 1994, and then revised in 2007) (Figure 3.2) and other such examples (i.e. Food Rainbow in Canada). In 2012, the Ministry of Health in Saudi Arabia devised and launched the Saudi Dietary Guidelines (The Healthy Food Palm) in a bid to communicate the constituents of a healthy diet

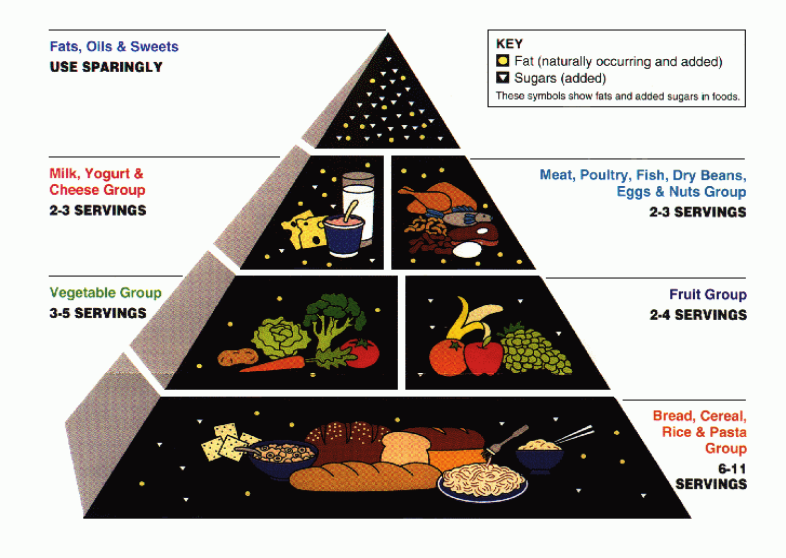
in response to an increase in food-related NCDs such as Type 2 diabetes (MOH, 2012). The main goals of the guidelines were outlined and supervised by Al-Dkheel (2012:11), Saudi's Director of General Directorate of Nutrition, which were to first and foremost to,

> "*improve the health by promoting healthy eating choices and encourage physical activities, so that these behaviours become the normal among all individuals in the community*."

In addition to this, other goals were to encourage citizens to see the benefits from certain food sources (i.e. proteins, fibre, vitamins and minerals), whilst also acknowledging the harm that can arise from other food sources such as excessive consumption of salts, sugars and fats. In turn, if individuals were able to adhere to these guidelines, then it would help fulfil another major governmental goal, which is to minimise the diseases relating to the diet that is found within Saudi Arabia (Al-Dkheel, 2012). Specific problems in Saudi's food consumption patterns are the "*low intake of vegetable and fruit, whole grain cereals and fish and fish oils*" (Musaiger (2011:75) and an increase in consumption of fats and salty foods. The latter increases are observed among middle-income and lower-income countries (Chopra, Galbraith and Darnton-Hill, 2002), and are identified as contributing towards obesity and other non-communicable diseases (Popkin, 2001). This is in line with the findings by Snooks (2009), who states that countries that had a high rate of cardiovascular diseases were those where excessive amounts of meat were consumed and a minimal amount of whole grain was eaten. Furthermore, significant intake of sugars can be the cause of increased body weight and diabetes (Vartanian *et al*., 2006).

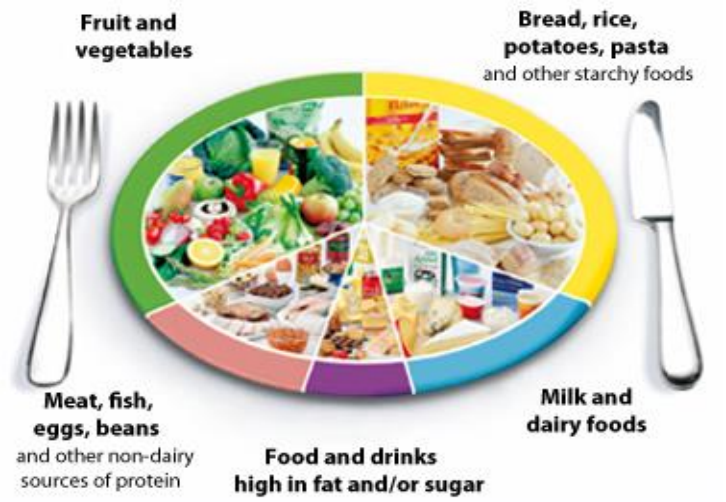
In developing a graphical representation for dietary guidelines, governments have made them country and culturally relevant, which is the case for Saudi (Musaiger *et al*., 2012).

Figure 3.1 The Food Guide Pyramid



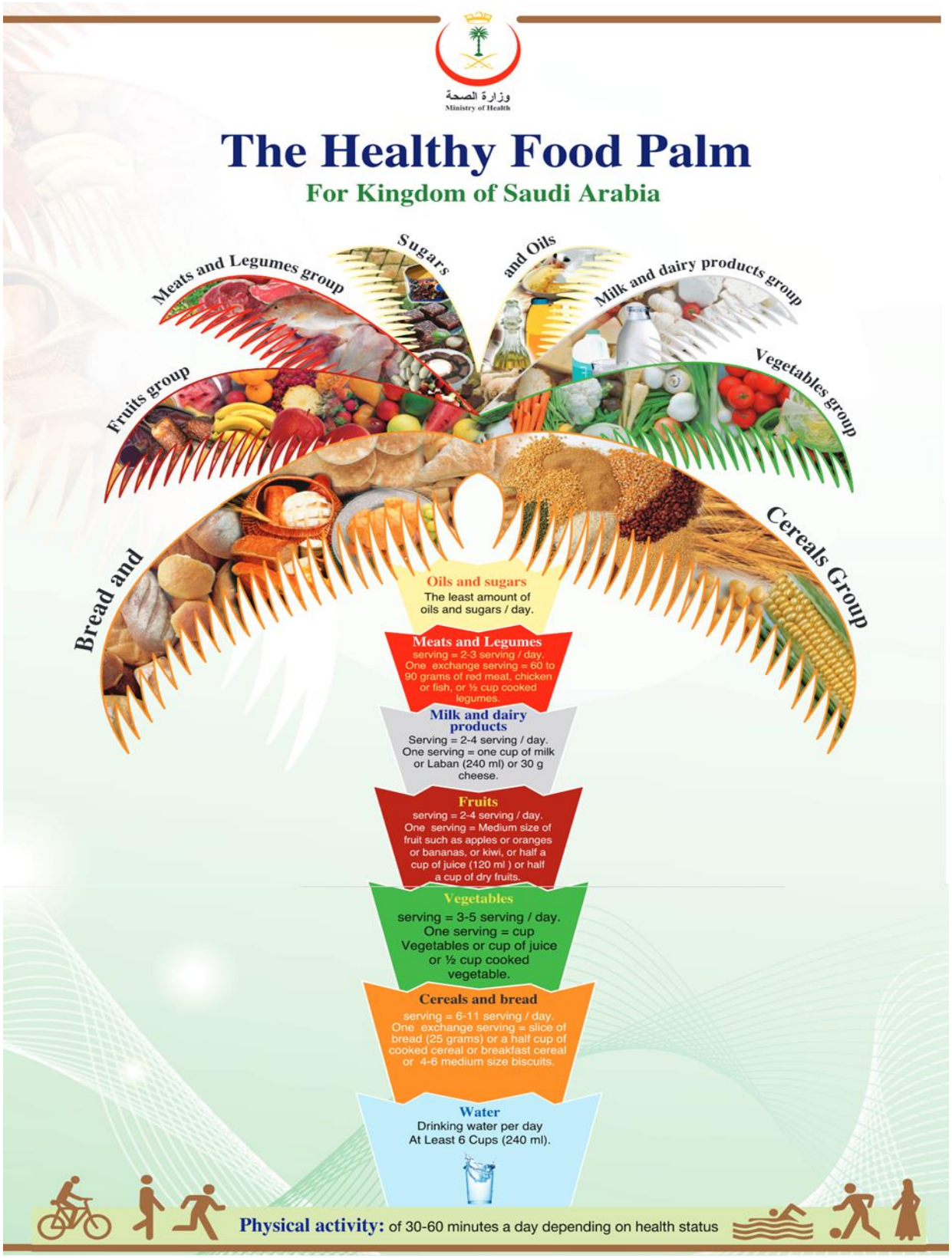
Sources: U.S. Department of Agriculture/U.S. Department of Health and Human Services (1992)

Figure 3.2 The Eatwell Guide



Sources: NHS, 2011

Figure 3.3 Healthy Food Palm



Sources: Al-Dkheel, 2012

For example, in Saudi, the servings of dairy and eggs is slightly larger at 2-4 daily servings opposed to 1-3 in the US and UK. The reason for this increase is because the primary source of calcium and vitamin D in Saudi Arabia is from this category, and due to a vitamin D deficiency, particularly amongst women who are unable to gain sufficient exposure to sunlight in Saudi Arabia (in comparison to other countries and due to being covered in public), milk servings are higher in order to prevent health problems such as rickets or osteomalacia (Al-Dkheel, 2012). A further additional component in the Food Palm that is not found in the other dietary representations is the addition of water. Dehydration amongst the elderly and young is a problem in Saudi's hot climate (Jéquier and Constant, 2010), and therefore recommendations on daily water intake was added to the dietary recommendations (Al-Dkheel, 2012). This analysis indicates the additional importance of malnutrition arising from a lack of certain nutrients. The main micronutrient deficiencies in Saudi and the Eastern Mediterranean region are vitamin D, iron and vitamin C (Christie, 2011; Maalouf *et al*., 2006; Musaiger, 1993).

Upon further analysis of the Food Palm model, one may note that the design and layout of the palm tree seems to have been purposefully produced in this manner so that each component reflects how it should be applied in the real-world, as well as using an object that has cultural relevance to Saudi people. That is, the palm tree is commonly found in Saudi Arabia and also makes up part of the Saudi Arabian national emblem (i.e. palm tree and two crossed swords below it); thus, one may assert this is something that will be visually attractive to the Saudi people and something that they can relate to.

Moreover, in terms of the actual design and layout of the Food Palm model, at first glance, the size of the palm leaves and trunk gives the reader a visual representation of how big (or small) each food group should be when applying it for their daily portion intake. For example, the bigger palm leaves indicate a higher proportion of these food groups (i.e. breads and cereals), whereas, the smaller the leaves get, it makes the reader understand that these foods should be of lesser proportion (i.e. sugars and oils). The reader can then confirm what they have noted from the palm leaves by analysing the trunk, which corresponds to the leaves - both in size (i.e. the smaller the component of the trunk equates to lesser proportion and vice versa), as well as in providing further details and guidance. The trunk also has an added component, which is water, and makes up the bottom of the palm tree trunk and is proportionally the largest dietary contributor with the Palm Tree. This makes the reader note that they should consume more water; whereas, at the top of the trunk, the oils and sugars make up the smallest component of the trunk, indicating this should be minimised in comparison to others (i.e. water, cereals and bread, vegetables, etc.). This breakdown in the leaves and the trunk is similar to other models

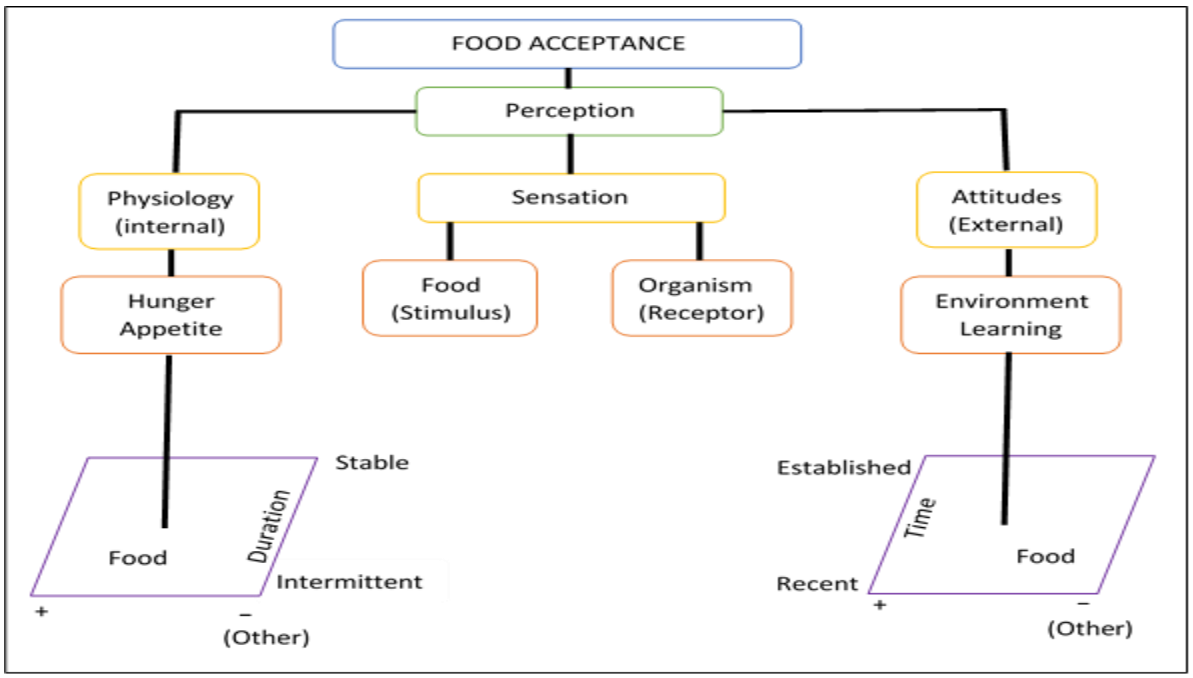
like the US Food Pyramid model, including the proportion guides, however the Food Palm model also incorporates physical activity as part of the model.

3.5 Determinants influencing Food Choices

The decisions that individuals make when determining what foods they will choose to consume are influenced by a number of interrelated factors (Shepherd, 1990). Various attempts have been made by researchers to describe these influences from different perspectives (see for example, Al Kurdi, 2016, Lawrence and Barker 2009; (Señoran, Ibánez, & Cifuentes, 2003; Koster, 2009; Booth, 1994; Glanz *et al*., 1992; Mennell *et al*., 1992; Axelson and Brinberg, 1989; Shepherd, 1989, 1990; Thompson, 1988; Murcott, 1983), and the key frameworks are now discussed.

According to Shepherd (1990), one of the earliest models to illustrate the factors influencing food choice was from Pilgrim (1957), who stated that perception was a primary influence over food acceptance (Figure 3.4).

Figure 3.4 Components of Pilgrims model of food acceptance



Source: (Pilgrims, 1957 cited in Shepherd, 1990)

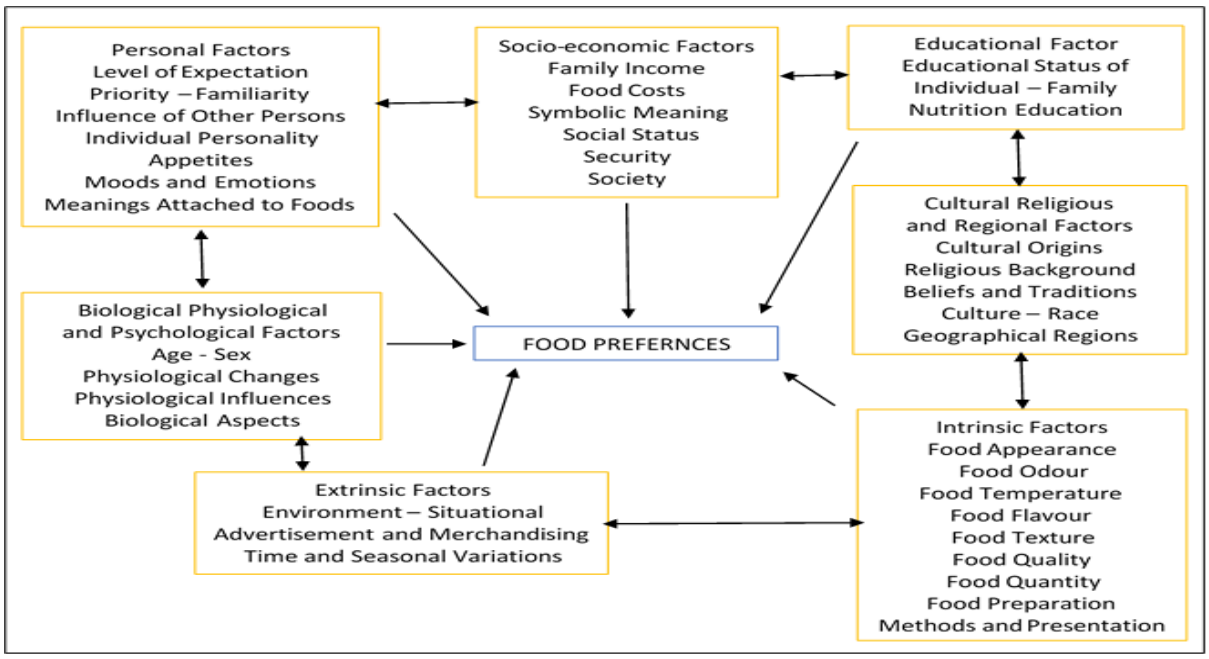
This concept of perception related not only to sensory perception pertaining to the food itself (i.e. taste), but also referred to internal psychological perceptions (i.e. of hunger), and was influenced by external influences such as the environment which influenced knowledge and

understanding (or learning). While Pilgrim's (1957) model highlighted three specific categories influencing food choices, Khan (1981) presented an extensive range of influences that determined the food choice process (Figure 3.5). This descriptive model defines seven primary interrelated factors that influence food choices. However, Shepherd (1990) argues that even with this greater number of factors, they can still be classified in the same categories shown by Pilgrim (1957), which are:

1) Influences related to the food itself
2) Influences related to the individuals making the food choice
3) External environment within the food choice is made

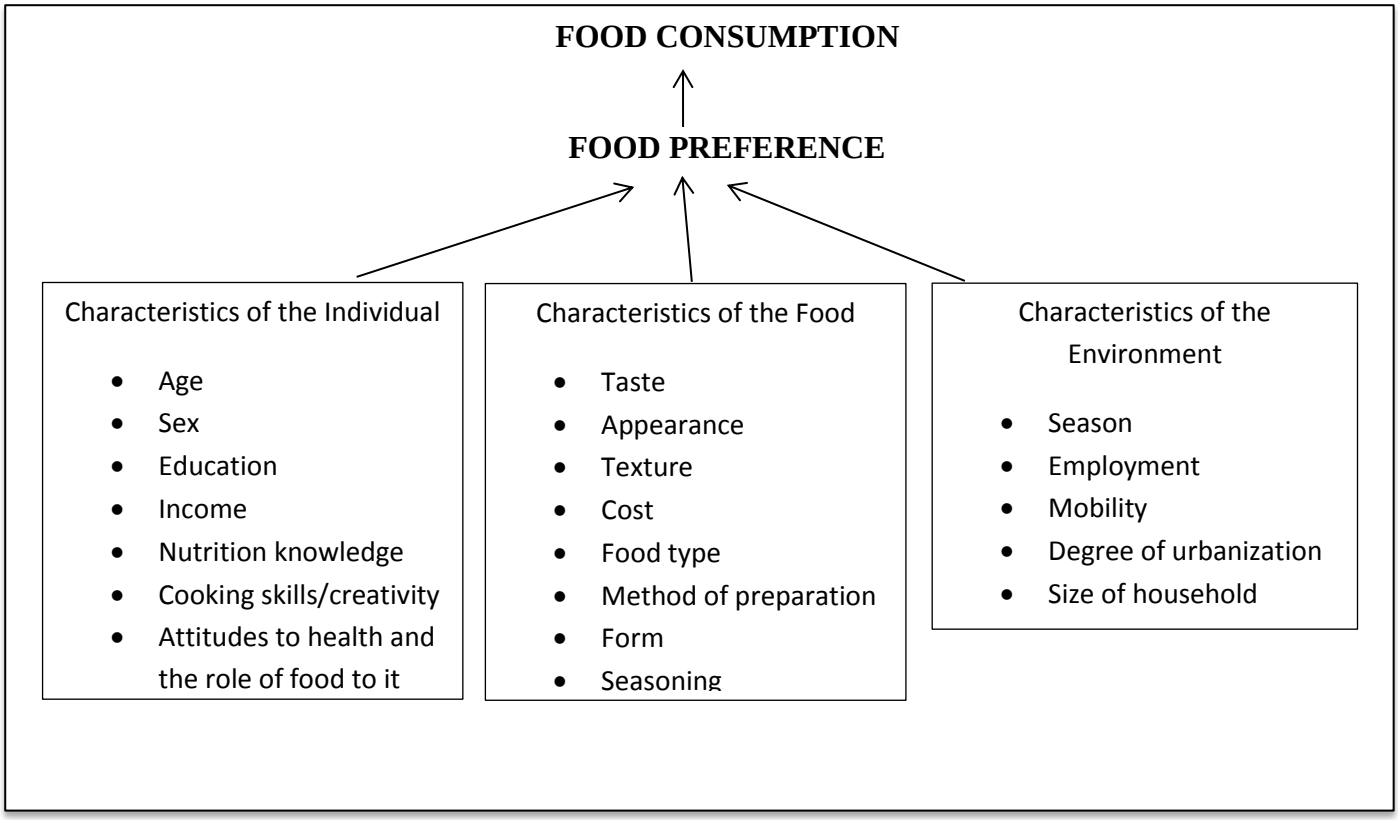
For instance, the category entitled "Intrinsic Factors" relate specifically to the food itself, addressing issues such as its flavour, odour and texture. Moreover, the category entitled "Extrinsic Factors" relates to the external environmental influences, addressing such areas like advertisement of certain foods or when certain food is in season. Additionally, the category "Personal Factors" is one that relates to internal influences of the individual, referring to aspects such as familiarity, appetite and mood. One may therefore conclude that these three primary categories formulate an established foundation that can be used to determine the overlying influences for food choices. This is evident upon analysis of a number of schemes, where the aforementioned categories may be extracted accordingly (see Booth and Shepherd, 1988; Randel and Sanjur, 1981; Shepherd, 1990).

Figure 3.5: Factors influencing food preferences (from Khan, 1981)



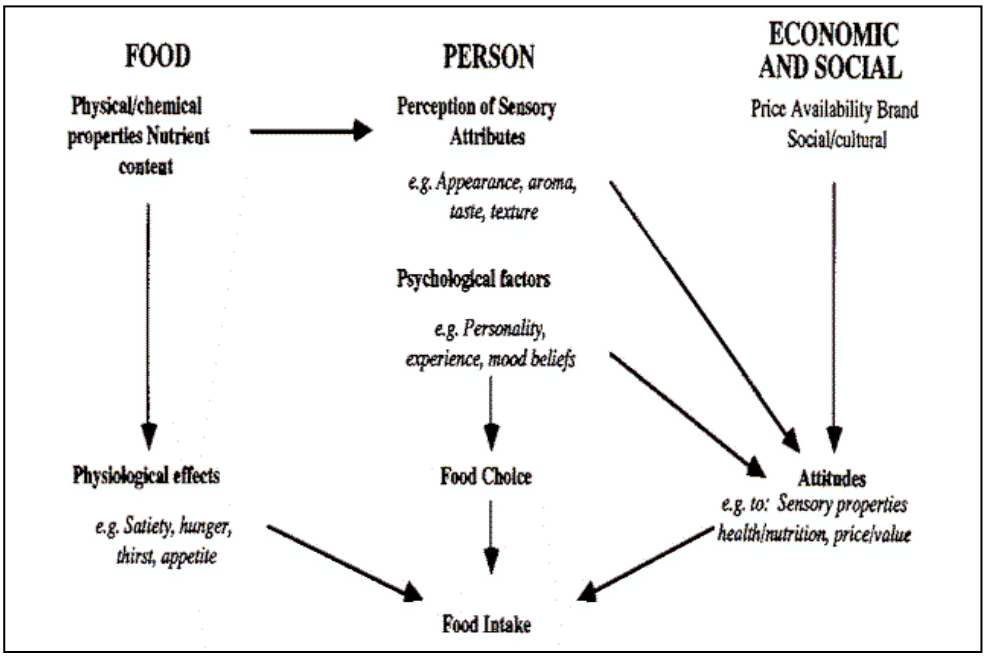
Source: (Khan, 1981 cited in Shepherd, 1990)

Figure 3.6 Factors influencing food preferences (Randall and Sanjur, 1981)



Source: (from Randall and Sanjur, 1981 cited in Shepherd, 1990)

Figure 3.7 Some Factors Affecting Food Choice and Intake



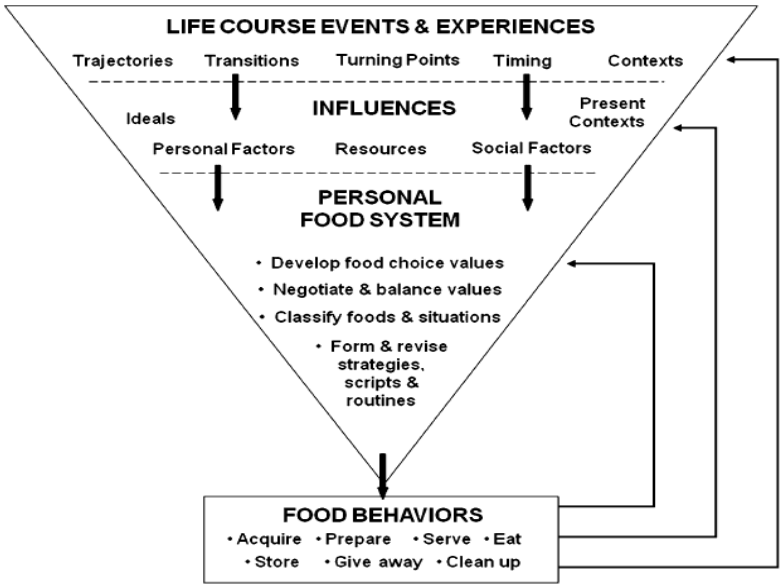
Source: (Shepherd, 1985)

3.6 Food choice process model

The above models can be criticised for their static representation of food choices. An alternative 'process' approach was initially proposed by Furst *et al*., (1996) and is referred to as the 'Food Choice Process Model'. This model was derived and developed by Cornell Food Choice Research Group and emerged as a means of gaining a deeper insight into the complexities that are involved within the food choice process, particularly taking into account past events and experiences that have occurred throughout the course of individual's life, and from that, the multitude of influences that may have influenced their food choices and behaviour (Delaney and McCarthy, 2009; Connors *et al*., 2001; Sobal and Bisogni, 2009), and also how new events can act as triggers that will take people on new food choice trajectories. Therefore, the capacity for change is also implicit in this model. This has proven to be an important aspect within this area of study, as it helps understand how individuals construct food choices over the course of their life and how their choices have evolved as a result of the environment around them (Falk, Bisogni and Sobal, 1996). Furst *et al* (1996) refer to these choices as processes that occur over time as individuals gather experiences and thus, this model enables the user to explore past events as key moments that "*interact with current food environments to both enable and limit current food decisions*" (Delaney and McCarthy, 2009). The model is comprised of the categories and components that are involved in an individual's food choice *behaviour*s. In this respect, life course is highly important, because, as influences from the past emerge, it is something dynamic and ever evolving and thus, it becomes a primary reason for why people choose certain foods in the present. An example of this is given by Devine *et al* (1998), who found that adult preferences towards fruit and vegetable had been influenced from a number of influences over the life-course, including upbringing, health, cultural traditions and location. With regards to the study by Furst *et al* (1996), the presented model for food choice processes, groups the factors influencing food choices into three main sections: life course, influences and personal system as shown in Figure 3.8.

The main omission from this model are the broader environmental factors that influence food choice. Analysis of such environmental factors have been developed by, Lake and Townshend (2006) in their 'obesogenic environment' model which will be discussed in section (3.7.3.5).

Figure 3.8 Food Choice Process Model



Source: (Sobal and Bisogni, 2009)

3.7 Factors affecting food choices

Adhering to the categories that have been outlined in the majority of literature, the following sections provide a detailed discussion of how these factors may influence food choices, particularly amongst Saudi Arabian citizens or those in the Gulf region. Additionally, it is important to note that when exploring the different factors influencing food choices, whether they are individual, food-based or from the external environment, many of these factors are highly interrelated (Kearney *et al*, 1999; Vaandrager and Koelen, 1997).

3.7.1 Factors related to food itself

The characteristics of the food can have a significant influence over an individual's food choices and can be considered as those that relate to the individual themselves, such as taste and other sensory factors (Ziebland, 2004). With regards to the food preferences, regardless of whether this is healthy or unhealthy, the consumers' own preferences are one of the strongest influences that determine their eating habits (Nestle *et al*., 1998). Thus, individuals may perceive some of the physical and chemical properties of certain foods in relation to sensory-affective responses, which encompass its appearance, texture, taste and smell (Contento, 2011; Shepherd and Raats, 1996).

3.7.1.1 Sensory Appeal

The sensory appeals may not necessarily take into account a person's views on nutrition or health, as Pollard, Kirk and Cade (2002) state, many individuals will consume food as a source of pleasure, as opposed to its nutritional value (Epuru *et al*, 2014), and therefore regard it as an experience they can enjoy or find comfort in (Clark, 1998). When asked what influences their food choices, many individuals have cited taste to be the determining factor (Glanz *et al*. 1998; Clark 1998; Food Marketing Institute 2002), and, in a pan-European survey in the EU and UK that explored attitudes towards food and health, the majority of the participants placed "taste" within the top three factors (with "quality" of the food being the most important factor that determined their food choice behaviour) (Institute of European Food Studies, 1996). Whilst the sensory factors affecting food choice often refer to taste, they also refer to the texture and smell of food (Small and Prescott (2005).

Taste is directly related to the internal factors of the individual, as there is evidence to suggest that regardless of culture, all humans are born with a predisposition towards foods that taste sweet whilst avoiding foods that taste bitter or sour (Contento, 2011; Desor, Mahler, and Greene 1977; Mennella and Beauchamp 1996; Snooks, 2009), and will often remain with individuals throughout their life, unless this is altered through learned behaviour (Pepino and Mennella, 2005). Additionally, the various chemical elements found in certain foods, such as the presence of nutrients or amount of fats and protein, may also determine which foods are consumed (Shepherd and Raats, 1996). Examples of this is the consumption of coffee, which has high levels of caffeine that can keep individuals alert, or drinking alcoholic beverages that can relax individuals as a result of their calming elements (Snooks, 2009). In Saudi Arabia and other gulf countries, there is a high consumption and preference towards dates amongst individuals (Musaiger, 1993), which, could be related to their sweet taste, widespread availability or nutritional value.

Moreover, studies show that females in particular regard taste to be a significant influence over their food choices, as they are often drawn to unhealthy foods because they are tastier than healthy foods, and therefore difficult to resist. This was also found amongst women over 60, who stated that healthy foods could be boring if consumed all the time (Chambers *et al*, 2008).

In terms of texture and appearance, Snooks (2009) states that both these factors can appeal to an individual's appetite and food choices. This includes preferences for certain textures like hard, soft, creaminess or crispness and also visual appeal.

3.7.2 Influences related to the individual making the food choice

Food choices are dynamic and often evolve over time, which, according to Belasco (2006) will continue to do so amongst subsequent generations. This is because individuals undergo various personal developments within their lives, and hence, decisions for food choices are becoming more complex as they involve a number of underlying factors and considerations, such as what to eat, when, where and with whom (Bisogni, Falk and Madore, 2007). The factors that influence individuals' food choices may include: the overall attitudes, knowledge, beliefs and previous experience they possess concerning certain foods, demographic aspects (i.e. age, gender and geographical location), biological and psychological elements (i.e. appetite and hunger, mood and stress), physical determinants (i.e. skills, time, education and accessibility), economic factors (i.e. availability and income), as well as social factors (i.e. culture and religion, family and peers). The following section will attempt to explore the main aforementioned factors. Once again, it should be noted that when discussing these factors, many of them are highly interrelated with one another and hence, in certain instances, these factors will overlap with one another during this discussion.

3.7.2.1 Psychological factors (mood, experience, belief and attitude)

One of the most important factors that determines and motivates an individual towards their preferences for food and dietary habits is their personal factors, such as their belief concerning what they will gain from their choices (Contento, 2011). Khan (1981) describes food habits to be "*the way in which individuals in response to social and cultural pressures select, consume, and utilise portions of the available food supply*". These are often developed from learned experiences, which in turn create a particular attitude towards such foods. Consequently, food habits are regarded as a type of self-expression, where individuals use food to define or articulate how they feel (Pollard *et al*., 2002). People want their food to be a particular way and it is subjective to them and their own personal attitudes towards these foods, which is through their own perceptions, attitudes and expectations concerning food. For instance, some focus on taste, while others may simply concern themselves with affordability, convenience, familiarity or that this food will help them lose/gain weight. Whatever the case, certain food choices are made as a result of the personal meanings and also the values that individuals attach to them, which are very much at the centre of these choices (Feather, 1982, Contento, 2011). According to Wang and Worsley (2014), knowing the personal values that individuals attach to food has been used to predict food concerns (Worsley and Scott, 2000; Worsley and Lea, 2008), food

consumption (Grunert and Juhl, 1995) and purchasing decisions in general (Belk, 1983 and Belk, 1985), as well as providing relevant information on nutritional information and advice (Worsley and Lea, 2003). Fieldhouse (2013) further argues that, while food habits and consumption is determined by the biological needs of an individual (i.e. energy needed by food), it can also be deeply rooted in an individual's personal belief, geographical, sociocultural norms and traditions and also religious factors. Many of these beliefs are also related to health and wellbeing, such as the belief in Bahrain that certain seeds and nuts can improve the sexual ability in males, which are subsequently consumed before the wedding (Musaiger, 1993), or the avoidance of spicy foods, radishes and leeks in Iraq in the belief that may cause abdominal problems (Abdulla, 1979).

Moreover, it is often difficult to separate the psychological, internal factors with those that are sociocultural or based upon tradition, which can often come from external influences (Snooks, 2009). Research suggests psychological factors significantly influence what a person will eat, particularly if a person is in a strong emotional state or mood, such as anger, boredom, depression or tiredness (Snooks, 2009). Additionally, psychological factors such as willpower and commitment to a healthy diet have been identified as key determinants of food choices (AlQuaiz and Tayel, 2009). While some use food as a means to manage emotional distress, many also exhibit a sense of powerlessness against their control over food choices (AlQout and Reynolds, 2014). Many individuals within AlQuaiz and Tayel's (2009) study found excuses not to exercise or adhere to a healthy diet, resulting from a severe lack of self-motivation, with 80.3% stating this is the reason they are unable to do so.

3.7.2.2 Hunger and Satiety

In order to help control an individual's hunger and thirst, there are a number of psychological (Snooks, 2009) and biological processes that occur within the human body (Contento, 2011; Snooks, 2009). This sense of urgency to eat when hungry means the body ensures the energy levels of an individual are maintained and that they eat enough food to meet this unpleasant and sometimes painful urge (Snooks, 2009; de Castro, 1999). Thus, hunger and thirst originate from biological needs, which subsequently drive the psychological elements within individuals. Additionally, researchers explain that the body has an in-build mechanism that determines satiety, which is when the stomach is full, or when a person is tired of a particular taste and seeks to replace it with a new taste during a meal (Rolls, 2000; Snooks, 2009). Furthermore,

satiety can be closely related to customs and cultural practices within a society, as certain customs insist on individuals eating food, even if they are full. For instance, in Arabic culture, it is seen as a sign of disrespect to turn down food when the host has served you (AlQuaiz and Tayel, 2009; Alqout and Reynolds, 2013).

3.7.2.3 Knowledge

Knowledge and education of nutrition are considered to be a fundamental aspect in influencing food choices and in achieving a lasting behavioural change with regards to healthy eating. Food nutritional education can comprise of providing information on the different food groups and how they all fit within the dietary guidelines for a healthy diet (Bakhotmah, 2012). Moreover, how this information is circulated amongst individuals can come from a variety of sources. For instance, according to Al-Almaie (2005), the main sources of information concerning healthy foods and health in general in Saudi Arabia are from popular media such as television, magazines and newspaper. Although, the staff at Primary Health Care Centres (PHCC) are one of the sources of food and health information for both males and females in Saudi, and they can provide a direct response/interaction with individuals (which is not attained via the previous sources mentioned – television, magazines and newspapers), while the only structured framework to deliver nutritional advice was *via* the curriculum in schools (Al-Rukban 2003; Al-Zahrani and Al-Raddadi 2009).

In light of this, much of the research states that those who are regarded as possessing higher levels of general education are more inclined to opt for a healthier diet and have more active lifestyles (Hawkes, Jewell and Allen, 2013; Makino *et al*., 2004). Much of the reason for this stems from educated people having the ability to process, interpret and apply the information they receive (or investigate) concerning food and food choices (Hawkes, Jewell and Allen, 2013; Contento, 2011), which means they understand the benefits and harms that are associated with certain foods. In addition, if their education has led them to well-paid positions of employment, it may lead them to make a conscious decision and investment into their health (Makino *et al*., 2004).

These findings are in accordance to previous research, such as the study by Al-Isi *et al* (1976), who found that parents in Lebanon who were more educated ensured their children ate healthier foods as opposed to those whose parents had little education. Other Gulf countries such as Kuwait (Al-Shawi, 1985) and Bahrain (Musaiger *et al*, 1986) also found more educated women

in particular would choose to consume healthy foods, such as fruit and those that were high in protein.

However, it should be noted that education and knowledge does not always correlate to good food habits. This is because knowledge of health risks from eating certain foods does not always mean individuals have the sufficient willpower to overcome these issues and hence, they may find it difficult to break or modify certain eating habits (Musaiger, 1993). In Yeh *et al*., (2008) study, they observed that, although the level of knowledge that participant held in regards to its health benefits and nutritional value of food was factor in determining the intake of fruit and vegetables, this did not necessarily mean a rise in fruit and vegetable consumption. One could argue therefore, that although individuals have a greater understanding of what is healthy or unhealthy, this does not necessarily mean they know how to change their behaviour in making healthier choices and in accordance to this knowledge (Witherup, 2012). AlQuaiz and Tayel (2009) found in their study of individuals in Saudi Arabia, that willpower was a major influence over maintaining a healthy diet, where approximately 80% of the participants saying they did not have the willpower to sustain a healthy diet or give up their favourite foods. Similar findings were made in studies of individuals in Kuwait (Serour *et al*, 2007) and Spain (López *et al*, 1999).

Knowledge must therefore be accompanied with strategies for implementation and application in order to facilitate a more effective approach to change, such as the use of social marketing campaigns. Nestle *et al*., (1998:50) therefore aptly state that a change in behaviour does not simply occur as a result of distributing nutritional advice but rather this information "*does not have much effect on food behaviour unless it can overcome counteracting psychosocial, behavioural, and environmental barriers*." In addition, individuals do not always know what their food contains and as a result often misunderstand (or be misled) by advertising and the nutritional composition of foods. For instance, Norton, Fryer and Parkinson (2013) conducted a study where they labelled two identical standard chocolates as 'Milk Chocolate' and 'Reduced-fat Milk Chocolate'; this had a negative effect on the participants expected liking of the reduced fat milk chocolate, even though the content for both items were the same.

3.7.2.4 Learned behaviour

While tastes and preferences continue to develop through a person's life, much of this is established during early childhood, predominantly within the family social setting (Snooks, 2009). Thus, what is often eaten within the home or eating patterns during family meal times, will subsequently reflect the overall influences on a child's eating patterns and habits (Snooks, 2009). For instance, a study by Brug *et al* (1995) on fruit and vegetable consumption by participants in Holland found the majority of them ate such foods because it was what they were taught at home and this habit continued in their lives, even after leaving their family home. Moreover, Furst *et al* (1996) focused on the food choice processes among those over 65 years old and found their attitude towards food and meals were greatly influenced by their childhood experiences of food. As a result, one must take into account that if poor eating behaviours have occurred over a long period of time, in many cases from childhood, it is not something that can be changed easily. It is also reported that in the case of food neophobia (i.e. an aversion to trying new foods), when young children were given new foods to eat, a natural response was to reject this; however, research does show that this response can be altered through repeated interaction with the new food and ultimately trigger acceptance towards it (Nestle *et al*, 1998; Hursti and Sjoden, 1997). This implies that learned behaviour can have a positive or negative influence over food choices. Learned behaviour also correlates to social and situational contexts, which Snooks (2009) states can become broadened as individuals enter into these new settings, such as school, exposure to advertising on television or from one's peers. For instance, eating foods with high fat and sugar content during times of celebration such as birthdays will cause children to have a positive feeling towards such foods and consequently, an affinity towards it. That said, Nestle *et al* (1998) argue that children have an innate preference towards sweet foods and therefore there is no need to develop this.

3.7.2.5 Demographics (Gender, Age and Geography)

Nestle *et al* (1998) state that foods that are rich in carbohydrates are preferred across all cultures and geographical boundaries. Moreover, studies show that each gender has a particular preference for certain foods (Ares and Gambaro, 2007); with men preferring a fat and protein combination (i.e. meat dishes) whereas women are more likely to select sweet foods and those made up of fat and sugar (Sellagh and Chapman, 2008). In another study conducted by Lea (2003), it was found that the majority of men felt it was important to have someone else decide what food they should eat. John and Ziebland (2004) have also identified that although in many

families women may prepare the food, this does not necessarily mean they have control over what is made or consumed, as they must take into account the tastes and preferences of the whole family in addition and in some cases above their own.

Research has identified a gender difference in attitudes to health, with men placing a lower priority on health compared to other factors such as taste and convenience (Wardle *et al*., 2004). What is interesting to note here is the conflict that many women experience between eating tasty and often unhealthy foods with attempting to maintain a healthy diet and control their weight. For instance, it is often the case that dieting programmes are targeted towards women as they have a greater concern over their weight; this is prevalent in the majority of studies on attitudes of dieting and body weight, where results found women were more worried about their weight and sought to control it more than their male counterparts (Wardle and Griffith, 2001; Bellisle *et al*, 1995; French and Jeffrey, 1994; Serdula, Collins and Williamson, 1993). Thus, while there is a real struggle to resist unhealthy foods due to its taste, this awareness of health issues does result in women attempting to be more inclined to choose foods with lower fat and sugar content, whilst also attempting to eat more fruits and vegetables in order to control their diet (McClelland *et al*. 1998; Worsley *et al*., 2000; Bandura, 1998). Additionally, research indicates that this issue of women being more concerned with healthy eating over males applies in different contexts, such as males and females in developing or developed countries (Afifi *et al*., 2002; Ford, Dolan and Evans, 1990; Lee, Leung and Lee, 1996), of old age or pre-adolescence (Gibbons *et al*., 1995). This further justifies the use of public health promotion and social marketing, as they both advocate that behaviour change initiatives are targeted towards those where the greatest gains will be achieved.

In addition to gender, there have been a number of studies that indicate food choices are also influenced by age (Wang and Worsley, 2014; McKie, 1999; Ball *et al*., 2006). In Shepherd *et al*. (2006) study of young people's preferences and influences to food choices, rather than viewing food as healthy and unhealthy, they regarded the food as likes and dislikes, wherein younger people were shown to have an inclination towards fast foods because it was tastier than other foods. This is also the case for studies that explore the socioeconomic position of individuals and families, whereby those from lower backgrounds more often choose foods that are lower in nutrients and energy-dense (Drewnowski and Specter 2004; Worsley *et al*, 1995; Worsley *et al* 2004; Turrell *et al* 2002). Thus, as a result, one can conclude that these specific demographic factors (i.e. age, education and knowledge, gender) have a significant influence over food choice and consumption.

3.7.3 External environment within the food choice is made

In addition to the internal factors that influence individual food choices there are also a number of factors that are external to the individual and are found within society or the environment, which will now be considered.

3.7.3.1 Support and encouragement from others

A strong factor in promoting healthy eating that has emerged in existing literature is the support and active involvement from family members and positive role models in monitoring what food is consumed, particularly from parents or spouses (Gellar *et al*, 2007; John and Zeibland, 2004; Shepherd, 2006; Doldren and Webb, 2012). Witherup (2012) found the role of parents to be the third biggest influence in motivating others towards improving eating habits, wherein children who join family mealtimes are more likely to have a healthier balanced diet. This was also found in the case of the spouse, more specifically the female partner, who was observed to be more supportive of their male counterpart when introducing more fruit and vegetables into their diet, while males were often found to be more obstructive (John and Zeibland, 2004). In addition, from Sellagh and Chapman's (2008) study, males who lived alone were shown to have less healthy eating habits and their reason for this included a lack of responsibility towards others, resulting in them not considering healthier options. Many participants within the study however, felt that this would most likely change if there was support and encouragement from a partner or children, who would monitor and scrutinize what was eaten and also be a means of ensuring healthy eating for others. Thus, the presence of a support unit (in this case, the family structure) is often regarded as an important determinant for healthy food choices, as families are viewed as a source of knowledge for nutrition and as a role model for one another (Doldren and Webb, 2013). In addition, AlQuaiz and Tayel's (2009) study found 72.4% of the Saudi participants cited a lack of social support hindered them from maintaining a healthy diet and would therefore influence them into being tempted to eat foods that they knew would be classed as unhealthy. Interestingly, the majority of them also had lower levels of education.

Nevertheless, Withrup (2012) argues that not all households or family structures are the same, and just as parental influence can be positive it also has propensity to be a negative influence on healthy food choices. It is argued that within household parents act as gatekeepers and often exert control over what children eat (Taylor *et al*., 2005). This means, that if a parent does not like a certain food item, it will not be purchased (Giskes *et al*, 2005). Witherup (2012) further

states that within the current setting of many western families, the need for both parents to work has led to a decline in family meals, as well as less supervision of what children eat. The time to prepare healthy meals is also lessened as parents do not find the appropriate time to prepare meals if they are working, which results in food that is convenient and often processed or high in fats and salts being consumed more frequently (Trew *et al*, 2005). One may compare this to Saudi Arabia, where family mealtimes continue to remain a traditional practice up until the present day (Al-Rethaiaa *et a*l, 2010).

3.7.3.2 Availability, Price, Convenience and Time, Accessibility

Food availability is a significant factor in food choices. When defining availability, Nestle *et al* (1998, p: 52) explain that this term can mean different things to different people. For instance, "overall availability" may relate to the various options of food that are available, whereas "immediate availability" refers to how easily accessible the food is in terms of convenience and affordability. Pollard *et al* (2002) also state that availability may refer to the availability of foods that are found within certain shops or may even refer to how easily accessible it is to reach the store in the first place. This is something that can influence the food choices of all socioeconomic classes, as it can also contribute to the overall obesogenic environment.

In addition, readiness also becomes a significant factor under this subcategory, which can also relate to the food's shelf life, the time it takes to prepare and cook the food, or even where it can be consumed (Harris and Shiptsova, 2007). Furthermore, availability correlates directly to consumer supply and demand, whereby those types of foods that are popular will be more available than those that are not. As a result, ready-made meals, which are often processed foods that are high in sodium and fats, are prevalent in UK because they are widely available and easy to prepare for people with busy lifestyles (Winterman, 2013)

These factors, specifically time, convenience and price, have repeatedly been cited as primary barriers to healthy eating habits and improved lifestyle (see for example Ziebland, 2004; Yeh *et al*, 2008; Shepherd *et al*, 2006; HSE, 2007). For instance, Doldren and Webb (2013) investigated the facilitators and barriers to healthy eating that were found amongst black women in America, and whilst the results showed the participants were conscious of the importance of healthy eating and desired to maintain a healthy diet for themselves and their family, barriers of commitment to healthy foods and the time required for preparation of food was evident. As part of a detailed study exploring participants' attitudes towards healthy eating, Chambers *et al*., (2008) conducted six different focus groups and found that whilst the majority of the groups

reported a healthy eating pattern, younger participants (18-30) and men aged 31-55 were reported as eating foods that were classed as 'convenience' and 'junk' (Chambers *et al*., 2008:362). Their main reasons for this were due to time constraints, convenience, price and a lack of cooking skills. Moreover, females within the 18-30 and 31-55 age brack*et al*so considered convenience to be a significant barrier to healthy eating and when asked why, the younger female groups (18-30) stated they found ready-made meals easier to prepare, and considered fresh food to be expensive. With regards to the male participants, younger men (18-30) reported convenience of unhealthy foods and its association with time to be barriers to healthy eating.

There are however conflicting viewpoints in regards to how food choices are influenced by time and time constraints. For instance, long preparation times for cooking and perishability of fresh foods including fruits and vegetables has been argued to result in the consumption of foods that take minimal effort to prepare and can be stored for longer (Pollard *et al*, 2002). In Ziebland's (2004) study focusing on the perceived barriers towards increased fruit and vegetables consumption, participants reported accessibility to be primary barrier particularly for those that did not have access to a vehicle to transport food items. Thus, convenience of pre-packaged foods as opposed the short shelf-life of fruit and vegetables made the former more appealing and easier to implement (Yeh *et al*, 2008). Additionally, time was further barrier cited by middle aged participants in Chambers *et al*., (2008) study, who felt the pressures of their jobs meant they were not willing to spend time cooking a healthy meal and would rather opt for something quick, often resorting to ready-made meals for convenience. The decisions pertaining to food may therefore be driven by an individual's lifestyle, where those lead a busy lifestyle may find it difficult to choose foods that require long preparation times (Contento, 2011; Kearney and McElhone, 1999). This is also supported by Selleag and Chapman (2008, p.124), who found that those living alone would opt for convenience or ready-made meals that required little effort, citing the lack of time due to employment or social activities as their primary reason. This is also often the case for those who are employed and have long or irregular shift patterns, which can often come from those who have low-income jobs (Contento, 2011) or for those who were young and more educated (i.e. employment in more skilled jobs that also require long hours of labour) (Lappalainen *et al*. 1997).

For some families, both parents work irregular hours, ready-made and convenience meal options have replaced those prepared by first principles which is evidenced by the significant rise in such ready-made meals and salads in supermarkets (Mintel, 2001). Pollard *et al* (2002) therefore conclude that time constraints of different individuals are a clear issue that influences

food choices, meaning people may often need to make a conscious choice of convenience over health.

Within Saudi Arabia, AlQauiz and Tayel (2009) reported that over two thirds of their participants cited lack of time to be the cause of having an unhealthy diet, particularly amongst younger age groups. Within this study, it was argued that the prominence of fast food outlets within Saudi Arabia, coupled with busy modern lifestyles, had resulted in the increased consumption of convenience foods and the reduction in cooking by first principles. That said, one could argue that the family social structure would urge young people to sit and eat at the dinner table with the family. However, Musaiger (1993) counter-argues this claim, stating the traditional family structure of a housewife and breadwinner is not necessarily the case anymore, as the percentage of Arab women that are now in employment is relatively high. For instance, according to Al-Hadad, (1976), the demand for canned food in Egypt rose during the late 1970s as a result of women in employment. Musaiger (1987; 1993) also notes that female employment has led to an increase in hiring housemaids within the Gulf region, in order for them to carry out daily errands for the household. As a result, a correlation between time constraints to prepare food and the availability of cheaper food from restaurants and fast food outlets has resulted in families eating out more, particularly in the evenings (Musaiger, 1993).

In terms of UK household, the increase in lone occupancy was evident in the findings of Chapman *et al* (2008) study, with participants stating that a lack of motivation to cook food *"just for themselves",* which in turn prevented them from doing so as they found no enjoyment in spending time cooking. Selleag and Chapman (2008) also highlighted this to be particularly important for certain groups within society, such as single mothers, young professionals and the elderly.

3.7.3.3 Media and Advertising

For many people, the media is a primary source of information, as well as a strong, established influence over nutrition and food consumption (Nestle *et al*, 1998; Musaiger, 1993). Advertising, which encompasses all mass media, is an effective tool that is used by organisations to make their food look appealing, particularly when they seek to create a positive association with their advert, such as making fast food restaurants associated with a happy family occasion (Snooks, 2009; Musaiger, 1993). As a result, food companies have been known to spend over $30 million on advertising campaigns in order to reach a wider audience and persuade people to purchase their products (Nestle *et al*, 1998). In the Gulf countries, a

considerable amount of money has been spent on commercial advertising. For example, according to (Statista, 2016) in Saudi Arabia advertising spending in 2015 were $1,172 million. Moreover, evidence suggests that advertising has been able to influence beliefs and perceptions towards products. For instance, foods that are labelled with certain phrases can be used to reflect popular health fads, such as "low in fat" or "high fibre", which prompts consumers to purchase such items as they are now perceived as healthy (Snooks, 2009).

However, there is a concern that food advertisers cause conflicting attitudes among their target audience, particularly when individuals attempt to strike a balance of healthy and unhealthy foods (Chambers *et al*, 2008). Jones *et al* (2007) states that the marketing strategies of companies to advertise their energy-dense foods are a possible cause for obesity. This is particularly the case for children, as there have been instances in the past where adverts for unhealthy snacks are promoted on TV after school times or during children's programming and TV shows (Nestle *et al*, 1998). In 2003, due to the growing body of research that showed a rise in obesity among British children, the UK Government's Secretary of State for Culture, Media and Sport proposed a restriction/ban on advertisements of food and drink high in fats, sugar and salts that were aimed at children (WHO, 2014). OFCOM concluded that this type of advertising did have a large potentially indirect effect on children and a modest direct effect, and therefore advertising rules were revised, where in 2006, the ban for such advertisements was put into effect.

Furthermore, in Yeh *et al*'s (2008) study of participants' perceptions towards fruit and vegetables, they found that media advertising has a negative impact on fruit and vegetable consumption, as television advertisements rarely promote fruit and vegetables. Additionally, a study conducted by Madanat et al., (2007) found that television advertising has a negative significant influence on Jordanian women over their food choices.

Advertising can also be a strong influence to encourage healthy eating. Nestle *et al* (1998) cite Kellogg's cereal as an example of this, where their adverts promoted the healthy benefits of having a high-fibre cereal. Other examples of this include the Change4Life campaign in the UK discussed in the previous chapter, which used television advertising as part of an integrated social marketing campaign to promote behavioural change, one aspect of which was the promotion of the public health recommendation to include 5 portions of fruit and vegetable as part of the daily food intake.

3.7.3.4 Income and Price

According to Musaiger (1993), income is regarded as one of the primary influences that determine what food choices are made within the Gulf countries, particularly when looking at this from the perspective of the overall country. For instance, during the period of 1973-1980, the Gulf countries saw a rapid economic growth within the Arab region, which was due to oil exports. This became the primary source of income for such countries, whereby a 10% annual increase was found on the per capita income as a result of oil revenues (Achilli, 1984). In terms of food choice and consumption, this period saw a substantial rise in the consumption of milk, eggs, cereal and meat, with meat consumption increasing by 500% in Saudi Arabia alone (Musaiger, 1993). This illustrates that income has the ability to widen the food choices. As highlighted in Chapter 1, Saudi Arabia and other Gulf countries are shifting from their traditional staple diet of dates, barley, wheat and meat, to a more Western style diet (Bakhotmah , 2012).

In relation to income, the price of foods can also influence patterns in food choices (Witherup, 2012). By lowering prices on certain foods, it is likely that their consumption will increase. This was the case for foods such as rice, wheat flour, meat, sugar, oils and fats within the Arab region due to a support policy on foods made by the governments during the 1970s (Musaiger, 1993). This policy stated that the government would subsidise food items such as those mentioned above, particularly in response to an increase in population and prices of world foods. However, in 2007-2008, the Arab region saw a sharp rise in food prices, particularly on staple foods such as rice, corn and wheat, making it somewhat unaffordable for those on low incomes (Saif, 2008; El-Dukheri, 2011). This has caused a significant impact on a number of Arab countries and led to certain responses from the governments (Saif, 2008) (i.e. In Jordan, the government removed subsidies to fuel, increased wages to those working in the public sector, and removed taxes on certain goods).

A high price limits the affordability of foods and this has been demonstrated in *et al* studies of healthy foods such as fruit and vegetables, where the high cost of these foods have constrained their purchase (Witherup, 2012). In Chambers *et al*. (2008) study, young and middle aged adults considered price to be a significant barrier towards their decision of choosing healthier foods, whereas other groups did not feel that this was important. It is presumed that this was because all those within that age group were experiencing lower incomes (possibly students and young professional) and therefore having a budget for food was a relevant issue. It should be noted however, that this factor is not restricted to students or the younger scale of age demographics.

Rather, this issue of price is often found to be highly influential in the food choices made by those among the lower socio-economical groups such as students, the unemployed or those that are retired (Pollard *et al*, 2002; Reicks *et al*. 1994; Lennernas *et al*. 1997; Johansson and Andersen, 1998). The population segment of older people (60-65) within the UK is reported to be among those in a "nutritional risk group", and among the reasons for this is due to low-income after retiring from the workforce (Hare *et al*, 2001). John and Ziebland (2004:166) further states that, "*socially deprived areas may lack local sources of reasonably priced, good quality fruit and vegetables, causing a vicious circle of poor demand and supply*".

3.7.3.5 Obesogenic environments, home

Although behavioural and factors have been fundamentally accepted as a cause or influence over obesity, one aspect that has yet to be fully explored is the environmental influences (Booth *et al*, 2001). This refers to the obesogenic environment, which has been defined by Swinburn *et al* (2003:289) to be, *"the sum of influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals or populations."* The built environment therefore consists of all areas in which humans have modified the environment, such as their homes, workplaces, food outlets and stores (Contento, 2011). According to Sallis and Glanz (2009), the built environment has a significant influence over food choices and overall health and has been considered to be a major driving force behind the ever-increasing rise in obesity (Swinburn *et al*, 1999). Therefore, a deeper insight into this subject may provide researchers with a clearer picture on how to modify such environments to prevent or limit obesity. For instance, research indicates that interventions using pharmacological, educational and behavioural methods have found limited success in environments that promote sedentary lifestyles and the intake of high calorie foods (Nelson and Wood, 2009). Lake and Townsend (2006) further state that not only are obesity and being overweight complex issues, but that human environments can also be extremely complex and multifaceted. Subsequently, in order to grasp a clear understanding of the obesogenic environment, it also requires an equally multidisciplinary approach. This is because within an individual's daily life, they occupy a number of different environments, which may have a different impact on their behaviour towards healthy eating and exercise.

One way to categorise these environments would be simply to define them as either supportive or unsupportive in fostering a healthy diet (Booth *et al*, 2001); however, Lake and Townshend (2006) argue that this method is subjective, as individuals are different and may interact

differently within a particular environment. Conversely, Swinburn *et al*, (1999) constructed a framework model for how the environment can affect an individual's health, which consists of economical, physical, political and sociocultural factors that occur across either micro-environments or macro-environments. Micro-environments refer to settings such as the workplace, school or home, whereas macro-environments include education and health care systems, societal attitudes and beliefs and government policies. For instance, Booth *et al* (2001) argues that the environment within many American cities has led to certain health problems and food intake. This includes a surplus of fast food chains, larger portion sizes at lower prices, a greater accessibility/availability of unhealthy foods and a lack of need to keep physically active throughout the day due to modern transport. Consequently, as Booth *et al* (2001:22) aptly state, "*the current environment favours an imbalance between food intake and physical activity, therefore, which can contribute to obesity and chronic diseases".*

In analysing the obesogenic environment for the UK, Lake and Townsend (2006) show there is a link between deprived areas having less access and availability to healthy foods or that they are at a high price (Cummins and Macintyre, 2006). For instance, Cummins *et al* (2005) found that neighbourhoods with higher levels of deprivation and poverty across England and Scotland were more likely to be exposed to a McDonald's restaurant, and associated consumption of fast food. However, other studies did not find any such correlations (Cummins and Macintyre, 2002), or even links between neighbourhood retail food provision with diet and healthy food intake (White *et al*., 2004; Pearson *et al*., 2005). For example, in Ludvigsen and Sharma's (2004) research in Glasgow, there was no correlation of deprivation areas with take-away outlets found. Lake and Townshend (2006:264) therefore state that *"any association between diet and retail environment are most likely observational and require further investigation."*

With regards to eating out of the home, research in the UK shows that this *"accounts for an average of 7.6% of individual energy intakes*" (Jones *et al*, 2007:7), with up to 65% of an individual's diet coming from restaurants or fast-food outlets (Prentice and Jebb, 2003). Similar to USA, such establishments contribute to the obesogenic environment as they are often associated with unhealthy foods due to such foods comprising of lower nutrients and high in fat (Lake and Townshend, 2006). However, there is research that suggests restaurants in the UK may also help improve diet, such as an increase in fruit and vegetable consumption (Glanz and Hoelscher, 2005).

Although it is necessary for individuals to be motivated to change their food choices and food behavioural patterns, the above analysis also suggests that it is necessary to change the environments in which food choices are made. Booth *et al* (2001) suggests that every setting

may contain influences over human behaviour and the following sections provide a greater insight into two environments of school and work, both of which have received considerable attention in changing food choice behaviours (Jones *et al*, 2007).

- ***School Environment***

The school environment is regarded as a highly important environment in influencing children's behaviour over their food choices, as well as reinforcing positive messages relating to diet and exercise. Many researchers highlight how individuals at this age are extremely impressionable and thus, what is taught can shape their eating habits and have a lasting impact on them throughout their life (Lake and Townshend, 2006; Ludvigsen and Sharma, 2004; Jones *et al*, 2007).

In a study by Hammerschmidt *et al* (2011), it was reported that superintendents within a school environment felt the most common barriers to healthy eating and physical activity was that schools did not give this area much attention or priority, potentially due to a lack of funding and leadership in setting up such strategies.

Studies in the UK further indicate that the school environment can be a prime location for unhealthy foods; however, this seems to be dependent on how well the facilities and provisions are within the school itself. For instance, Shepherd *et al* (2006) found young people citing poor school meal provision to be a barrier to healthy eating and that teachers were not seen as a source of nutritional advice and guidance. This however, has improved greatly under new governmental initiatives such the School Food Plan in 2013, with the goal of improving standards within school meals. This issue also gained relatively large media attention when TV chef and personality, Jaime Oliver embarked on a revolutionary campaign in 2005 to revamp school dinners in secondary schools (Lake and Townshend, 2006; Jones *et al*, 2007). This resulted in direct intervention from the UK Government, leading to certain foods being banned from school menus and new nutritional standards to be set across schools in 2006. As a result, recent governmental bodies have released an official brief stating children who opt for school lunch meals tend to have a healthier diet than those who have packed lunches (PHE, 2014). Such initiatives allow schools to positively influence the food-purchasing and eating habits of young people, which in turn could potentially influence their future diets (PHE, 2014).

- ***Work Environment***

The work environment has been identified as a key location where nutritional and health advice needs to be provided (WHO, 2004). In Pridgeon and Whitehead's (2013), qualitative research exploring the perceptions of food choices among public sector workers in South Yorkshire, identified that a key barrier to healthy eating was the limited availability of healthier food options. Although the employees would welcome healthier meal alternatives, they were compelled to eat whatever was available or not even take lunch at all due to time constraints and deadlines that they needed to meet. Furthermore, in a study that examined selected barriers and incentive for worksite health promotion programmes, Kruger *et al* (2007) sent surveys to 2337 adults employed in full/part time work and found that the majority of workers from a sample showed a willingness to change their food choices and would welcome vending machines with healthier foods. This is supported by Bisogni *et al* (2007), who state that employees have a good awareness about healthy eating and a willingness to change, provided the food met their preferences of taste, price, convenience and quality.

3.7.3.6 Migration

In terms of the environment, what is important to note in the timeline and the shift in food consumption patterns in the Middle East, is how influential migration is to the introduction of new foods and food choices (Musaiger, 1993). Musaiger (1993) cites three types of migration that occurred during the 1970s: 1) migration of Saudi citizens from rural to urban areas, 2) an influx of migrant workers to oil-producing countries within the Middle East (including Saudi Arabia) during the oil-price boom in 1973, and 3) the migration of non-Arab nationals to work in different areas as a result of affluence in Middle Eastern countries.

In relation to the first type of migration, many Arab families chose to move to the city because urban life in the dessert was disadvantaged in terms of economy and economic functions (i.e. food production and food maintenance). With a huge shift into urban areas, it also created a demand for more food to fulfil the supply. The second type of migration saw an influx from migrant workers into countries such as Saudi Arabia for labour purposes. Many of the workers came from neighbouring countries that did not have oil, such as Egypt, Yemen, Syria, Sudan and Jordan; with them they brought their own food and customs. An example of this is how Egyptian foods such as "fool madamis" which is a type of (beans with garlic, lemon and olive oil) have influenced food choices in Iraq. This is similar to the third type of migration, where those from non-Arab nationalities such as the Philippines and Indonesia, India and Pakistan

have sought work in an increasingly affluent economic environment. Again, with them they brought their own cuisine, which has also influenced the diet of countries such as Saudi Arabia. This food acculturation that follows migration is not unique to the Gulf region as it is a worldwide phenomenon and can occur in any country, creating a shift in food choices due to the introduction of new foods (Snooks, 2009). Another example of this that has been mentioned previously is the westernisation of foods and diets in other countries and regions like the Middle East.

3.7.3.7 Societal and peer pressure

Societal and peer pressures can also influence the adoption and maintenance of healthy eating habits. Evidence suggests that social pressures and interactions have a clear influence on food choices, particularly when food is consumed in a group setting and if the group comprises of individuals that are familiar with one another. For instance, Lindstrom *et al* (2001) conducted a study on how social support and networks influence the consumption of fruit and vegetables, and found that individuals were pressured into conforming to social norms and therefore found it difficult to choose the foods they wanted or that would help them maintain a healthy diet. Research in the field of obesity management affirms these findings, where minimal support from peers or friends can lead to an unhealthy diet (Perri *et al*., 1993). Sellaeg and Chapman (2008) also argue that social conformity is prevalent amongst those who live alone, as eating with others becomes an "event" or "gathering" as opposed to an ordinary daily routine. This can therefore influence food choices, as the desire to eat socially prevents individuals from cooking at home and instead can opt for less healthy options such as take away foods or to consume food at restaurants (Sellaeg and Chapman, 2008; Donelly *et al*, 2011). Moreover, as modelling "famous people" and peer pressure becomes frequent, there is conformity towards the group by eating what everyone else is eating (Nestle *et al*, 1998). Social pressures pertaining to food choices are aptly summed up by Germov and Williams (1999, p: 379), who state,

> *'…people can seek to differentiate themselves from others, or alternatively, convey their membership of a particular social group through their food consumption. Ordering a vegetarian meal, eating a meat pie, dining at a trendy café, or eating an exotic cuisine may be used and interpreted as social 'markers' of the individual's social status and group membership'.*

This illustrates how much individuals will use food and their food choices in order to be accepted by others within society. One could also argue that, depending on the dynamics of the social group, this can act as either a barrier or facilitator to healthy eating. Shepherd *et al* (2006) clarifies this by outlining certain social contexts for foods. For example, foods that are seen as healthy are mainly linked to parents or at home, whereas take away foods and unhealthy foods are associated with one's peers. This also indicates how important the family involvement is in ensuring behavioural change in diet and eating habits, as well as highlighting how friends and peers can become a barrier to an individual eating healthily as a result of individuals feeling pressurised to conform (Giskes *et al*, 2005).

Evidence also suggests that food is an integral part of gatherings and social interactions (Sellaeg and Chapman, 2008). Social gathering to which food play a significant role are a distinguishing feature of Middle Eastern culture. This is often perceived to have a social element to it, whereby Middle Eastern culture places a great emphasis on hospitality of guests and generosity towards one another, which often comes before adhering to healthy eating guidelines (Bakhotmah, 2012). Hence, social gatherings, are commonplace and the serving of different foods (normally large or even excessive portions) is often at the centre of such occasions (AlQuaiz and Tayel, 2009; Alqout and Reynolds, 2013; Bakhotmah, 2012). Likewise, guests feel obliged to eat, as refusal is regarded as socially unacceptable and may offend the host (AlQuaiz and Tayel, 2009; Alqout and Reynolds, 2013). Thus, regular social gatherings can significantly impact on one's ability to make healthy food choices and maintaining a healthy diet.

It is therefore evident that social support or influence plays an effective role in fostering and facilitating positive lifestyle changes, particularly if it is from those who are close to the individual, such as family and friends. However, it must be recognized that this can act positively or negatively on food choices as pressure to conform can mean it is difficult to control dietary intake in social situations. Although, in contrast, Alqout and Reynolds' (2013) state if the family encouraged one another to eat healthily, participants felt this would support weight reduction. This is supported by their research findings, which highlighted that family members who previously lost weight through bariatric surgery became advocates and supporters for others who also wanted to lose weight within the family unit. Al-Ghawi and Uauy (2009) argue that this is an important facilitator of healthy eating and weight management.

3.7.3.8 Culture norms and traditions

According to Nestle *et al* (1998) and Donnelly *et al* (2011), many of the food choices made by individuals and societies revolve around their culture. Specific customs, ideas and rules that are found within cultures or ethnic groups begin to shape what an individual regard as acceptable and preferable, including combinations of food or amount of food consumed. One may presume therefore, that cultural norms and traditions will have an impact on the foods that people consume, even in later life, as Pollard *et al* (2002, p 374) state, these "*are the foundations on which all food choice decisions are built*". This is evidenced by the various dishes that are present from regional food cuisines and customs across the globe. For example, one may argue, that as more Gulf communities adopt foods that are consumed in affluent Western societies, there is often a nutrition transition in diet from traditional food sources to those that are prevalent in Western culture (AlQout and Reynolds, 2013). Whilst it is important to clarify that not all food consumed in the west is unhealthy, foods that are high in fats and sugars are prevalent (Nestle *et al*, 1998). This may be a result that is driven by taste and preferences and often related to the urbanization of communities and increased accessibility to take away food outlets and processed foods (Alqout and Reynolds, 2013; Donnelly *et al*, 2011).

Cultural norms may also include special days, where festivals and certain occasions dictate what foods are eaten. For instance, Americans will often eat specific foods on the national holiday of Thanksgiving Day, such as turkey, cranberry sauce and pumpkin pie (Snooks, 2009). Moreover, within the Middle Eastern countries, where the majority of the population adhere to the Islamic faith, there are often lavish feasts that occur on the days of Eid (translated as holy days) (Musaiger, 1993). Eid al-Fitr marks the end of the month of Ramadan where Muslims fast by abstaining from food and drink during the daylight hours for one month. Interestingly, even this can have an adverse effect on what food is consumed because this means there are two main meals throughout the day (i.e. before sunrise and at sunset), so certain dishes are served at those particular times. Within the Gulf region, dates and yoghurt drinks are traditionally served at sunrise (Abdulla, 1979) and meat stew with rice is often served at sunset when breaking the fast (Musaiger, 1982). Other ceremonial days would mark weddings or deaths. For weddings, foods such as nuts and sweets are often given to guests in Bahrain (Musaiger, 1981) but also rice and meat dishes are served as a main meal (Abdulla, 1979). These traditions and cultural practices are passed on from generation to generation, which influence their food choices.

Clearly religious influences also impact dietary behaviour. Those who adhere to the Jewish and Islamic faith have certain dietary regulations based on their religion, where they cannot eat

certain types of food, such as swine or carrion, and are restricted to Kosher and Halal respectively (Snooks, 2009; Musaiger, 1993). This may also extend to those that adhere to the Christian faith, where people give up certain foods for Lent or before Easter (Snooks, 2009). In reference to Saudi Arabia, as it is deemed an Islamic country, the restrictions of halal foods only would be implemented.

3.8 Theories of Behaviour Change

After identifying the factors influencing food choices, it is important to explore the theoretical models that have been devised to understand behavioural change. The theories of behavioural change that will be discussed in the next section are commonly implemented within social marketing, and will be reviewed to consider their inclusion within this thesis, to inform social marketing recommendations for improving healthy eating habits in Saudi Arabia. It is also important to note that one of the key principles of social marketing is that it is theoretically underpinned, which is why it is necessary to consider the various behavioural change theories that are present, in order to identify those that are relevant for this thesis.

Although social marketing is considered to be a necessary requirement in health prevention (Lefebvre and Flora, 1998), there are certain areas that need to be addressed. For instance, within the social marketing domain, Andersen (1997) explains that there is a significant absence of a theoretical framework for the majority of social marketing planning models, which may provide the necessary insight into why individuals adopt certain behaviours. In contrast, within the field of health education itself, the primary focus is not on the consumer as it is in social marketing. Thus, Thackerey and Neiger (2000:332) highlight how an integration of both social marketing and behavioural change theory can be complementary to one another, stating, "*behaviour change theory provides an understanding of precursors related to a problem or behaviour of interest, and social marketing provides the framework to apply the theory and modify the behaviour.*" In other words, the theoretical aspect can provide the underpinning knowledge of what is necessary for to encourage behaviour change, whilst the social marketing provides the necessary tools to put this into practice. If these two elements can be incorporated into the planning, development and implementation stages of a social marketing campaign/health programme, it can provide a greater structure to be used in creating a more interactive and bottom-up approach to health education, which subsequently may generate a higher success rate in modifying or changing behaviour (Thackerey and Neiger, 2000; Frost, Zukerman and Zukerman, 2008). The challenge however, is to effectively integrate the

behavioural change theory in social marketing. Thackerey and Neiger, (2000) highlight four areas in which theory can help a study, which are: 1) in providing a guide for the social marketing planning framework, 2) in explaining consumer behaviour, 3) in guiding what questions can be asked during formative research and lastly 4), in evaluation and providing measures for success.

In discussing what is referred to as theory, Glanz and Rimer (1997:11) define it as "*a set of interrelated concepts, definitions, and propositions that present a systematic view of events or situations by specifying relations among variables in order to explain and predict the events or situations*". Green *et al* (1994:398) further explain that its role is to "*untangle and simplify for human comprehension the complexities of nature*". With regards to health education, a number of theoretical models and concepts have been derived from social sciences, in order to gain a deeper insight into health-related behaviours (D'Onofrio, 1992; Hochbaum, Sorensen and Lorig, 1992). Many of the models possess similar components, such as motivation, intention and self-efficacy (Raingruber, 2014), and among the more fundamental and prominent models within health education practice are the following: Health Belief Model (Rosenstock, 1966), the Theory of Planned Behaviour (Ajzen, 1989), the Social Cognitive Theory (Bandura, 1986) and the Transtheoretical Model (Prochaska, Norcross, and DiClemente, 1994). The next section provides a critical analysis of these models, exploring their strengths and weaknesses as well as evaluating how they could be incorporated into this study.

3.8.1 The Health Belief Model (1966)

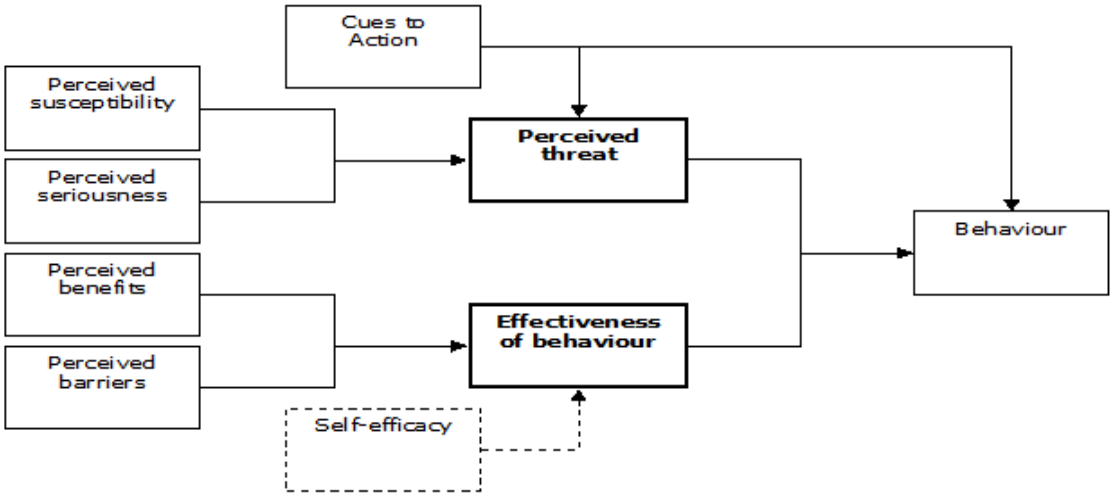
The Health Belief Model (HBM) is one of the earliest models that was designed and applied for health promotion programmes (Rainbruger, 2014; Morris *et al*., 2012). Initially developed by Rosenstock (1966), the HBM was used by health researchers to explore why people did not join health programmes or why they were unwilling to take action in preventing or detecting diseases (Alcalay and Bell, 2000). In addressing these issues, the core principle behind the HMB is that behaviour is shaped by a person's beliefs over what may threaten or be a risk to their health and wellbeing (Morris *et al*., 2012). It also focuses on their belief of how they perceive the overall effectiveness of a particular action in order for them to subsequently perform it (Morris *et al*., 2012). Nisbet and Gick (2008:297) provide a brief overview of the model:

> *'in order for behaviour to change, people must feel personally vulnerable to a health threat, view the possible consequences as severe, and see that taking action is likely to*

either prevent or reduce the risk at an acceptable cost with few barriers. In addition, a person must feel competent (have self-efficacy) to execute and maintain the new behaviour. Some trigger, either internal ... or external ..., is required to ensure actual behaviour ensues'.

In other words, an individual's beliefs and perceptions regarding their own health issues will lead them to take action and change their behaviour. Figure 3.9 shows how each of the components fit into the model, which will be discussed in detail.

Figure 3.9 The Health Belief Model



Source: Alcalay and Bell (2000)

In order to fully understand the HBM, it is important to analyse its four key constructs. The first one is the individual's perceived susceptibility of the health threat. Alcalay and Bell (2000:10) define susceptibility to be "*a person's subjective evaluation of the likelihood of becoming afflicted with the focal condition*". Individuals therefore consider whether or not there is a risk of them actually acquiring or catching a particular health threat (Bogart and Delahanty, 2004; Rimer, 2002). This is closely linked to the second construct, which is the perceived severity of the health threat. Alcalay and Bell (2000) refer to this as how serious the health condition is, as well as the consequences that may come from having such a health problem, such as pain, disability or death. Thus, when the susceptibility and severity of a health condition are both high, then the threat of it is also high; however, if one of them is low, then it is regarded as a minimal threat (Lefebvre, 2000). For example, the common cold (high susceptibility but low severity) and Legionnaires' disease (high severity but low susceptibility) would both be

considered to have little threat to people residing in the UK. What this does illustrate is, susceptibility and severity are used to determine whether action is necessary; but this is further fuelled by the third and fourth construct, which are the individual's perceived benefit from and perceived barriers towards the recommended action (Bogart and Delahanty, 2004; Rimer, 2002). The perceived benefits refer to whether or not the individual's subjective view in performing a particular action will be both effective and feasible. In other words, there should be some form of gain if they change their behaviour (Raingruber, 2014). In contrast, if the outcome is not perceived as effective, the action will most likely not be implemented, even if the threat is great (Alcalay and Bell, 2000; Lefebvre, 2000). With regards to perceived barriers, this can be anything that the individual feels may hinder them from changing their behaviour (Raingruber, 2014). These can include financial costs, negative consequences or associated dangers that can arise from the action, such as side effects or pain. In such instances, Alcalay and Bell (2000) state individuals will conduct an informal cost-benefit analysis and weigh up the benefits against the perceived costs to themselves of engaging with a certain action. If the benefits outweigh the cost, then the action is regarded as something that should be performed (Morris *et al*., 2012, Raingruber, 2014). Thus, the literature suggests that actions are more likely to occur if they are perceived to be cost-effective (Roden, 2004; Rosenstock, 1966; Alcalay and Bell, 2000).

It is also important to note that the perception of a threat does not automatically lead to carrying out the recommended action, even if the perceived benefits outweigh the costs. The model states that for an action to be adopted there must be the presence of 'cues to action' (Rosenstock, 1966; Roden, 2004; Lefebvre, 2000). This is a stimulus for the individual, which prompts them in being ready to take action and change their behaviour (Morris *et al*., 2012). This cue can either be bodily or environmental (i.e. internal or external) and therefore highlights that they will only act if they believe there is a threat or risk to their health, and that the perceived benefits to action outweigh the barriers. Alcalay and Bell (2000) cite the example of an individual who may ignore the threat of cancer, choosing to disregard healthy practices that are known to help prevent certain types of cancer. However, they may be certain internal or external cues, such as age or hearing a news story of how smoking causes cancer, which then causes them to personalise the threat, and subsequently causes them to make behavioural changes. It is also important to note that self-efficacy - the person's perceived capacity and capability in changing their behaviour – is the underlying driving force behind this (Morris *et al*., 2012).

In the context of social marketing, the foundational components of the HBM have been widely used among public health practitioners (Rainbruger, 2014; Morris *et al*., 2012). The reason for this is because the HMB echoes the primary focus of campaigns to address changes in lifestyle to prevent diseases (Alaclay and Bell, 2000). Moreover, it provides the important constructs that can be taken into account during different stages of the campaign. For instance, the target groups' perceptions concerning the severity, susceptibility, barriers and benefits of a threat can be used as the primary basis for audience segmentation (Rainbruger, 2014). Additionally, the HBM highlights the need for cues to action, which the social marketing campaign could use effectively in the form of stories or case studies that the target group can relate to. This could also emphasise what behavioural action is required to prevent or cure certain health issues. For instance, case studies or life stories of successful behaviour change and the mechanisms used to achieve this change which is supported and devised by health experts could reinforce the cues to action and motivate the need to change.

There are nevertheless, certain criticisms of this model, such as its focus on rational or conscious choices influencing behavior change. (Raingruber, 2014; (Morris *et al*., 2012). This approach ignores other subconscious (i.e. habitual) determinants related to health behaviour that should be considered (Morris *et al*., 2012; Roden, 2004; Rosenstock 1966). By ignoring these and focusing only on the individual factors, Roden (2004) states this can create a culture of victim blaming. Jackson (2005:133) further elaborates upon these arguments, stating that the HBM model,

> "*…pays insufficient attention to the social norms and expectations that govern human choice and to the habitual and routine nature of much human behaviour. It also fails to recognise how consumers are locked into specific behaviour patterns through institutional factors outside their control*."

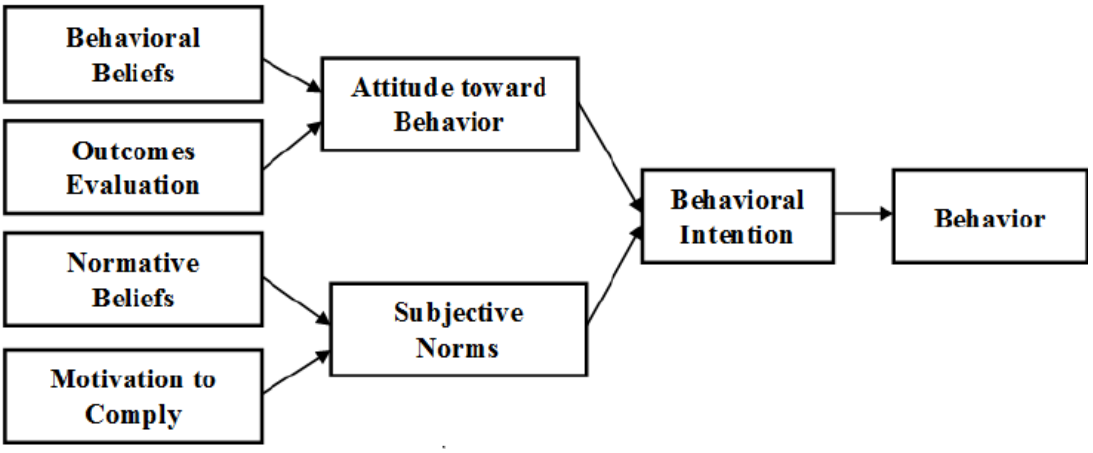
Thus, by overlooking the external influences, if an individual does not see any threats to their health, then they will not show willingness to act or change their behaviour. The same could apply if they perceive the change to be 'costly' and provide little benefit (Morris *et al*., 2012). In response, supporters of the model have explained that the HMB was primarily designed for the purpose of focusing on individuals; thus, according to Alcalay and Bell (2000), there is no issue if one wishes to implement models that explain the socio-economic or environmental factors to health in conjunction with the HBM.

3.8.2 Theory of Reasoned Action (1975)

The Theory of Reasoned Action (TRA) is a framework devised by Fishbein and Aizen (1975) to predict individual's behaviour from their intention to perform a behavior (Ajzen and Fishbein, 1980; Fishbein and Middlestadt, 1989; Montano and Kasprzyk, 2015). The underlying assumption within this theoretical model is that individuals are rational and will first reflect over, and take into account the consequences of a particular behaviour before making the decision to act upon it (Raingruber, 2014; Alcalay and Bell, 2000). What is important to note regarding this model is a precursor for the Theory of Planned Behaviour model, which provided the foundations for this model to be built upon.

As illustrated in Figure 3.10, the TRA revolves around three general constructs: behavioural intention, attitudes and the subjective norm. This theory therefore centres on the intention, where the behaviour will only be performed if the person has the actual intention to do it (Ajzen and Fishbein, 1980; Fishbein and Middlestadt, 1989; Montano and Kasprzyk, 2015). Behavioural intention is further influenced and determined by two factors: 1) attitude towards the behaviour which may be positive or negative, and also 2) the subjective norm; how key influences within personal networks (i.e. family members, experts, spouses etc.) regard this behaviour (Raingruber, 2014; Ajzen and Fishbein, 1980; Fishbein and Middlestadt, 1989; Montano and Kasprzyk, 2015). For example, a behavioural intention to eat more vegetables is influenced by a person's attitude towards this action and also what others think about it. As a result, if the attitude towards the desired behavioural change was positive and the individual felt that people important to them would also have a positive reaction if this behaviour were performed, it would be done so voluntarily (Fishbein and Ajzen, 1975). This forms a strong criterion for changes in healthy behaviour, as attitude and subjective norms are considered to hold a substantial influence over behaviour (Alcalay and Bell, 2000). This is why the TRA model has been often implemented in social marketing campaigns, as the subjective norm help to create the focal target group i.e. a social marketing campaign against underage smoking, which is deemed unacceptable in society. It has further been used in campaigns for diet and safe sex campaigns where such campaigns have been successful in modifying behaviour (Raingruber, 2014).

Figure 3.10 The Theory of Reasoned Action



Source: Fishbein & Ajzen, (1975)

This model has certain weaknesses that must be highlighted. One such weakness is in relation to the behaviour itself, not all behaviours are under the control of the individual. For instance, behaviours such as desires, habits or even spontaneous actions do not fall into the category of being reasoned or logical – they are simply difficult actions for the individual to control (Raingruber, 2014). Moreover, there are instances where one of the two factors (attitude and subjective norm) is stronger than the other, which can have a detrimental effect over changing behaviour. For instance, an adolescent who holds a negative attitude towards smoking may still continue to smoke due to peer pressure, highlighting how strong a factor the subjective norm actually can be.

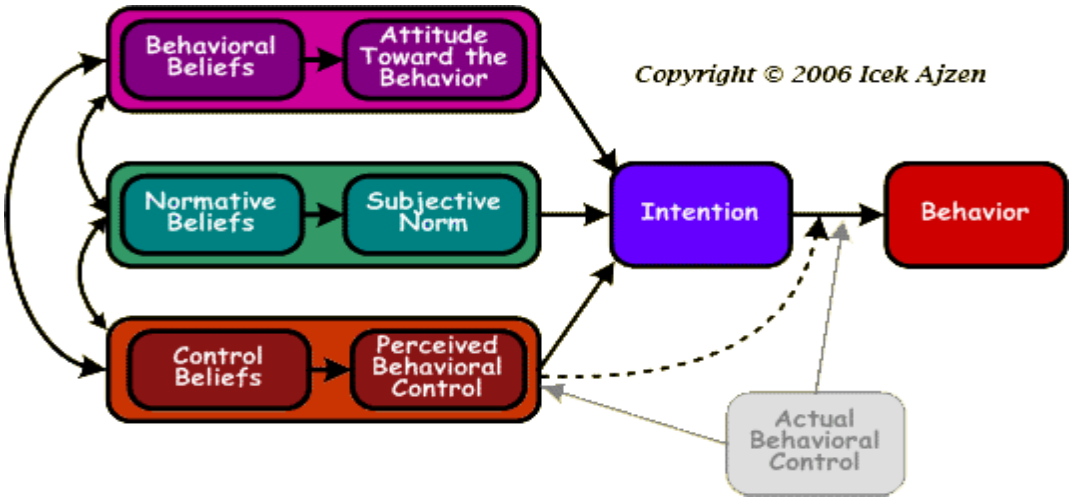
3.8.3 Theory of Planned Behaviour

In recognition of the shortcoming of the TRA, Ajzen (1985) expanded the model and devised the Theory of Planned Behaviour (TPB) This model was derived from the works by Bandura on self-efficacy and was subsequently used this theory to explain occasions when individuals would not have control over their actions or when they lack the confidence to do so. The TPB model therefore not only focused on intention but also on how much control an individual could apply to change the behaviour (Ajzen, 1991; Montano and Kasprzyk, 2015). Accordingly, as shown in Figure 3.11, the TPB model identified three factors that affect the intention: 1) attitude towards the desired behaviour, 2) the subjective norm and 3) how easy or difficult they perceive the change to be in light of their behavioural control. Self-efficacy is regarded as the driving force behind the extent of behavioural change, as those who believe in themselves to change

will be more likely to do so (Ajzen, 1985). In contextualising the implementation of the TPB for health behaviour compared to the TRA, it is suggested that this model provides a more robust framework to help understand the actions of individuals.

It is worthy to note that this model has been used previously within a Middle Eastern Context. Due to the reported mortalities that occur from traffic accidents in Saudi Arabia[7], Nelson *et al* (2014) conducted a cross-sectional study using the TPB model, in an attempt to predict whether Saudi pregnant women would use child restraint systems (CRS) in their cars for their children. While the study showed the TPB could identify the beliefs in relation to the intent of using CRS in Saudi Arabia, the results did show that this intent may not actually be related to its usage of CRS.

Figure 3.11 Study model of healthy eating based on the TPB



Source: Ajzen (1985)

In contextualising this theory for implementing healthy eating habits, one must first identify the target group's attitudinal construct in performing this behaviour. This could mean a person will consider the perceived outcomes of eating a healthy diet, such as increasing weight loss, lowering the risk for non-communicable diseases, more energy, bland taste and higher costs.

[7] The study reported 7153 fatalities in 2011 across the country.

3.8.4 Social Cognitive Theory or Social Learning Theory

According to Macdonald (2008), the Social Cognitive Theory is one of the most widely acknowledged theories in the domain of health education and as a conceptual framework for health promotion programmes. This theory, also referred to as the Social Learning Theory (SLT), was developed by Bandura (1989) and considers observation, imitation and positive reinforcement to be ways in which behaviour is learned (Raingruber, 2014). Bandura (1989) also proposed that individuals will learn by observing other people that perform a particular action and if they see the benefit in the action, they will also perform it.

Accordingly, the SCT model explains that personal, interpersonal, environmental and behavioural factors are all considered for determining behavioural change, and that these factors all affect one another as they have a shared relationship with one another (Alcalay and Bell, 2000). Raingruber (2014) further elaborates that the SCT is comprised of six main concepts. The first concept, as mentioned, is reciprocal determinism, which is where the individual, environment and/or behaviour have an influence over one another. An interesting thing to note within this is that these factors can influence the individual with or without their awareness. Alcalay and Bell (2000) cite an example that an individual's dietary fat intake can occur as a result of peer pressure or the actual physical environment, where the presence of it is widespread in processed foods or in fast-food establishments. The second concept is *behaviour*al capability; this is the appropriate skills and knowledge that an individual need in order to perform the desired behaviour. In the context of diet and food, this could be knowledge of the different types of dietary fats, what methods of cooking are healthier or even how to understand the nutritional information on food labels (Alcalay and Bell, 2000). The third concept is expectation, which is what outcome the individual anticipates once they perform the behaviour. As a result, an individual will seek to maximise positive outcomes and minimise negative ones. The fourth concept is critical to this theory, which is self-efficacy. This refers to the individual's self-confidence in their abilities and the necessary drive and motivation to initiate action and change to occur (Bandura, 1989). For instance, if an individual feels they are not in control of their eating habits, they may be unwilling to enrol on a weight management programme (Alcalay and Bell, 2000). This means, similar to the TPB understanding of self-efficacy, the success in behavioural change lies in how much self-control they possess, which is monitored through specific targets and self-observation. The fifth concept is observational learning, which has been explained earlier, while the last concept is reinforcements. This is where the response

to the behaviour that an individual performs is either influential to them and it can change their environment.

In the application of the SLT model for social marketing campaigns, this theory provides an effective framework for how marketers can understand their target audience. For instance, Alcalay and Bell (2000, p.16) aptly state, "*SLT tells us that we need to consider how the environment can be shaped to increase the probability of success"*. Thus, if the objective behind the social marketing campaign is to lower fat intake for the target group, the strategy will need to consider the availability of low-fat/fat-free alternatives in local supermarkets or other places of interest. Additionally, the campaign may also involve the development of the social environment by devising a plan for families and friends to prepare and purchase healthier foods. Furthermore, one of the key concepts in SLT is to change an individual's expectations so that behavioural change can occur. The social marketing campaign can be used to make the benefits of adopting change explicitly clear, such as the use of case studies, diagrams or a public service announcement (Alcalay and Bell, 2000). Lastly, a social marketing campaign could be used to provide the relevant knowledge and instructions to improve skills in a particular area, for instance, providing cookery lessons or instructions on how to prepare low-fat meals or an easy-to-understand guide on nutritional information labels.

3.8.5 The Transtheoretical Model (1992)

The Transtheoretical Model, also known as the Stages of Change Model, was popularised by Prochaska and DiClimente (1992). The model has incorporated theories pertaining to psychotherapy and behaviour, and has been used extensively in health promotion, which has led to some researchers referring to it as the '*dominant health promotion model'* (Raingruber, 2014:61). Prochaska and DiClimente (1992) initially used the model in relation to smoking cessation, but its application soon became prevalent in addressing other addictive behaviours (Morris *et al*, 2012).

The basis for the model was to show that change was something that varied from person to person and occurs over time (Raingruber, 2014). Thus, an individual progressed through six defined stages, with each of them being a milestone or '*level of motivational readiness'* (Heimlich and Ardoin, 2008:279) towards modifying and maintaining behavioural change. Within this, the driving force that caused individuals to transition between the stages was as a result of their self-efficacy and decisional balance, where they weigh up the pros and cons of

performing the recommended action (Heimlich and Ardoin 2008; Armitage *et al* 2004; Morris *et al*, 2012).

These stages are:

1. Pre-contemplation: Individuals at this stage do not have any plan to take action in changing behaviour for the foreseeable future. Raingruber (2014:61) elaborates upon this, stating, "*the person may not even be aware of needing or wanting to change or they may be unwilling or uninterested in changing.*" This shows that there are a number of different, yet valid reasons why there is a significant lack of intention behind any change in behaviour, particularly at this first stage (Bogart and Delahanty, 2004; Prochaska, Redding and Evers, 2002).
2. Contemplation: This is the stage where the individual develops a desire to change and begins their plan to take action in changing their behaviour (Bogart and Delahanty, 2004; Prochaska, Redding and Evers, 2002). It is during this stage that Alcalay and Bell (2000, p.11) refer to the "*cues to action*" construct from the Health Belief Model, where individuals have contemplated over their health, weighed up the pros and cons towards the change, and subsequently shifted from the previous stage to this one. It is further important to note however, that similar to the HBM, individuals may find it difficult to make the transition to further stages in this model if they struggle to see the benefit over the 'cost' and effort they must make (Alcalay and Bell, 2000)
3. Preparation: This stage is where individuals will take action within the next month and they put together a plan of action. This model does state that an individual reaches this stage if their intention to change occurs within thirty days (Bogart and Delahanty, 2004; Malotte *et al*., 2000).
4. Action: During this stage, individuals are making or have made specific behavioural changes as the new behaviour is being carried out on a regular basis.
5. Maintenance: This stage seeks to ensure the behavioural change is maintained. According to Prochaska and DiClimente (1992), this is normally the case if they have been able to consistently perform the new behaviour for six months, or for up to five years if the change is more difficult (i.e. to stop smoking).
6. Termination: This is the stage where individuals can safely say they will not return to their old behaviour. It is described as "*the stage in which individuals have zero temptation and 100% self-efficacy* (Prochaska and Velicer, 1997, p.39)."

In the context of social marketing, the Transtheoretical Model was initially used in social marketing campaigns to increase physical activity amongst community residents in a research by community residents (Marcus et al, 1992). Due to the overall success in setting out defined stages, its application has gone on to influence many social marketing practitioners to consider it for their campaigns. An important aspect of how this model achieves this is by allowing audience segmentation to be clearly defined in accordance to the various stages of readiness to change (Alcalay and Bell, 2000). This enables the strategy and application of the social marketing campaign to focus specifically on the target groups' stages. For instance, those that are at the pre-contemplation stage may respond better to traditional health education techniques or shock tactics, in order to move them to the next stage. Thus, those at the contemplation stage may need more overtly persuasive messages to help them make the transition to prepare (Alcalay and Bell, 2000). Similarly, the preparation stage could focus on providing clear guidance notes or checklists of what is needed to change behaviour, while behavioural rehearsal is better suited for the action stage. Lastly, strategies that address how individuals should stay committed to change can be devised for the maintenance stage. Thus, it is evident that the Transtheoretical Model provides a robust framework for social marketing campaigns, particularly in how to implement different strategies and products for those at different levels.

The contentions with this model however, are similar to the issues with other cognitive models such as HBM, in that the focus is on the individual as opposed to addressing external factors (i.e. environmental factors), which may also affect change (Morris *et al*, 2012; Raingruber, 2014). This is an issue, as it does not help social marketers understand why some individuals will be quicker in changing than others (Morris *et al*., 2012). Moreover, there does not seem to be any definitive guidance as to whether individuals must go through each stage in sequential order (Raingruber, 2014), or whether or not these stages are actually necessary (West, 2005). In light of these contentions, Prochaska (2006) has suggested that any future studies that wish to adapt or improve the model could tailor it to all the core constructs as opposed to only the stage of change.

3.8.6 Community Organisation Model

The majority of models that have been analysed within this section have primarily focused on the individual and internal influences. Conversely, the Community Organisation Model does the opposite, as the objective is to facilitate and engage communities to work together in

identifying what health problems they face, and then work collaboratively in devising a plan of how to resolve these issues (Alcalay and Bell, 2000; Minkler, 2005). The premise behind this model is that health-related issues occur within the environment that surrounds the same individuals; therefore, as they all face the same issues, it should be possible for them to be involved in providing solutions (Labonte, 1990). An example of this would be the obesogenic environment.

Within the model, three methods based on Rothman's (2001) typologies have been used in order to organize and mobilise the community. The first is Social Planning, which is "*a task-oriented method that stresses rational problem-solving, usually by an outside expert, to address community problems*" (Alcalay and Bell, 2000:22). In such cases, the health expert's role is to gather relevant information pertaining to the health problem that the community faces, such as a lack of health and fitness resources or a prevalence of obesity. Following this, they provide recommendations and then facilitate discussion on how these recommendations can be developed collectively into a programme or a course of action. The second method is Local Development; this is a process-orientated approach, wherein the objective is to build community relations and identity (Minkler, 2005). In this instance, experts may form a cross-section of the community into groups and get them to identify and provide solutions for the barriers to improve healthy change within the community. This method encourages cooperation amongst group members and sees the health expert in a role that allows them to coordinate discussions and teach problem-solving skills. The last method is Social Action, which is both a task-based and process-based approach aimed at improving the problem solving abilities amongst the members of that community (Minkler, 2005). With an improvement in such skills, the focus then lies in providing actual changes in community, as well as re-shifting the balance of power with a group who may be seen as disadvantaged (i.e. single parents, women, those on benefits, etc.). According to Alcalay and Bell (2000), Social Action normally occurs in the form protests or through mass movements, with the health expert taking up the role of an activist or advocate. There are many examples where Social Action in changing behaviour has been used, and not always for the purpose of health, such as peace activists, environmentalists and women's rights (Hyde, 1994).

3.9 Summary

This chapter focuses on the overall understanding of food choices made by individuals, addressing what is classified as healthy and unhealthy eating from a number of different perspectives. This has led to governments establishing tailored dietary guidelines for their citizens. That said, the dietary guidelines that are established still may be ignored by its citizens due to the preferences they have towards certain foods. These are influenced by a number of factors and the models outlined by researchers have classified these into three main categories: factors related to food, personal and environmental. This chapter has sought to describe these factors in great detail, particularly in the Saudi context and how they can hinder or foster an influence towards healthier eating habits. Following this, the chapter discusses many theoretical models that relate to changing behaviours towards food, of which, many concepts and components have been considered for this research (i.e. self-efficacy and addressing perceived susceptibility). The next chapter will provide the research methodology that is adopted for this study.

Chapter 4 Research Methodology

4.1 Introduction

In order to examine the healthy eating behaviours of Saudi Arabian citizens and specifically adult females, a mixed methods research design containing three primary data collection phases was developed. This chapter outlines the justification for this research design and details the data collection and analytical approaches of each empirical phase. The chapter begins by contextualising the positivist and intrepretivist epistemological positions commonly used in social research and then discuss how the use of a mixed methods approach which typically combines both approaches can positively contribute to the outcome of this social marketing research. Following this, a detailed description of the sample, data collection methods and analytical approach for all three phases of this work is given (i.e. questionnaire to explore Saudi Arabian's food choice motivations, focus groups to explore the barriers and facilitators to healthy eating, and in-depth interviews with health experts' to understand their perspective on health related behavior change). Ethical approval for this research was received from the Faculty of Science, Agriculture and Engineering, Newcastle University. The ethical issues of informed consent, anonymity and confidentiality are also explained within each data collection phase. This chapter also provide a detailed overview of the data analysis approaches and addresses how the data is triangulated to improve the reliability and credibility of social marketing recommendations.

4.2 Research philosophy/paradigm

A research paradigm or philosophy is a belief system that guides the researcher in how the research data should be collected, analysed and applied (Bryman and Bell, 2007). Guba (1990) asserts that such paradigms can be characterised by the researcher's understanding of what reality is (ontology), how they determine what knowledge is (epistemology) and by the steps that are taken to "find something out" (methodology). Thus, it is suggested that paradigms provide a holistic view of how knowledge is viewed, as well as how and why research within social sciences is conducted. Easterby-Smith *et al* (2012) elaborate on this, stating that a researcher who has a good understanding of the paradigms will give a clear insight into the overall procedure and elements of the study that they will undertake. Moreover, this will help them recognize and construct an appropriate research design, which may go beyond their own previous experience. Within the social sciences and marketing research, two main paradigms

prevail, namely positivism and interpretivism (Harrison and Reilly, 2011). Positivism and Interpretivism can be positioned at opposing ends of the quantitative-qualitative continuum, and there are specific methodologies associated with each of these positions and methods (Carson *et al.*, 2001; Bryman and Bell, 2007). The positivist approach utilizes deductive procedures to determine behavioural trends, whereas an interpretivist approach aims to identify the underlying motives and actions that lead to such behaviours (Baker, 2001). In many cases, quantitative and qualitative purists would hold the position that positivism and interpretivism respectively, are consistent and associated with their own research methodology (Johnson and Onwuegbuzie, 2004).

4.2.1 Positivism

Positivism is defined by Neuman (2010:58) as, *"an organised method for combining deductive logic with precise empirical observations of individual behaviour in order to discover and confirm a set of probabilistic causal laws that can be used to predict general patterns of human activity".* This definition emphasizes the approach that is used by positivists, who explicitly rely upon objectivity and facts in order to explain causal relationships (Carson *et al,* 2001). Collis and Hussey (2009) also recognise hypothesis testing to be a primary component within positivism and one that is closely associated with quantitative data because statistical analysis leads to results that are fixed and absolute. Neuman (2010) supports this, asserting that the positivist paradigm centres upon the discovery, explanation and disclosing of facts in light of precise hypotheses and theories. In applying this approach to consumer research, studies show that the data primarily focuses on consumer preferences, which are comprised of behavioural, motivational, cognitive and situational standpoints. Such assessments are often classed as traditional perspectives as they precede the advent of the anti-positivism (interpretivist) paradigm (Pachauri, 2002).

4.2.2 Interpretivism

As an alternative to the positivist paradigm, is interpretivism which Bryman (2008:712) defines as, *"an epistemological position that requires the social scientist to grasp the subjective meaning of social action"*. That is, the researcher takes an active role within the research by not only collecting objective facts and data, but also through close interaction and observation of their participants' behaviour, and then interprets this accordingly (Lee, 1991). This implies that interpretivists investigate beyond the factual data and seek to comprehend the complexities

and differences that are found within human social actions and the social world (Saunders *et al*, 2009). More specifically, this comprehension occurs using the participants' own frame of reference or the "lived experiences" of the participant (Collis and Hussey, 2009; Tadajewski, 2008:92). Thus, the meaning of social phenomena, as opposed to the measurement of it, is at the forefront. Table 3.1 provides a definitive overview and comparison between the two paradigms.

Table 4.1 Overview and Comparison of Positivism and Interpretivism Paradigms

	Positivism	**Interpretivism**
Main Objective	Explaining the social phenomena through objective facts.	Understanding the meaning of social phenomena through interpretation of participants.
Ontology	Research and researcher are separable. Researcher is independent in order to limit observer bias.	Research and researcher are inseparable (real life instances). Researcher is involved in order to interact closely with the data.
Epistemology	Research is objective and can often exist in the realm of mathematical discourse.	Reality is subjective and socially constructed from lived experiences.
Method	Statistical – data is quantified and seeks to test theories/hypotheses. Structured and outcome driven. Suited for quantitative methods	Exegesis – data is qualitative, non-numeric and seeks to generate theories/hypotheses. Unstructured and focused on process. Suited to qualitative methods.
Relationship between theory/concepts	Deductive, inferential	Inductive, emergent
Nature of data	Data is hard and reliable, true measurement of reality and results can be reproduced.	Data is rich and deep. Subjective, so results are not easily reproduced.

(Adapted from Carson *et al.*, 2001; Weber, 2004; Tadajewski and Brownlie, 2008; Kuznesof, 2010).

Having identified and discussed the epistemological perspectives for both paradigms, it is important to note that it is possible for these two paradigms to be mixed if the research requires it. Mixed methods approaches have received a growing support when researchers appropriately select which paradigm to implement for their research design. In relation to this research, this

task is equally important and is dependent upon a number of issues. Such issues relate to the research questions within this thesis, the researcher's personal beliefs of what is deemed as appropriate in studying human behaviour, how detailed the research intends to be in terms of the authenticity and universality of the results, how useful the results will be for future research and the extent at which they can be used to generalize other research (Patton, 1990). In relation to this research, the research questions investigate the factors affecting food choices, to devise clear recommendations for improving healthy eating habits in Saudi Arabia. This therefore requires both quantitative and qualitative data as previously discussed. This is also reflected in the researcher's belief of what is necessary when studying or attempting to understand human behaviour; that is, it is necessary to have a holistic insight over what influences the behaviours and choices of individuals in what they eat.

In practical terms, positivism has generally been adopted within marketing research. The approach comprises of quantifiable variables and deductive research, where phenomena can be deducted from a sample group of a represented population, typically using quantitative methods that comprise of data from surveys or laboratory experiments (Tadajewski, 2008). In contrast, interpretivism is commonly used for inductive research, where the observation and patterns of a sample group lead to a greater inference of social phenomena; that is, where the data is generally derived from comprehensive interviews and/or observations (Tadajewski, 2008). Given that this research explores different aspects of food choices at different phases within the study, a mixed method approach is best suited to this study.

4.3 Mixed method

Mixed method research is an approach that combines both quantitative and qualitative methods within one study (Cresswell, 2003). Within the domain of marketing and social science, there is evidence to suggest a mixed method approach has been successfully adopted or advocated (Harrison and Reilly, 2011; Cresswell, 2003), and whilst this approach has been referred to by different names (i.e. multi-method, blended research, triangulated studies, integrative etc.), the most commonly used terms for this in marketing research is multi-method and mixed method. Belk (2006) further explains the difference between these two terms, in that multi-method is comprised of different types of quantitative enquiry (i.e. questionnaires, surveys etc.) or qualitative enquiry (i.e. case study, focus groups, interviews etc.). In contrast, a mixed method refers to using a combination of quantitative and qualitative data collection within a study

(Morse, 2003). The latter of the two seems more appropriate for this research and subsequently, mixed methods research can be defined by Johnson *et al*., (2007:123) as follows: *"Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g. use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purpose of breadth and depth of understanding and corroboration"*.

In addition to this, Belk (2006) highlights that many researchers who use this approach often incline towards a positivist paradigm, but use qualitative methods to support their quantitative findings in order to explain certain phenomena. Conversely, there are those that use qualitative methods as their foundation, which is supported by quantitative methods to "*understand the meaning of an observed phenomenon from the perspective of the consumer*" (Belk, 2006:199). What this means is the results from one method can help identify the participants or questions to ask for other methods (Tashakkori & Teddlie, 1998), whilst also broadening the research to better understand and explain a phenomenon (Cresswell, 2008). Thus, this supports the notion that mixed methods research can be classified into having both qualitative and quantitative portions to the overall study, which can be carried out concurrently or sequentially (Belk, 2006; Cresswell, 2003). This further suits the research design that has been outlined for this thesis, as the various phases of the study require different research instruments and methods to obtain the necessary data. As illustrated in Chapter 1, this study comprises research objectives that have specific research requirements for each phase in the thesis. For instance, in response to Research Objective 1, which is to determine the motives of food choices amongst Saudi Arabian citizens, the Steptoe *et al* (1995) Food Choice Questionnaire (FCQ) is an appropriate data collection tool. As a validated questionnaire, the FCQ will provide baseline information with regards to the factors affecting food choices in a quantitative and positivist approach. In contrast, for Research Objectives 2 and 3, which are also consistent with the second and third phase of this study, they require richer and a greater insight into what both hinders and facilitates the behaviour of consumers to eat healthy foods. It is evident that this requires further elaboration and more input from the participants, which is situated in the domain of interpretative and qualitative methods. Hence, the use of a mixed methods approach for this research is justified. It is also important to note is that by adopting a mixed method approach, the triangulation of data is established. Triangulation is referring to adopting different tools for data collection within the same experiment (i.e. focus groups, interviews, observations which significantly

increased the credibility, validity and certainty over the research findings (Alexander *et al*, 2008).

Figure 4.1 provides an illustration of how the three phases of the research are linked and they each contribute towards the following phase.

Figure 4.1 The linkage between 3 phases of the research design

Source: Authors construction.

4.4 Phase 1: The Food Choice Motivations

The objective for Phase 1 is to determine the motives for food choices among Saudi Arabian citizens, bearing in mind the diversity of backgrounds based on gender, age, education and income. At this present time, there is very little information and data concerning the food choice motivations of Saudi Arabian citizens. However, as discussed in Chapter 2, social marketing plans require a clear analysis of a given problem, sufficient background research and identification of who is being affected (i.e. the target group) so that a viable solution can be formulated and implemented. Thus, in order to gather and generate a large amount of factual and statistical data, a quantitative approach is adopted to fulfill such objectives.

4.4.1 Questionnaire

The use of surveys and questionnaires are widespread in many studies and is often used as a primary research tool in quantitative methods (Bryman, 2008). Crombie and Davies (1996) further explain that this method is vital within research pertaining to health and health services. This is because, from a researcher's perspective, questionnaires are an efficient method of

collecting large amounts of data from geographically dispersed individuals in a cost-effective manner. In most cases, the majority of questionnaires comprise of closed questions, in which participants are given specific closed question options that they must choose from. The subsequent advantage in using this approach makes it extremely efficient, as the data is easy to collect, particularly if it is to be administered to a large sample and it is necessary for the researcher to establish any particular experiences, attitudes or preferences from the representative sample group. Other advantages are also cited, such as this method providing an easy approach to how the data is coded and analysed (Patten, 2016). Bryman (2008) further explains that participants could prefer completing a questionnaire, particularly in contrast to having a structured interview because they can benefit from having a visual representation of the questions, which in turn makes it easier for them to fully understand what is being asked of them and answer accordingly also the ability to self-complete at their own convenience. However, there is the potential disadvantage in this, as the participant does not have any particular opportunity to elaborate upon their answers or even seek further clarification if necessary (Bryman, 2008). O'Cathain and Thomas (2004) address this issue by raising attention to the general "any other comments" open question that is often found at the end of many questionnaires. Although they state that this has the potential for participants to elaborate or increase response rates, it can cause difficulties for researchers to analyse or present this data.
Given the ability of questionnaires to collect large quantities of data from geographically dispersed participants, a questionnaire was considered the most suitable data generation method to address Research Objective 2. When designing a questionnaire, it is good research practice to consider existing validated measures. The Food Choice Questionnaire (FCQ) developed by Steptoe *et al.,* (1995) is a validated questionnaire for the assessment of consumer food choice motivations and was therefore adopted as the basis for the survey to assess Saudi Arabian food choice motives.

4.4.2 The Food Choice Questionnaire

Steptoe and Pollard (1995) developed, tested and validated The Food Choice Questionnaire (FCQ) to understand food choice motives of consumers in the United Kingdom (UK). Share & Knox, (2012:58) describe the FCQ as a *"multi-dimensional measure of motives related to food choice that would help to address questions of food consumption and to more broadly inform health and consumer psychology"*. Thus, the rationale and purpose behind the development of the questionnaire was from a public health perspective. That is, because it was evident that food

choices could have a harmful effect on health, this questionnaire could be used to identify what factors influenced what food was consumed, in order to reduce or help modify dietary patterns over time.

The FCQ is a 36-item scaled questionnaire, measuring 9 factors that were presented as influencing consumers' food choices: health; mood; convenience; sensory appeal; natural content; price; weight control; familiarity; and ethical concern (Steptoe *et al*., 1995). In the original questionnaire, a 4-point scale was adopted (i.e.1=not at all important, 2=a little important, 3=moderately important and 4=very important) and participants were asked to use this scale to answer and rate the 36 items concerning their food choices on 'a typical day'.
Their initial study gave extensive detail highlighting issues pertaining to validity and reliability of the whole data tool. It is therefore interesting to acknowledge the intensive and laborious processes that were undertaken to establish a reliable and valid measuring data tool to capture food choice (see Fotopoulos *et al*, 2009; Share & Knox, 2012; Lindeman and Väänänen, (2000).

In the original FCQ (Steptoe *et al*., 1995), n=358 completed the questionnaire with participants' ages ranging from 18-87 years. To identify the multi-dimensional factors accounting for consumers' food choice motivations, the data was analysed using factor analysis and verified using confirmatory factor analysis (see Appendix 1). In addition, reliability was assessed through a test-retest process over 2-3 week intervals, ensuring reliability of the questionnaire (see Appendix 2 for results). The correlations within these tests showed the scores with each scale were >0.70, which suggests acceptable reliability.
Further validity checks, such as convergent validity, were implemented by using test associations between the scale and measures on the FCQ. Consequently, through such evaluations, the aforementioned nine factors were outlined as unique but potentially inter correlated, and the original 68 item scaled questionnaire decreased significantly to 36 items. Thus, many researchers justify the use of the FCQ in their research, whilst using it as a basis to conduct, build upon or modify it for diverse groups and populations accordingly, such as research studies in Finland (Lindeman and Väänänen, 2000), Russia (Honkanen and Frewer, 2009) Belgium (Eertmans *et al.,* 2005), Taiwan (Sun, 2008) and Uruguay (Ares and Gambaro, 2011). Table 4.3 summarises of previous studies that have used the FCQ.

Table 4.2 Overview of previous validation studies of FCQ

Author	Date	Sample size	Aims	Key finding
Steptoe. *et al*	1995	Adults (n=358), Age (18-87) in the UK	To devise a multi-dimensional measure for what motivates individuals concerning their food choices. This data will help to address questions pertaining to the consumption of food, as well as providing a general insight into consumer psychology.	Key differences pertaining to food choices were made when compared by gender, wherein females were more concerned with weight control, health and ethical concerns in comparison to males. Moreover, price, health, convenience and sensory appeal all scored highly on the questionnaire.
Prescotta. J	2002	Female in Japan, Taiwan and Malaysia n=654	To identify what factors influence food choices within different cultures.	The findings showed there were a number of common factors as well as differences. The most important factors that were common across the cultures were natural content, weight control, convenience and health; although price was regarded as the most important in Japan. Moreover, all countries saw familiarity to be the least important factor.
Eertmans *et al*.	2006	Adult students Canada (n=163 Belgium (n=176) Italy(n=163)	To assess at what extent the factor structure of the FCQ was invariant in relation to urban populations in western countries.	The finding fit with Steptoe 9 factors
Yu-Hua Christine Sun	2008	College Students (n=456) in Taipei, Taiwan	To identify and assess any connection between food choice motives, attitudes and health concerns among college students in relation to healthy eating habits.	The findings showed the most important motive for food choices were sensory appeal, mood and price, whereas the least important motive was weight control. In relation to the aim of the research, it showed a direct influential relationship between attitudes and choice over health concerns.
Honkanen.P and Frewer. L	2009	Adult in Russian (N=1081)	To gain a clear understanding over the consumer trends, orientation and spending habits in local supermarkets concern foods. The findings were used to devise a marketing strategy.	Motives included availability, sensory appeal, naturalness and price.
Januszewska, *et al*	2011	Adult Belgians (n=458) Hungarians (n=401) Romanians (n=229) Filipinos (n=32)	Analysing differences relating to the factors and motives of preferences in foods across different cultures and countries.	Key findings included a number of differences – European countries ranked sensory appeal as the most important, whereas the most important factor in the Philippines was health.
Share, M and Stewart-Knox	2012	N= (397) Adolescents age (14-17) in Ireland	Identify how valid the constructs of food choices in Steptoe *et al* (1995) study and Lindeman and Väänänen (2000) study were when applying them against adolescents in	Key findings pertaining to gender: Boys held religion as a higher importance for food choices than girls, whereas girls held animal rights and health to be more important than boys.

			Ireland. This was used to assess whether gender and age group could differentiate the motives for food choices.	Key findings pertaining to age: Younger children held religion, health and animal rights to be more important in terms of food choice motives than older children. Key motivations for food choice: health, mood, price and convenience, religion, animal rights.
Milosevic *et al*.	2012	N= (3085) Adult aged 18 and older in six WBCS (Bosnia- Croatia, Montenegro, Serbia, Macedonia and Slovenia.	Examines the motives for food choice across 6 WBCS using FCQ. The aim was to provide analytical research cross-national comparison of food choice motives within these countries. This was then used to assess whether this could be generalised across UK and other Western European countries, as well as assessing the overall effectiveness in using the FCQ to identify food choice behaviours.	Findings showed similar motives and ranking of food choice motives across all six WBCs. Key findings of most important factors: sensory appeal, price and convenience, health and natural content. Key findings of the least important factors: ethical concern and familiarity.
Markovina, *et al*	2015	N = (9381) Germany, Greece, Ireland, Poland, Portugal, Spain, the Netherlands, the UK and Norway	To discover the validity and reliability of the Food Choice Questionnaire (FCQ) across 9 European countries.	The finding fit with Steptoe 9 factors

In addition to this, researchers have not only replicated the use of the FCQ, but there have been considerable studies that have applied it to assess its validity and whether the 9 factor structure stands up to scrutiny and suitability across different population groups. Honkanen & Frewer, (2008) assessed consumers in Russia (n=1081) on their food choices, in order to identify and gain a deeper insight into the spending habits, consumer trends and shopping orientation within local supermarkets. Their findings were used for marketing strategies such as promotional campaigns and advertising. For example, if a certain factor (i.e. taste) was more prominent as a reason for food choice, marketing would be used to promote this particular area. Contrary to other studies conducted across the world, and more specifically within Europe, health or sensory appeal was not the central motives for food choice. Magnusson *et al,* (2001) Wandel & Bugge, (1997) are just two examples of sensory appeal being the dominant influence over food choice in Europe. Honkanen and Frewer (2008) also highlighted that this was the case within the UK, where sensory appeal, health, convenience and price were among the most important reasons for food choice. However, in terms of Russia, strong motives predominantly included availability of food and product naturalness. They inferred that this was a result of food shortages within the country and highlighted a correlation between events taking place in Russia, in terms of political and economic changes, and how this directly affected the types of food that were purchased. They explained that the inflation rates meant more people spend their saving on food, therefore are more likely to be motivated primarily by price and availability. This study supports claims that food choice motives can be formed as a result of external pressures or situations.

In another study by Januszewska *et al* (2011), they conducted the assessment across four countries; (n=1420), of Belgium (n=458), Romania (n=229), Hungary (n=401) and Philippines (n=332), with the aim of examining differences in the motives and factors of food preference across theses varying populations. The results confirmed there were differences, particularly with sensory appeal, which was ranked as the most important factor among the European countries, but not in the Philippines, which the majority chose health as the most important. The significance of health was seen in Sun's (2008) study, who approached this area of research from the perspective of health concerns, and how this may influence participants' (n=456) food choices and attitudes towards healthy eating in Taiwan. The results revealed a direct influential relationship between health concerns over attitudes and choice motives.

Certain studies have been more refined in their research. A study by Prescott *et al* (2002) looked specifically at the food choice among female consumers across Asian countries (namely Japan, Taiwan and Malaysia). This highlighted commonalities and variance within the food

choice factors, such as health, natural content, weight control and convenience all scoring as the most important aspects, whereas female Japanese consumers saw price as the more important. In addition, all countries regarded familiarity as the least important. In addition, Honkanen & Voldnes (2006) reported a significant difference in food choice when determined by gender, with females attaching more importance to health, weight control and ethical concerns than males. This was also the case in the original test by Steptoe *et al* (1985) and by Piggford *et al* (2008), whereby females scored health as a higher factor than men. Pollard *et al* (1998) concludes that such motives were as a result of physical appearance, which suggests a clear correlation between health and concern for physical appearance, further supporting the claim that these factors are interrelated. Despite the implementation of this questionnaire across such diverse populations and groups, there has been no attempt to conduct this questionnaire on a Middle Eastern population. Therefore, this particular thesis justifies why this research is being conducted and can also add to the body of literature in this field.

However, the FCQ also been criticised. One area of criticism is the limited applicability of the FCQ on sub-groups within population groups (i.e. teenagers, the elderly). For instance, Trew *et al.,* (2005) conducted a study on Irish teenagers but the results were inconclusive as the questions were not suitable for this particular demographic group.

A second area of criticism is the lack of inclusion of contemporary issues in food, ethical concerns, dietary choices (i.e. vegetarianism and veganism) and religious and political dimensions within the original questionnaire. Share & Knox, 2012 revised the FCQ to reflect this and included items to assess contemporary or ethical concerns in food by adding the variables *'organic food' and 'food miles'* (i.e. local or imported foods). Moreover, based on research in the sociology of eating, Lindeman & Stark (1999) included thirteen new questions to specifically assess ethical motives of dietary behaviour, particularly in relation to vegetarianism and ideology or religion. Lindeman and Väänänen (2000) also incorporated additional features for ethical food choices, such as animal rights, religion and political dimensions. In their study (ibid), their results highlighted religion and political values as two prominent factors. Whilst there is a plethora of food choice data and analysis in relation to Western countries, there is a lack of research and empirical data that specifically relates to Middle Eastern countries. Much of the present research focuses on the impact as a result of the food choices, particularly the obesity concerns and BMI of Saudi citizens across diverse demographics. These demographics include urban and rural areas (Al-Assaf & Al-Numair, 2007), female citizens (Alfawaz, 2012; Al Qauhiz, 2010; Bakhotmah, 2012), male citizens (Al-Rethaiaa, 2010) and adolescents (Al-Hazzaa *et al*, 2011; Amin *et al*, 2008). Therefore, to

address this gap in knowledge, the FCQ was administered to a sample of Saudi citizens to understand the factors affecting their food choice.

4.4.3 Questionnaire Design

A questionnaire was designed for the purpose of this research, which comprised of two main parts as shown in Table 4.4. The first part related to the socio-demographic information about the respondents, whilst the second part was intended to explore food choice motivations using the Food Choice Questionnaire (FCQ). The questionnaire therefore, included 36 questions that were introduced with the statement *"it is important to me that the food I eat in a typical day…"* using a five point Likert scale (1= "Not important at all", 2= "a little important", 3="moderately important", 4= "Very important" and 5="Extremely important"), as opposed to using the original four-point scale used by Steptoe *et al*. (1995).

Table 4.3 Questionnaire Format

Questionnaire section	Question area	Questions include	Question types
1	Demographic	-Gender -Place of residence -Nationality -Age -Level of education -Marital status -Income -Number of adults in household -Number of children in household -Responsibility of buying food in household -Responsibility of cooking	Category Open Category List List List List Open Open Open Open
2	Food choice motivation	Food choice questionnaire (Steptoe1995,)	5 point Likert Scale

Source: Authors own construction

Table 4.4 Questionnaire question justification table

Name of scale	Source	Question asked	Item	Response
Food Choice Motivations	Steptoe et al. (1995)	Please give your position on the following statements. It is important to me that the food I eat on a typical day	1) is easy to prepare 2) contains no additives 3) is low in calories 4) tastes good 5) contains natural ingredients 6) is not expensive 7) is low in fat 8) is familiar to me 9) is high in fibre and roughage 10) is nutritious 11) is easily available in shops and supermarkets 12) is good value for money 13) cheers me up 14) smells nice 15) can be cooked very simply 16) helps me cope with stress 17) helps me control my weight 18) has a pleasant texture 19) is packaged in an environmentally friendly way 20) comes from countries I approve of politically 21)is like the food I ate when I was a child 22) contains lots of vitamins and minerals 23) contains no artificial ingredients 24) keeps me awake and alert 25) looks nice 26) helps me relax 27) is high in protein 28) takes no time to prepare 29) keeps me healthy 30) is good for my skin/ teeth/ hair/ nails etc. 31) makes me feel good 32) has the country of origin clearly marked 33) is what I usually eat 34) helps me to cope with life 35) can be bought in shops close to where I live or work 36) is cheap	Five-point importance scale: not at all important, a little important, moderately important, very important, extremely important

4.4.4 Sampling

The sampling method adopted for this research was a non-probability sampling, which is also referred to as non-random sampling. This includes several types, sampling such as quota, judgement, snowball and convenience (Key, 1997, Tashkkori &Teddlie, 1998). For this study,

the quota sampling technique was adopted to ensure the age and gender quota was reached. Zikmund and Babin (2012. p324) explain that quota sampling "*ensure that the various subgroups in a population are represented on pertinent sample characteristics to the exact extent that the investigators desire.*" In light of this, The Central Department of Statistics provide data relating to the age profile of the Saudi Arabia population as shown in Table 4.5.

Table 4.5 Age profile of the Saudi Arabian population

Age category	% of the SA population
15-24 years	23%
25-34 years,	25%
35-44 years	26%
45-54 years	14%
55-64 years	6.9%
+65 years	3.4%

The sample for this questionnaire aimed to fulfil the demographics of the Saudi Arabian population outlined above, with the sample meeting the age and gender quotas outlined above.

4.4.5 Pilot study

A pilot survey was conducted in order to assess the clarity, completion time and maximise linguistic equivalence, as well as to ensure the relevancy of each item included within the questionnaire. The pilot included 15 respondents both male and female from different age groups. Conclusions of the piloted highlight that the questionnaire was fit for purpose, however, one amendment was made as it was found that the item number 12 "*is good value for money*" was not clear to some participants and so was changed to "*have a high nutritional value according to its price*".

4.4.6 Questionnaire administration

With the participants being Arabic-speaking only, the questionnaire was first translated into Arabic. In order to ensure the translation and meaning were correct, a second translator was used to retranslate the Arabic version into English (see Appendix 3), and then two independent

observers matched both the original English version and the retranslated version. In order to improve response rates, the questionnaire was made available for completion online and to maximise coverage for the questionnaire and meet the quota sample outlined in Section 4.4.3, it was distributed through a number of mechanisms including online through social media (Twitter and Facebook) and as paper copies distributed in shopping centres. To access more male participants, the researcher consulted with male colleagues who were trained in social research methods to go to wet markets which are typically frequented by males, because it is deemed culturally inappropriate for a female to approach and talk openly with males within Saudi Arabia. Data collection occurred during the period of March-April 2013.

The questionnaire began with a short paragraph that informed the participants of its purpose, identified that they would remain anonymous, that their participation was voluntary and they could withdraw at any time. In addition, by completing the questionnaire, informed consent was assumed by the participants.

4.4.7 Data analysis technique

The data from the completed questionnaires was imported into Microsoft Excel. This was checked and cleaned by ensuring that individual participants did not provide the same response to all questions, which would indicate minimal thought given to the question. From the total number of questionnaires returned, 377 were usable, of which 174 were male and 203 were female. Following this, in order to conduct specific statistical analysis, the software packages Stata14 and SPSS22 were utilised for the purpose of analysis. Data analysis was conducted in a two stage process, first percentage and frequency analyses were conducted on the data to provide a demographic overview of the sample using descriptive statistics. Second to gain an insight into the food choice motivates of the sample factor analyses were applied, first Confirmatory factor analysis was applied to assess the goodness of the original factor model identified by Steptoe et al (1995) and following this Exploratory Factor Analysis was used to identify the factors appropriate for a Saudi Arabian cohort. The following sections provide a more detailed account of stage 2 of the analysis.

4.5 Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) is used to establish whether a predefined factor model is a suitable fit for the observed set of data, relying upon several statistical tests. This is done by testing how well the measured variables are in representing a small number of constructs (Hair

et al., 2010). In this context, the CFA was adopted to see whether the number of factors identified in the Steptoe *et al* (1995) FCQ model was suitable with the Saudi sample, in relation to the factors affecting the food choice motives. Within this analysis, the following tests were presented:

Chi-Square Test. This test outlines the differences between expected and observed covariance matrices. With respect to this, any values near to 0 specifies little difference between expected and observed covariance matrices. Moreover, when this is the case, the probability level should also be >0.05. Nevertheless, researchers have pointed out a disadvantage in using this test, which is sensitivity towards sample sizes, making it unclear in a number of situations whether the statistical significance is due to the sample size or the actual poor fit of the model. As a result, a number of other measures are implemented for this reason (Hair *et al*., 2010). They are as follows:

- Absolute Fit Indices. This is a direct measure that determines how well a specified model can repeat the observed data. This includes measures such as Root Mean Square Error of Approximation (RMSEA) and Goodness of Fit Index (GFI). The Root Mean Square Error of Approximation (RMSEA) is regarded as one of most widely adopted measures to help correct the chi-square test, in dealing with large sample sizes. In this regard, RMSEA values range from 0-1 and the smaller the value indicates a better fit.
- Incremental Fit Indices (IFI). This includes the Comparative Fit Index (CFI), in which the values range from 0-1 or >0.9 and the higher the value indicates a better fit (Kline, 2010).

Furthermore, the Akaike Information Criterion (AIC) was adopted for model comparison, measuring how well the model fits and also model complexity (Akaike, 1987). These indices are similar to the Bayesian Information Criterion (BIC) (Bryne, 2010), because both of them have been applied to model comparison. In respect to these indices, the lower the values, and the better the fit.

4.5.1.1 Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis is applied in statistical analysis to identify underlying dimensions within the original variables. In the context of this study, it was applied due to the poor fit of the defined factors in relation to the Steptoe *et al* (1995) model. Pallant (2010) explains that

prior to conducting a factor analysis, it is necessary to take the following steps into account: 1) assessing the suitability of the data, 2) factor extraction and 3), factor rotation and interpretation.

In terms of suitability of the data, this was confirmed by conducting a Kaiser-Mayer-Olkin (KMO) test, which measures sampling adequacy and predicts whether the data that has been collated will be satisfactory to proceed. For this, the value in the KMO test should be >0.5. In this study, the value was .930. In addition, the application of Bartlett's test for sphericity, a statistical test to determine whether variable correlation, and therefore whether the factor analysis was appropriate. This is achieved if the Bartlett's test is $p<0.05$.

For factor extraction, the Principal Component analysis was also used to reduce the number of variables. Additionally, factors that were retained were those that had an eigenvalue >1, which, as advised by Kaiser (1960) are to be treated as relevant. Lastly, factor rotation was used to help interpret the data (Pallant, 2010), wherein the Varimax Rotation was applied accordingly.

In order to evaluate goodness of fit, two main methods have been identified. The first method is communality, which measures the correlation between original variables and other variables within that particular analysis (Field, 2006; Hair *et al*., 2006). For the data to be deemed as suitable, communalities are to be >0.5 (Field, 2006). The second method is Total Variance Explained, in which a combined contribution to the total variance of the derived factors is analysed. For this to be deemed as suitable, the Total Variance Explained should be >0.6.

4.5.1.2 Correlation Test

The purpose of using correlation test is to find out whether there were any statistically significant relationships between the three key demographic variables (gender, age and income) and the factors affecting food choice. For instance, does income affect what types of food are consumed, or are there specific factors that affect what older or younger people eat?

Before doing the correlation test, Kolmogorov-Smirnov test was used to test the normality of the data instead of Shapiro-Wilk because the sample size was greater than 50. The data was not normally distributed because the P value was < 0.05 as a result non-parametric tests were used in the analysis in addition to mean, median and standard deviation to describe the data because the distribution of the data was not found to be normal, which is suitable for non-parametric tests as they are distribution free tests, and the study adopted Likert scale responses, which parametric tests are unsuited for.

As a result of the above, a non-parametric measure of association, Pearson correlation co-efficient (r) was used to show if there is any association between age and factors also between income and factors. Correlations were considered significant where $p<0.05$. For more than two groups were compared, Kruskal-Wallis tests was used to explore the association between education and food choice motives. However, for in comparison between two groups (e.g. male/female) Mann Whitney U test was carried out to find out the difference between food choice motives and gender.

4.5.2 Validity and reliability

Validity is defined by Taylor *et al*., (2006, p. 2) as "*the success of a method in probing and/or assessing what it sets out to probe or assess*". Taylor *et al* (2006) explain that if a particular data method is regarded as valid, then any variances within the findings will be seen as variances in the characteristics that are under investigation. In assessing validity, four key approaches are identified: face, content, predictive and construct validity (Taylor *et al*., 2006; Saunders *et al*., 2007). In light of this study, the current instrument measure (FCQ) was already validated by Steptoe *et al* (1995) and employed in the previous research to understand food choice motives. Moreover, to achieve the content validity in this research the the original English version and the retranslated version of the questionnaire was undertaken. In addition, the questionnaire was piloted with 15 participants as explained in section 4.4.4.

In regards to reliability, Rubin and Babbie (2010, p. 82) define it as "*degree of consistency in measurement (impeded by random error)*". Therefore, reliability refers to the amount of error within a method; that is, the less the error, the greater the reliability. It should however be noted that this does not always ensure accuracy (Rubin and Babbie, 2010). Furthermore, it is more applicable to quantitative methodology, as this is easier to replicate and therefore easier to measure. There are three main methods to measure the reliability of measurement scale 1- test-retest, 2- parallel forms (equivalent) and 3- internal consistency (Cooper and Schilinder, 2003). The most common measure in this regard is internal consistency, which can be calculated using Cronbach Alpha and a value of >.70 is regarded as acceptable reliability.

4.6 Phase 2: Perceived Barriers and Facilitators to Healthy Eating

Building on the data that was obtained in Phase 1, the aim of phase 2 of the research was to gain a detailed understanding of the factors affecting food-related behavior change, in particular

to gain an understanding of the perceived barriers and facilitators to healthy eating. Phase 1 yielded insights into what factors affected food choices (food choice motivation) was gained, but from this data, there was a need to acquire a greater depth of insights regarding the perceived barriers and limitations towards healthy eating. This information could then be related to the social marketing theories outlined in Chapter 3. To achieve this, Patton (1990) suggests that a qualitative approach should be adopted to fulfill such objectives. Integrating qualitative methods has become prevalent within market research, as Bellenger *et al* (2011) states, only relying upon pure numbers can be restrictive in this field of research and therefore a need to analyse real world problems must be met. Thus, they assert, *"much marketing research, and virtually all qualitative research, is directed at subjective aspects of consumer behaviour and opinion. These types of concerns must necessarily rely on behavioral sciences for the theories and techniques of research and analysis"* (Bellenger *et al*, 2011:4). Consequently, the findings that have been derived from qualitative methods have led to strategic input by organisations, such as policy-making decisions (Bellenger *et al*., 2011). This means the data is exploratory and subjective in nature, and therefore researchers do not seek to draw hard and fast conclusions (Bellenger *et al*, 2011). In accordance with objective 2 to elaborate upon the existing data and to provide a further insight into the underlying barriers and facilitators to healthy eating qualitative data gathering approach was necessary.

In relation to how qualitative data is collated, Bryman (2012) states the most common data generation techniques are focus groups, in-depth interviews or ethnography/participant observations. It should be noted however, that qualitative studies are often criticised because they comprise of small sample sizes and that the data is only collected in a single setting. Although this does provide rich, thick data and description, it can often lead to concerns relating to their generalisability (Pilnick and Swift, 2011). Swift and Tischler (2010) respond to this by stating that, although the data from qualitative research may not be empirically generalisable, they can be theoretically generalisable. Moreover, generalisability can be improved when considering the sample that is used for a study, by selecting a sample that is representative of the population that is being investigated (Pilnick and Swift, 2011). For this study, focus groups were the chosen method for data collection.

4.6.1 Focus Group Technique

The objective for Phase 2 was to explore the perceived barriers to and facilitators for healthy eating and lifestyle in Saudi Arabia. Thus, in line with the qualitative tradition, this phase implements the focus group method. Focus groups are a form of a group interview characterized

as a directed but informal discussion on a specific topic. Wilkinson (1999:221) more specifically, Sim and Snell (1996:189) suggest that they are *'facilitated and coordinated by a moderator or facilitator which seeks to generate primarily qualitative data, by capitalizing on the interaction that occurs within the group setting*". Thus, the data that is extracted in such settings seeks to provide a platform for the group to "explore and clarify" their opinions and perceptions regarding a specific topic (Kitzinger, 1995:299), without the fear of being judged or criticized (Krueger & Casey (2009).

Time is considered to be a significant advantage in implementing focus groups (George, 2013) and is considered to be more efficient than conducting one-to-one interviews with individual participants (Kitzinger, 1995). Moreover, this approach allows the participants to interact and support other ideas and thoughts from within the group, which they would also not have been able to do within one-to-one interviews. Furthermore, Morgan (1988) compares the data that is extracted from focus groups with that of studies using questionnaires as their primary data collection tool, arguing that questionnaires are static and do not provide details on the 'dynamics' of opinions and attitudes that can be derived from focus groups. Other comparisons can be made between these two methods, such as the spontaneity in the expression of thoughts and opinions in focus groups (Butler, 1996). Lastly, in any approach that is used to collect data, it is imperative that the participants feel safe, supported in expressing their opinions and not judged. Vaughn *et al* (1996) argue that focus groups can offer such a safe environment to the participants, as the commonalities between the group members provides a support mechanism for one another. In turn, this allows them to feel confident in sharing their common opinions, but also, individuals do not feel like they have to answer every question and can share that responsibility among the whole group.

Having said that, focus groups are not without their limitations or disadvantages, which Morgan (1996) believes can stem from either the facilitator or the group itself. The facilitator's role within focus groups can be a positive or negative influence. This refers to how the facilitator behaves during the setting, and whether they can effectively use their interpersonal skills to create an interest in the subject. These include prompting individuals within the group, noticing and responding to non-verbal cues (Vaughn *et al*., 1996) and eliciting responses without directly leading or influencing the answers for their own agenda or benefit (Sim, 1998). In short, the facilitator must remain fair and balanced between an active and passive role. If this does not occur, the danger is that the focus group data will be distorted. The actual interactions that occur during a focus group discussion, may also have a negative outcome. Sim (1998) explains

that some members of the group may become influenced by the more dominant members and as a result may not give their true opinion or views but just go with the majority or dominant view. Others may also feel more embarrassed and issues regarding their privacy may need to be addressed. Thus, issues such as these can impact the data that is collected and its objectivity (Breakwell, Hammond and Fife-Schaw, 2000).

The rationale therefore, behind using this method was that it would help the participants in generating more discussion and interaction within the group, as well as enabling them to benefit and share ideas from one another. This is in line with the practical application of focus group discussions, by allowing the researcher to examine how a group of individuals can work together to interpret and grasp the researcher's questions as well as why they come to such conclusions (Bryman, 2008). When conducting the focus group discussion, the participants were encouraged to be open in their opinions pertaining to their own personal food choices and express the challenges they face in this regard and identify the factors that might facilitate healthier food choices.

In addition, researchers recommend to have 5-8 individuals per focus groups and to conduct them for no more than one hour. A further advantage of this approach is that the participants can be known to one another, which helps in facilitating the discussion as familiarity alleviates shyness and inactive participation Krueger and Casey (2014).

4.6.2 Participants and sampling

Existing literature indicates the sampling procedures used when selecting participants for qualitative studies are predominantly purposive, which comprises of strategically selecting participants that are directly relevant to the research questions (Bryman, (2008). As this study aimed to examine food choice motivations and healthy eating behaviours among Saudi Arabian citizens, target sample profile included both male and female adults of varying ages – all of whom have responsibility for food provisioning. In addition, a form of snowballing, which Bryman (ibid) considers to be an example of purposive sampling, was utilized. This was done by the researcher contacting friends and colleagues who would be considered as the target group for the interview, and then requested they also find and ask others similar to them in joining the discussion. Although this may have its disadvantages, Tonkiss (2004) asserts that focus groups should be homogenous, which McElroy *et al*. (1995:195) describe as "*commonality, not diversity*". Moreover, familiarity amongst the group members is supported by Bloor *et al* (2001), as it will encourage open discussion and reduce silence, generating rich data and

exploration of views and opinions. Table 4.5 provides a breakdown of the composition and location of the focus groups.

Table 4.6 Focus Group Composition

Group number and location	Number of participants	Gender of Participants	Age Range	Date
1. Saudi Arabia. Researcher's house	5	Female	18-45	23-8-2013
2. Saudi Arabia. A participant's house	5	Female	18-55	24-8-2013
3. Saudi Arabia. A participant's house	5	Female	26-58	26-8-2013
4. Saudi Arabia. Researcher's house	5	Male	18-40	27-8-2013
5. Saudi Arabia. A participant's house	5	Male	31-65	29-8-2013

As shown, five group interviews were conducted, each consisting of five participants per group to facilitate increased discussion time and depth of discussion per participant (Kitzinger, 1995) and management of the groups. A conscious effort was made to keep the groups as homogenous as possible, particularly in terms of demographics such as gender and age, as existing literature within qualitative research suggests this is more likely to facilitate open discussion (Sims, 1998). This was also based on previous studies, where each gender discussed similar issues in accordance to food choices (Chambers *et al*, 2007). In addition, due to Saudi Arabian cultural norms, segregation among the sexes is encouraged, which also necessitated gender specific groups.

4.6.3 Discussion guide design

A focus group discussion guide was design and divided into three main areas 1) rapport building, 2) underlying motives and 3) barriers and facilitators to healthy eating. Figure 4.2 diagrammatically represents the parameters of the discussion. To initiate a rich and open discussion, the discussion was semi-structured and predominantly used open-ended questions to generate more comprehensive answers. An open-ended question allows a degree of flexibility when conducting interviews and enables the participants to express themselves freely when answering a question.

Figure 4.2 Focus Group Discussion Parameters

Section 1 was intended to ease the participants into the discussion and to build rapport with them. This section included questions, such as' *what is the meaning of food*' and 'how much attention you pay to your health'.

The discussion then progressed to consider underlying motives for food choice, exploring the factors that affect their food choices. This included questions such as '*what is important to you when buy food and why*'.

Finally, the discussion was directed to consider participant perceived barriers that prevented them from eating a healthy diet and asked the participants to outline the factors that they perceived would help to improve their dietary intakes. Each focus group discussion was designed to last approximately 40-60 minutes.

4.6.4 Pilot Study

The purpose of the pilot study was to ensure there were no unanticipated issues when conducting the actual focus group discussions. This included the format of the questions, the timing of the interview, if there were any ambiguous or unclear questions or that the delivery of the questions was appropriate. The study involved a group of five Saudi women of mixed ages and took place in Jeddah, Saudi Arabia. In order to initiate the conversation minor

adjustments were made. For instance, during the discussion, some of the participants were initially baffled by the question, "what are the factors affecting your food choice?" as it was not something they had given much consideration. When prompting the participants with examples of my previous findings (i.e. sensory appeal, advertising, etc.), it led to a richer discussion. A similar case occurred when discussing barriers and facilitators to healthy eating, so a scenario was given where the participants were given a hypothetical (or in many cases, real-life) situation of going on a diet and then revolving the discussion around this scenario. Both adjustments were incorporated into the final discussion guide.

4.7 Data collection procedure

The focus group interviews took place in August 2013 in the urban locales of Jeddah and Makkah, Saudi Arabia. The rationale behind choosing Jeddah is because it is the second biggest city in Saudi Arabia, and therefore provides a good representation of the country. Moreover, the diversity of this city also includes various classes and social status among its residents. Makkah was also used because it is next to Jeddah and also includes a large diversity of people.

Two of the focus group interviews were conducted at the researcher's house and the other three were at a participant's house[8]. Although holding these meetings in the aforementioned locations may raise questions over the suitability, the reason for this is because in those cities, there is a difficulty in finding and accessing public places or places of neutral ground to arrange private meetings. Many institutes or organisations (including public establishments such as hospitals or libraries) will not allow the public to book meeting rooms unless they are members of staff.

All the focus groups were conducted in the native tongue of the participants (Arabic) so they could further express themselves appropriately. Although a focus group guide was implemented to maintain a focus on the key themes of the research (see Appendix 7), during the course of the discussion there were occasions when the researcher left the guide to pursue a deeper investigation on a specific point or issue that was raised by the participants. In many cases, this was to consider socio-cultural factors that were raised in association with Saudi Arabia specifically, which initiated a great deal of interaction between the participants and the researcher. This positively impacted on the validity of the interview questions in their suitability towards the Saudi Arabian context.

[8] The researcher was required to be accompanied to all home visit according to ethical approval and risk assessment by Newcastle university

Audio recordings of each group were made using a digital recorder, in addition to field notes by the researcher during the course of the interview. Moreover, before the interview began, all the participants were given an information sheet (see, Appendix 4) that explained the study, a consent form (see Appendix 5) to confirm they had read and understood the information sheet and they were happy to participate in the study and 60 Riyals (£10) as a token of appreciation for agreeing to participate. The reason for giving them 60 Riyals prior to the discussion was because they were then free to leave at any time, as per ethical approval guidelines. They were also requested to complete a pre-focus group questionnaire (Appendix 6), which provided the researcher with demographic background information such as age, level of education, marital status and occupation. This information was valuable when analysing the data and potentially used to compare data between the participants.

4.7.1 Focus Group Data Analysis

The data were analysed using thematic analysis, which allows patterns within qualitative data to be identified, explored and described in detail (Braun and Clarke, 2006). According to Braun and Clarke (2006), there are six phases for thematic analysis, which were used in this phase of analysis (see Table 4.7).

Table 4.7 Phases in Thematic Analysis

Phase	Description of the process
1. Familiarising yourself with your data	Transcribing data (if necessary), reading and rereading the data, noting down initial ideas
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes	Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic „map" of the analysis.
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Source: Braun and Clarke, (2006)

As highlighted in (Table 4.7), the first stage in this process is to ensure the data is prepared, and that the researcher is familiar with the data in order for the analysis to occur. This means the data should be transcribed where necessary, printed and read many times in order to develop familiarity with each interview and to also facilitate the development and refinement of codes. In this study, once the focus groups were completed, the recordings were translated and transcribed into English and also kept in a protected file that could only be accessed by the researcher or supervisors. The transcription was in accordance to guidance from Fade and Swift (2011), wherein the level of detail and comprehension of the transcription inclined more towards a word-for-word recording to ensure accuracy of the participants' experiences and views.

The second stage is to begin initial coding of the data, which, in this instance, was done manually using different colour highlighters to differentiate each theme. Although there is much debate between the advantages and disadvantages of manual or computer assisted qualitative data analysis, Welsh (2002) summarises that implementing both approaches is more likely to generate better results. Furthermore, Fade and Swift (2011) demonstrate the various approaches that researchers adopt when constructing their themes and categories, citing examples of manual methods as well as the use of electronic software. What is more important is that the themes are distinct, consistent and supported by the data, whilst also referring back to the research questions and that the themes are not based on a direct response to the focus group questions (Braun and Clarke, 2006).

Thus, for this study, once the transcriptions were completed, a hard copy was printed out to begin manual coding. Each statement made by the participants was coded using headings that related to their topic of discussion that was relevant to the research questions and aims of this study. This included making a note of the titles and ideas for each code on the transcript so that it could be referred back to in the later stages when organising the data into meaningful groups. These codes were subsequently grouped together under specific themes.

Upon coding the data, the third stage was to then sort them into relevant themes, which involved grouping all the similar coded data together. The purpose of this was to identify any relationships between the various themes and sub-themes. This data was then imported into NVivo10, which is a Computer Assisted Qualitative Data Analysis software (CAQDAS) specifically designed to support the analysis of qualitative data using a coding platform. Coding the data is a fundamental aspect of thematic analysis, and although NVivo10 can aid in organising the emerging themes, the primary tool that is able to extract meaningful information from qualitative data is the researcher (Fade and Swift, 2011). The researcher is therefore

responsible to code and categorise the data accordingly. A code (also referred to as a node or index) as described by Fade and Swift (2011:107) is "*simply a label that the researcher attaches to piece of data.*" That is, by systematically working through the transcripts and paying attention to every aspect of the data, the researcher must label the transcripts into meaningful text and emerging similar themes or categories that interest them. This ensured the data was organised in an orderly fashion to ensure tangible results were attained.

Within NVivo, the main categories were abstracted from the inductively derived codes and defined in accordance with the data that was collected.

For example:

CATEGORY: Barriers to Healthy Eating

SUB-CATEGORY: Internal Barriers

CODE: Taste

CODE: Lack of awareness and environment

SUB-CATEGORY: External Barriers

CODE: Price

CODE: Culture and Traditions

When entering this data into NVivo, all the participants' statements from the transcripts were added and allocated to the relevant subcategory and node, so that all the statements for a particular theme were grouped together.

Such codes were allocated to a sentence or paragraph of the participants' speech and if the similar themes are found through comparison across the different transcripts, then they were allocated the same code (Swift and Tischler, 2010).

The fourth stage was to review all the themes once again to reassess the data and see if the identified themes are coherent or if any other data was missed out. This is followed by the fifth stage, where the data was refined and core content to the themes and how they relate to the research questions. The final stage was to then produce the report that is then subject to analysis and scrutiny in light of the existing literature. Upon coding the data, the data was examined to establish relationships and relevancies, and as a result, themes began to emerge based upon related codes (Morse, 2008).

In terms of the thematic analysis for this data, the perceived barriers towards and potential facilitators of healthy eating were the main areas of focus and heavily documented. In addition, the data was broken down by age and gender in order to conduct a comparative analysis of the

data (see Appendix 8). That is, an investigation as to whether there were any differences between the factors of food choices or barriers/facilitators for healthy food between males and females or older and younger groups. This was achieved by comparing responses between the participants. Details and rich description of participant's experiences and the context in which those experiences happen were provided in the results to support analytical points.

4.8 Phase 3: Expert Perspective on Health Promotion

The previous phases provided a general overview concerning the factors affecting food choices, as well as what could hinder or facilitate consumers to eat healthy food. To develop this data further, in-depth interviews with experts were conducted to gain expert insights regarding the Saudi Arabian context, the factors influencing consumer's food choices and the barriers consumers face in adhering to public health dietary recommendations. Thus, based on the data from phase 2, the objective for the third and final phase of this thesis was to explore the perception and opinions of health experts on the health status of Saudi females in particular, as the data began focusing on addressing their perceptions of the challenges associated with achieving a healthy lifestyle and the potential solutions of interventions that could be put into place to address them. In order to gather this relevant data, semi-structured interviews were held with the health experts and their views and opinions were sought through careful questioning guided by a semi-structured interview schedule. As explained in Chapter 2, social marketing processes need to identify the problem and background research is required in order to ascertain the best mechanism to resolve the problem, which in this case, would be achieved through the use of interviews.

Interviews are widely used in qualitative research for the purpose of data collection and analysis (Bryman, 2008). Kvale (2006:483) defines an interview as "*a meeting where a reporter obtains information from a person, as a meeting with another person to achieve a specific goal, and more generally, as a conversation with a purpose*." That is, the primary purpose is to understand the perspective and worldview of the subject by giving them a voice and to express themselves in their own words (Kvale, 2006). As a result, the researcher is in a position where they can delve deeper into information pertaining to a particular topic, as well as enabling the participant to elaborate on their views and opinions, which is something that they were restricted by in other methods such as questionnaires (McNamara, 1999). This is a significant advantage of using interviews as it provides a much more personal form of research due to the specific interactions that occurs. Furthermore, if a semi-structured interview approach is adopted, it enables a greater degree of flexibility on how the questions are formed (Zafeiriou, Nunes, &

Ford, 2001), which subsequently allows the researcher to deviate from their line of questioning in order to probe further or ask follow up questions that may generate a greater benefit to the data analysis (Bryman, 2008). Whilst the advantages are evident in regards to the implementation of interviews, it is not without limitations or disadvantages. For instance, interviews can be extremely time-consuming (Bryman, 2008). More importantly, due to the interaction between interviewer and interviewee, there is a potential to manipulate the interviewee by "faking a friendship" and thus, influence them in providing the answers that suits the purpose of the research (Kvale, 2006). Kvale (2006:484) elaborates upon this, stating "*A research interview may often follow a more-or-less hidden agenda. The interviewer may want to obtain information without the interviewee knowing what the interviewer is after…Modern interviewers can attempt to use subtle therapeutic techniques to get beyond the subjects' defences and obtain the information they seek*." It is therefore imperative that the interviewer remains unbiased and adheres to ethical procedures pertaining to the use of an interview, particularly in not attempting to sway their participants' thoughts or viewpoints.

4.8.1 Interview discussion guide development

To initiate a rich and open discussion, the style of the interview was semi-structured and predominantly used open-ended questions to generate more comprehensive answers. This is because there were occasions where the researcher left the guide in order to pursue a deeper investigation on a specific point or issue that was raised by the interviewee. This positively impacted on the validity of the interview questions in their suitability towards the Saudi Arabian context.

The discussion guide was divided into 6 question areas including 1) health issues amongst Saudi citizens, 2) target groups, who are most at risk of having health problems, 3) future /emerging health related challenges for Saudi women, 4) barriers and facilitators towards healthy diet for Saudi women, 5) current initiatives to help improve diet/health behaviours of Saudi women, 6) recommendation to improve this situation in the future. One may note that the focus of the questions is on Saudi women and the reason for this is because, during the focus group discussions, more emphasis was placed on the barriers and facilitators affecting women than men; therefore, a shift in focus was consciously made to address the needs of Saudi females specifically.

4.8.2 Participants and sampling

The interviews were purposefully sampled to address the research question and to maximise the richness of the data. Therefore, male and female adults (n=13) experts in health (including dieticians and nutritionists) were identified and sought. The reason for choosing this particular sample was because they represent an appropriate cross-section for the type of people that work within the health environment. Moreover, they represent those individuals that are found in the Saudi Health Framework (health care system) as described in Chapter 2. Based upon the access the researcher was able to gain, 5 individuals from public hospitals and 8 from the private sector were interviewed (see Table 4.8), with one of them holding a senior position of health promotion in the region of Hejaz. The others who were dieticians had different levels of interaction with the public and different experiences relating to their ability to impact policy and procedures within the organizations they worked for. This was achieved by contacting some of the private and public hospitals and dietary centres within the Hijaz region and arranging a time and date to conduct the interviews with them.

Table 4.8 Interview Composition

Number	Location	Job title	Date
1	Bakhsh hospital in Jeddah	Gastroenterology	10-7-2014
2	Bakhsh hospital in Jeddah	Dietician	18-7-2014
3	Alnor hospital in Makkah	Diabetic dietician	20-7-2014
4	Alnor hospital in Makkah	Dietician	10-8-2014
5	Alnor hospital in Makkah	Dietician	10-8-2014
6	Alnor hospital in Makkah	Dietician	12-8-2014
7	Alnor hospital in Makkah	Dietician	12-8-2014
8	Diet centre in Jeddah	Dietician	15-8-2014
9	Fakeeh hospital Jeddah	Dietician	19-8-2014
10	Fakeeh hospital Jeddah	Dietician	19-8-2014
11	Fakeeh hospital Jeddah	Dietician	20-8-2014
12	Fakeeh hospital in Jeddah	Dietician	20-8-2014
13	king Fahad hospital in Jeddah	Dietician manager	22-8-2014

4.8.3 Interview Data collection

Prior to conducting the interviews, the researcher sought permission from the hospitals to speak to their health experts in various areas. The interviews took place between July and August 2014, predominantly in Jeddah and Makkah, Saudi Arabia. The rationale behind choosing this region of Saudi Arabia is discussed in Section 4.5.4, in addition to the diversity of this city includes various specialists within the health departments of hospitals and local dietary centres.

All of the interviews were conducted at the hospital or diet clinic where the health experts were based and worked. Audio recordings of each interview were made using a digital recorder, in addition to notes by the researcher during the course of the interview. Moreover, before the interview began, all the participants were given an information sheet (see, Appendix 9) that explained the study, a consent form to confirm they had read and understood the information sheet and they were happy to participate in the study, acknowledging the fact that anonymity and confidentially of their information would be maintained. Depending on the preferences of the interviewee, the interviews were conducted in either English or Arabic.

4.8.4 Data analysis

Similar to the analysis for the focus group discussion, the process and analysis was conducted in accordance to thematic analysis, where the interview was recorded, translated (where necessary) and then transcribed into English to define themes and analyse the data accordingly. When coding the data, this analysis also took into consideration many of the primary themes that were identified in the focus groups, such as specific health issues that were raised, the identified barriers and facilitators to healthy eating, as well as the current initiatives to improve health in Saudi Arabia. It should however be noted that, unlike the focus group discussion, the NVivo software was not referred to in this instance, and the process for the interviews was conducted manually using tables in Microsoft Word because it was more appropriate for the analytical process. For this, each row in the table referred to a specific topic, the themes within that topic and a reference to which interview this particular theme could be found.

4.9 Limitations

The three phases of data collection each had associated limitations. With regards to Phase 1 (administering FCQ for food choices in Saudi Arabia), because a number of approaches were implemented to gather this data, it did cause certain complications. For instance, one approach to administer the data was using an online-based questionnaire through social media; this meant there was very little control over who was the receiver of the questionnaire. To address this limitation and to maintain a quota sampling approach, alternative data collection methods, e.g. self-completion questionnaires in wet markets to increase male participation was necessary.

In relation to the focus groups, the main issue that was faced by the researcher was finding participants who were willing and agreed to take part in this study. The reason that was often

given by those who rejected to participate stated they were too busy or felt shy to share their views in a group setting. Additionally, certain cultural issues meant the focus groups were organised and conducted in a particular way. For instance, due to the strict practice of gender segregation in Saudi Arabia, the groups were homogenous by gender and even required a male chaperone to accompany the researcher when she engaged with the male focus groups. Moreover, there were limitations over where the focus group could be held, as a suitable public location for both participants and researcher was difficult to find. For instance, meeting rooms in local universities are restricted for students only and the public libraries within the area had no meeting rooms available. However, these potential limitations in focus group organisation were overcome and gender segregation supported comparative analysis between the male and female groups. Furthermore, a recurring problem that is often found within focus groups was being able to moderate the group accordingly, in order to ensure all participants were given a fair and equal opportunity to share their thoughts on the topic. This was an extremely challenging task as it meant using techniques to restrain participants who were extremely vocal in their views or spoke for the majority of the time, whilst also encouraging those who were shy to give their opinions.

With regards to the limitations found in the third phase (i.e. interview), the difficulty was to find an appropriate time to conduct the interview that was suitable for both the researcher and the health experts.

Lastly, in terms of conducting both focus groups and interviews, issues were encountered when the participants would answer a question, but when elaborating upon their answers, it would often lead them into answering forthcoming questions that were set in the discussion guide. This created somewhat of a dilemma in whether the researcher should strictly adhere to the discussion guide, which would mean interrupting the participants and inform them they will discuss this question later, or partially disregard the discussion guide for the sake of encouraging discussion and allowing the participants to elaborate naturally on the points they were making.

4.10 Summary

This chapter began with defining the research philosophy and paradigm that is used in research design, in order to determine how the data should be collected, analysed and applied. It went on to define two of the primary approaches in this area (positivism and interpretivism). After outlining the characteristics and features of each approach, a decision to adopt a mixed method of both positivism and interpretivism (i.e. quantitative and qualitative) was made, justifying the reason for this. By adopting a mixed method approach ensures triangulation occurs, which can overcome the limitations that may be found if only one research tool was used. The chapter further described how each of the three phases and the research tools that were chosen for the research design would be implemented, outlining the overall implementation with a detailed account of how the qualitative and quantitative research tools would be implemented during each phase. Lastly, specific attention was given to the ethical considerations that have been adhered to throughout the course of this thesis.

Chapter 5 Quantitative results

5.1 Introduction

This chapter presents the findings from the quantitative survey data, which was extracted from a sample of n=377 Saudi consumers, as a means of measuring their characteristics and factors affecting food choices. To achieve this, the Steptoe *et al*., (1995) FCQ was used as the primary data-measuring tool. As part of this analysis, the demographic characteristics of the sample are first provided, followed by a Confirmatory Factors Analysis to confirm if the same factors influencing food choice motivations by Steptoe *et al*., (1995 holds in a Saudi Arabian context. The next step was to then present a detailed description of the findings using the Exploratory Factor Analysis. The reason for conducting this analysis was because, when applying the confirmatory factor analysis, it was found that the factor structure identified by Steptoe *et al* (1995) did not fit in the Saudi Arabian context and therefore, an exploratory analysis was run to see which factors were important in this context. Lastly, the section ends with outlining the relationships between the factors affecting food choices with gender, age, income and education.

5.2 Descriptive statistics

A descriptive analysis of the data sample included an overview of the demographic characteristics of all those that participated in the questionnaire. Table 5.1 provides the main characteristics of the sample. In total n=377 participants completed the questionnaire n=203 were female and n=174 male; this was representative of the Saudi population. Moreover, the majority of the sample were married (61.5%), with 35% of the sample reporting to be single and 2.9% divorced. The majority of the sample was under the age of 35, with 31.8% of those falling within the 15-25 bracket, and 42.2% in the 26-35 bracket. In comparison, only 4.2% were in the 46-55 age bracket and 1.6% in both 56-65 and 'over than 65' brackets respectively. This was not necessarily representative of the Saudi population and one may postulate that the reason for the majority of the sample being under 35 was because the questionnaire was distributed through social media, and most users would fall under this age range. With regards to education, 71.1%, of the participants were educated at university level while only 1.6% were at primary level (similar to a junior school level – certificate at age 12), 4.0% at intermediate (similar to high school/GCSE – certificate at age 15) and 15.9% possessed a secondary level education (similar to sixth form/A-levels – certificate at age 18). As for monthly income, this

was relatively diverse across the various brackets, with 25.5% earning less than 5,000[9] SAR a month, 30.8% earning 5000-10000 SAR and 24.4% earning 10000-15000 a month. As for those above the monthly income of 20000 SAR, they were significantly less, with 12.2%, 3.4% and 3.7% for the 15000-20000 SAR, 20000-25000 SAR and over 25000 SAR respectively. Furthermore, the data also showed that 31% of all those that responded were mainly responsible for purchasing the food in their homes, whilst 40.1% were not and 28.9% reported that they occasionally do this.

Table 5.1 Descriptive statistics for Saudi sample

Variables	Frequency	percent	Saudi Total %
1) Gender			
Male	174	46.2	50.2
Female	203	53.8	49.8
2) Age			
15-25	120	31.8	23
26-35	159	42.2	25
36-45	70	18.6	26
46-55	16	4.2	14
56-65	6	1.6	6.9
over 65	6	1.6	3.4
3) Education			
primary	6	1.6	17
Intermediate	15	4.0	26
secondary	60	15.9	34
university	268	71.1	21
other	28	7.4	N/A
4) work status			
full time job	163	43.2	
part time job	4	1.1	
unemployed	20	5.3	N/E
retired	11	2.9	
student	134	35.5	
housewife	45	11.9	
5) Marital status			
single	132	35.0	
married	232	61.5	N/E
divorced	11	2.9	
widowed	2	.5	
6) Living arrangement			
Living alone	20	5.3	N/E
With partner	38	10.1	

[9] £1 = 5.50 SAR

with partner and children	181	48.0	
with your parents	116	30.8	
with related relatives	2	.5	
with friend	4	1.1	
with partner, children and parents	15	4.0	
other	1	.3	
variable			
8) Number of children living in the same household			
0	94	24.9	
1	88	23.3	
2	71	18.8	
3	66	17.5	N/E
4	28	7.4	
5	14	3.7	
6	8	2.1	
7	2	.5	
8	5	1.3	
9) place of residence			
Nejd	69	18.3	
Hejaz	219	58.1	N/E
Eastern province	64	17.0	
North	5	1.3	
Asir	20	5.3	
10) Monthly income			
less than 5,000 SAR	96	25.5	
5,000 to 10,000 SAR	116	30.8	
10,000 to 15,000 SAR	92	24.4	N/E
15,000 to 20,000 SAR	46	12.2	
20,000 to 25,000 SAR	13	3.4	
more than 25,000 SAR	14	3.7	
11) Are you mainly responsible for buying food in your house?			
Yes	117	31.0	N/E
no	151	40.1	
some time	109	28.9	
12) Are you mainly responsible for cooking and preparing food in your house?			
Yes	153	40.6	N/E
no	94	24.9	
occasionally	130	34.5	

N/E= No equivalent

Source: author construct and Central department of statistics and information (2014).

5.3 Confirmatory factor analysis for the original 9 factors (CFA)

A Confirmatory Factor Analysis (CFA) was implemented as a means of identifying "a fit" with the original FCQ model in regards to the Saudi sample's food choice motives. To achieve this, a measurement model was conceptualised, consisting of nine latent variables and the 36 original items in the FCQ as observed variables. To analyse the data accordingly, the Stata 14 statistical software package was used and the Maximum Likelihood estimation (ML) was kept as default.

In addition, the overall goodness model fit was considered. Within this, several measurements were present for the overall model fit, including cut-off criteria for fit indices, incremental fit indices and absolute fit index. In light of this, Hair, *et al.* (2010:672) argue that "*at least one increment index and one absolute index, in addition to the chi square test* (χ^2) *value and the associated degrees of freedom should be reported to provide adequate evidence of model fit*". With regards to the cut-off criterion, Hu and Bentler (1999:27) advise the threshold for specific measures that will cause lower Type II error rates, alongside acceptable costs for Type I error rates.

To acquire the fundamental measure of differences between the estimated covariance matrices with the observed variables, the Chi-Square (χ^2) statistic was adopted. Furthermore, the Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA) are all widely adopted absolute fit indices. In addition, the Bayesian Information Criterion (BIC) and Akaike Information Criterion (AIC) were also employed as criterion for mode comparative (see section 4.4.6.1). Table 5.2 provides an overview of the fit statistics from the CFA output and details the guidelines concerning goodness of fit.

Table 5.2 Goodness-of-fit indices for confirmatory factor analysis for Steptoe

Fit index	Threshold	Steptoe 9 factors
Chi-Square	-	3756.192
RMSEA	<0.08	0.121
P Close		<0.001
CFI	> 0.9	0.546
AIC		38917.784
BIC		39330.670
SRMR	< 0.05	0.296

As highlighted, the overall (χ^2) was 3756.192 with a freedom of 594 degrees. In addition, the p-value in relation to this was <0.001, affirming a highly significant result, which, as Milošević *et al.*, (2012: 31) state, this would suggest, "*a significant amount of observed covariance between items remains unexplained by the original mode*l".

One may also note that the value for the RMSEA was 0.121, which is relatively low and would come under the limit that is regularly acceptable for a model with a sample size comprising of n=377; hence, this would be an unacceptable fit for the Steptoe et al., (1995) model. As for the incremental fit indices, CFI, which is the most commonly used measure for this, was estimated at 0.546. One may therefore conclude that the goodness fit criteria results suggest that the Steptoe et al (1995) model gave an unacceptable level of goodness of fit. This means the CFA results for the Steptoe et al (1995) model is unsuitable for the Saudi sample.

5.4 Exploratory factor analysis (EFA)

As a result of the Confirmatory Factor Analysis, it would be justified to adopt the Exploratory Factor Analysis (EFA) to provide a better insight into the factors affecting the food choice motivations of Saudi Arabians, in order to effectively answer the research questions.

5.4.1 Factor extraction

The 36 items of Food Choice Questionnaire (FCQ) were analysed using Principal Component Analysis (PCA) with Varimax rotation. The suitability of the data was assessed before performing PCA by using the KMO[10] measure of sampling adequacy, which was =0.922, classed as Marvellous, leading to strong justification for applying factor analysis (see Table 5.3), and greater than 0.5 for each individual variable. The Bartlett Test of Sphericity was significant (x2 (300) = 5075.940, Sig = 0.000), thus resulting in 6 factors with eigenvalues greater than one, explaining 66.517% of the total variance.

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KMO value	Degree of common variance
0.90-1.0	Marvellous
0.80-0.89	Meritorious
0.70-0.79	Middling
0.60-0.69	Mediocre
0.50-0.59	Miserable
0.00-0.49	Don't factor

(Source: Philips, 2012)

Table 5.3 KMO and Bartlett's Test cycle 5

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**0.922**
Bartlett's Test of Sphericity	Approx. Chi-Square	5075.940
	df	300
	Sig.	<0.001

5.4.2 Validity and reliability of the FCQ

In order to quantify the scale reliabilities for the identified factors, Cronbach's Alpha coefficients were processed into the data software. The overall reliability was .930, which would be regards as "*marvellous*". Table 5.4 provides the reliability statistical data before and after items 2, 7, 8, 11, 12, 13, 14, 21, 32, 34 and 35 were removed. The reason for removing these items is given in Section (5.4.4). In addition, Table 5.5 highlights the reliability for both Steptoe *et al* (1995) FCQ scales and the Saudi sample. Reliability analysis for each of the factors resulted in five subscales, with a Cronbach Alpha score of over 0.6 as follows: Health scale (0.93), Mood and Sensory Appeal scale (0.82), Convenience scale (0.79), Price scale (0.65) and Ethical Concern and Familiarity scale (0.68). Conversely, there were no reliability scores for taste because only one item was loaded under this factor. However, it was kept in the analysis because it was regarded as an important item with loading of 0.817, and according to Clark (1998), taste is the main factor to differentiate the products in food manufacturers.

Table 5.4 Reliability statistic

Reliability statistic before removing the items		**Reliability statistic after removing 11 items**	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
0.945	36	**0.930**	25

Table 5.5 Reliability of the FCQ-scales (Cronbach's a) for Steptoe et al. (1995) sample, and Saudi sample

Steptoe et al.		Saudi	
1-Health	0.87	Health & wellbeing	**0.931**
2- Mood	0.83	Mood & sensory appeal	**0.820**
3- Convenience	0.81	Convenience	**0.796**
4- Sensory Appeal	0.70	Taste	-
5- Natural Content	0.84	loaded with factor 1	**N/A**
6- Price	0.82	Price	**0.657**
7- Weight Control	0.79	loaded with factor 1	**N/A**
8- Familiarity	0.70	Ethical concern & familiarity	**0.681**
9- Ethical Concern	0.70		

Source: Reliability indices are reported from Steptoe et al. (1995, Study 1).

N/A= not applicable

5.4.3 Evaluating the Goodness of Fit of the Solution (cycle1)

To ascertain whether the 9 factors in the FCQ model were suitable, the communalities were examined and subsequently considered as acceptable if it is >0.5 (Field, 2005). Among these, five items displayed communalities of <0.5, which were as follows:

- 2 - contains no additives (0.463)
- 8 - is familiar to me (0.493)
- 11 - is it easily available in shops and supermarkets (0.499)
- 12 - is good value for money (0.482)
- 21 - is like the food I ate when I was child (0.417)

As a result, these were deleted and excluded from subsequent analyses (see Table 5.6 for further details – those in the colour brown are the corresponding items that have been deleted). Moreover, the total variance, which was explained by these factors, were 62.73% in cycle 1, and in the final cycle 5, it was 66.517% (see Appendix 11 for cycles 2, 3 and 4). The purpose for running multiple cycles was to refine the items by placing them into more suitable factors. In other words, when a cycle a cycle was run, some items were loaded under incorrect factors and needed to be checked. This continued until five cycle runs where all the items were loaded suitably under the six factors highlighted in Table 5.7.

Table 5.6 Rotated Component Matrix: FCQ cycle 1

Variables	Factors							H^2
	1	2	3	4	5	6	7	
1- easy to prepare	0.117	0.056	-0.03	0.172	0.79	0.054	-0.02	0.678
2- contains no additives	0.51	-0.076	0.119	-0.07	0.4	-0.051	0.134	0.463
3-is low in calories	0.581	0.077	0.009	0.098	0.22	-0.087	0.507	0.666
4- tastes good	0.15	-0.081	0.003	0.018	0.08	0.757	-0.06	0.612
5- contains natural ingredients	0.768	0.009	0.044	0.192	0.05	0.204	0.16	0.699
6- is not expensive	0.151	-0.007	0.016	0.699	0.12	0.051	0.324	0.634
7- is low in fat	0.661	0.078	-0.08	0.176	0.1	0.035	0.439	0.684
8- is familiar to me	0.049	-0.053	0.479	0.148	0.14	0.434	0.171	0.493
9- is high in fibre and roughage	0.613	0.16	0.16	0.16	0.14	-0.06	0.233	0.529
10- is nutritious	0.776	0.148	0.1	0.137	-0.02	0.195	0.013	0.692
11- is it easily available in shops and supermarkets	0.389	0.176	0.119	0.495	0.06	0.225	-0.06	0.499
12- is good value for money	0.519	0.186	0.036	0.4	0.08	0.091	0.049	0.482
13- cheers me up	0.041	0.487	0.083	0.09	0.16	0.574	-0.01	0.61
14- smells nice	0.096	0.428	0.125	0.127	0.07	0.676	0.067	0.69
15- can be cooked very simply	0.116	0.323	0.148	0.15	0.7	0.253	0.118	0.736
16- helps me cope with stress	0.277	0.571	0.235	0.053	0.24	0.127	0.226	0.584
17- helps me control my weight	0.6	0.342	0	0.194	0.1	0.083	0.369	0.669
18- has a pleasant texture	0.203	0.54	0.284	0.281	0.01	0.1	0.39	0.653
19- is package in an environmentally friendly way	0.385	0.244	0.547	-0.11	0.11	0.132	0.314	0.645
20- comes from countries I approve of politically	0.268	0.172	0.663	-0.07	0.02	-0.014	0.183	0.579
21- is like the food I ate when I was child	0.111	0.253	0.531	0.205	0.09	-0.043	-0.09	0.417
22- contains lots of vitamins and minerals	0.832	0.211	0.202	0.081	0.04	0.072	0.013	0.791
23) contains no artificial ingredients	0.749	0.099	0.213	0.045	0.03	0.019	0.121	0.634
24) keeps me awake and alert	0.27	0.653	0.209	0.067	0.24	-0.098	-0.02	0.617
25) looks nice	0.2	0.674	0.049	0.113	0.04	0.317	-0.02	0.612
26) helps me relax	0.327	0.713	0.181	-0.03	0.14	-0.026	0.042	0.671
27) is high in protein	0.64	0.3	0.223	0.048	0.13	-0.041	-0.15	0.592
28) takes no time to prepare	0.112	0.275	0.223	0.193	0.72	0.102	0.036	0.705
29) keeps me healthy	0.747	0.254	0.087	0.153	0.17	0.165	-0.08	0.717
30) is good for my skin/ teeth/ hair/ nails etc.	0.607	0.462	0.087	0.153	0.14	0.174	-0.19	0.697
31) makes me feel good	0.68	0.355	0.173	0.181	0.1	0.072	-0.07	0.671
32) has the country of origin clearly marked	0.581	0.141	0.486	0.103	-0.03	0.04	-0.04	0.609
33) is what I usually eat	0.056	0.113	0.7	0.229	0.15	0.196	-0.22	0.668
34) helps me to cope with life	0.491	0.371	0.379	0.192	0.03	-0.115	-0.21	0.616
35) can be bought in shops close to where I live or work	0.271	0.149	0.257	0.644	0.11	0.143	-0.24	0.664
36) is cheap	0.127	0.054	0.089	0.732	0.21	-0.013	0.034	0.606
Eigenvalue	7.777	3.764	2.76	2.494	2.27	2.088	1.425	
% variance	21.6	10.46	7.665	6.928	6.32	5.801	3.959	
% Cumulative variance	21.6	32.06	39.73	46.65	53	58.77	62.73	

5.4.4 Factor rotation for cycles (2, 3, 4, 5)

Additionally, by examining the Rotated Factor Matrix, it showed that not all the factor loadings were deemed to be significant. Thus, in accordance to the guidance by Hair *et al*, (1998), those

that were >.5 were taken. All the items with similar cross loading in Cycle 2, 3 and 4 were deleted and the highest cross loadings were taken. For example, in cycle 2, items 7 (is low in fat) and 13 (cheers me up) were removed and omitted from cycle 3 because there was cross loading. Also in cycle 3, there are 5 cross loading items, which meant they were also removed (32, 35, 34, and the highest loading were taken for items 30 and 14). Following this, the cycle was run again after omitting all the previous cross loadings, and it was further found that 2 cross loading items (30 and 14) were identified. From these, item 14 was removed because it was irrelevant in relation to the rest of the items within this factor. This resulted in 6 factors for cycle 5 instead of the original 9, with improvements in the total variance, with a count of 66.517% (Table 5.7).

Table 5.7 Rotated Component Matrix: FCQ cycle 5

Variables	Component						h2
	1	2	3	4	5	6	
22- contains lots of vitamins and minerals	0.837						0.811
5- contains natural ingredients	0.785						0.705
10- is nutritious	0.784						0.724
23) contains no artificial ingredients	0.772						0.648
29) keeps me healthy	0.750						0.716
31) makes me feel good	0.682						0.651
17- helps me control my weight	0.660						0.628
3-is low in calories	0.652						0.598
9- is high in fibre and roughage	0.641						0.553
27) is high in protein	0.623						0.538
30) is good for my skin/ teeth/ hair/ nails etc.	0.581						0.666
26) helps me relax		0.753					0.694
25) looks nice		0.749					0.697
24) keeps me awake and alert		0.659					0.600
18- has a pleasant texture		0.606					0.568
16- helps me cope with stress		0.571					0.563
1-easy to prepare			0.809				0.692
15- can be cooked very simply			0.780				0.761
28) takes no time to prepare			0.756				0.743
20- comes from countries I approve of politically				0.779			0.700
19- is package in an environmentally friendly way				0.671			0.671
33) is what I usually eat				0.654			0.565
6- is not expensive					0.817		0.731
36) is cheap					0.797		0.698
4- tastes good						0.817	0.708
Eigenvalue	9.643	2.057	1.587	1.186	1.133	1.023	
% variance	24.937	13.295	8.849	7.930	6.578	4.929	
% Cumulative variance	24.937	38.232	47.081	55.011	61.589	**66.517**	

The decision to keep cycle 5 as a final cycle and basis for the rest of the analysis was because it was the best version in terms of the clarity, meaning and no cross loading. Moreover, the follow-up confirmatory analysis for this cycle was the best improved fit for the data in comparison to the model from the previous cycles (see Table 5.8). As shown, RMSEA and CFI indicated that cycle 5 had a significantly better fit than the previous cycles, and BIC and AIC was less in compassion to the previous cycles. Table 5.9 presents the final loadings, factors mean scores and loading interpretation for cycle 5, which is further summarised in Table 5.10 by organising it according to most important – least important factor, as based on the mean.

Table 5.8 Cycle's comparison for Goodness-of-fit indices for confirmatory factor analysis for Saudi and Steptoe models

Cycles	Chi-Square	RMSEA	P Close	CFI	AIC	BIC	SRMR
Steptoe 9 factors	3756.192	0.121	<0.001	0.546	38917.784	39330.670	0.296
Cycle 4	1590.341	0.106	<0.001	0.748	27813.59	28108.50	0.243
Cycle 5	**1432.758**	**0.105**	**<0.001**	**0.765**	**26762.37**	**27049.43**	**0.241**

Table 5.9 PCA -Food Choice Questionnaire

Factor Number	Associated Variables	Coefficient (h2)	Variance Explained (%)	Factor Mean (μ)	Interpretation
1	22) contains lots of vitamins and minerals 10) is nutritious 29) keeps me healthy 5) contains natural ingredients 30) is good for my skin/ teeth/ hair/ nails etc. 31) makes me feel good 23) contains no artificial ingredients 17) helps me control my weight 3) is low in calories 9) is high in fibre and roughage 27) is high in protein	.811 .724 .716 .705 .666 .651 .648 .628 .598 .553 .538	24.937	3.23	Health and well-being
2	26) helps me relax 25) looks nice 24) keeps me awake and alert 18) has a pleasant texture 16) helps me cope with stress	.694 .697 .600 .568 .563	13.295	2.79	Mood and sensory appeal
3	15) can be cooked very simply 28) takes no time to prepare 1) easy to prepare	.761 .743 .692	8.849	2.99	Convenience
4	20) comes from countries I approve of politically 19) is package in an environmentally friendly way 33) is what I usually eat	.700 .671 .565	7.930	2.87	Ethical concern and familiarity
5	6) is not expensive 36) is cheap	.731 .698	6.578	2.80	Price
6	4) tastes good	.708	4.929	4.34	Taste

Table 5.10 Mean and Rank order of most to least important food choice motives for Saudi

Rank	Factors	Mean
Most important	Taste	4.34
2	Health and Wellbeing	3.23
3	Convenience	2.99
4	Ethical concern and Familiarity	2.87
5	Price	2.80
Least important	Mood and Sensory appeal	2.79

The variables loading into factor 1 can be interpreted as health and well-being, which accounted for 24.937%, which is the highest percentage of total variance explained and therefore the most important factor motivating food choices in this cohort. Variables associated with mood and sensory appeal loaded onto factor 2, while convenience was loaded onto factor 3. Factor 4 was described as ethical concern and familiarity and factor 5 was referred to as price. Finally, factor 6 was interpreted as taste, which accounted for the least percentage of total variance explained. The total mean factor scores for this factor rotation was medium, however factor 6 and 1 were the strongest respectably (μ=4.34 - μ=3.23), then factors 2 (μ=2.79) and 5 (μ=2.80). Therefore, 'taste' and 'health' are deemed to be the most important factors affecting Saudi Arabians food choices, and 'price', 'mood' and 'sensory appeal' are deemed to be the least important.

These findings from the FCQ were similar to those from Steptoe *et al* (1995), who underlined that sensory appeal, health, and convenience were important factors in the UK sample. Moreover, these findings were also prevalent within a Russian context, where sensory appeal, health and convenience were among the most important motives behind their food choices (Honkanen and Frewer, 2009). Additionally, in the study by Januszewska *et al* (2011), which was conducted in four countries (Belgium, Romania, Hungary and Philippines), sensory appeal was ranked as the most important factor among the European countries, while health was ranked the most important in South East Asia.

Table 5.11 provides a detailed comparison between the Saudi sample, in this study with Steptoe *et al's* (1995) model in relation to the factors affecting food choices.

Table 5.11 Factors affecting food choice for Steptoe et al. and Saudi sample

Original factors	Extracted factors	explanation
1. Health **22) Contains a lot of vitamins and minerals** **29) Keeps me healthy** **10) Is nutritious** **27) Is high in protein** **30) Is good for my skin/teeth/hair/nails** **9) Is high in fibre and roughage**	22) contains lots of vitamins and minerals 10) is nutritious 29) keeps me healthy 5) contains natural ingredients 30) is good for my skin/ teeth/ hair/ nails etc. 31) makes me feel good 23) contains no artificial ingredients 17) helps me control my weight 3) is low in calories 9) is high in fibre and roughage 27) is high in protein	**Health and well-being**
2. Mood **16) Helps me cope with stress** **34) Helps me to cope with life** **26) Helps me relax** **24) Keeps me awake/alert** **13) Cheers me up** **31) Makes me feel good**	26) helps me relax 25) looks nice 24) keeps me awake and alert 18) has a pleasant texture 16) helps me cope with stress	**Mood and sensory appeal**
3. Convenience **1) Is easy to prepare** **15) Can be cooked very simply** **28) Takes no time to prepare** **35) Can be bought in shops close to where I live or work** **11) Is easily available in shops and supermarkets**	15) can be cooked very simply 28) takes no time to prepare 1) easy to prepare	**Convenience**
4. Sensory appeal **14) Smells nice** **25) Looks nice** **18) Has a pleasant texture** **4) Tastes good**	Loaded under factor 2 4)Tastes good	**Taste**
5. Natural content **2) Contains no additives** **5) Contains natural ingredients** **23) Contains no artificial ingredients**	Loaded under factor 1	
6. Price **6) Is not expensive** **36) Is cheap** **12) Is good value for money**	6) is not expensive 36) is cheap	**price**

7. Weight control **3) Is low in calories** **17) Helps me control my weight** **7) Is low in fat**	Loaded under factor 1	
8. Familiarity **33) Is what I usually eat** **8) Is familiar** **21) Is like the food I ate when I was a child**	20) comes from countries I approve of politically 19) is package in an environmentally friendly way 33) is what I usually eat	**Ethical concern and familiarity**
9. Ethical concern **20) Comes from countries I approve of politically** **32) Has the country of origin clearly marked** **19) Is packaged in an environmentally friendly way**		

Within each of the factors, a number of variables were different to the original FCQ, which could be because of Saudi context and the number of variable that had to be removed. Component 1 (Health and Well-Being) was comprised of eleven items, including all six items found in the original FCQ, with an additional two items measuring food choice motivations in relation to weight (3 and 17), as well as two items relating to natural content (5 and 23). This shows that this factor was broader for this context, by including weight and natural content variables, which may be considered as separate motivations in other contexts like the UK. As for Component 2 (Mood and Sensory Appeal), this included five items from the original FCQ, along with three items pertaining to mood (16, 24 and 26), and two items for sensory appeal (18 and 25). Component 3 (Convenience) was only made up of 3 items measuring food choice motivation in relation to convenience, whereas Component 4 (Ethical Concern and Familiarity) consisted of three items relating to this construct, followed by two additional items measuring motivation in terms of ethical concern and one item for familiarity. For Component 5 (Price), two items were present in measuring this construct and finally, Component 6 (Taste) was made up of one item (4).

5.5 Relationship between food choice motives and demographic characteristic

For the third stage of the data analysis, the six factors as a result of the PCA analysis were then used as the basis for this stage, which included a number of tests that would ascertain whether the motives behind food choices would differ in relation to the demographic characteristics (gender, age, income or education). The tests conducted were Man-Whitney U test, Correlation and Kruskal-Wallis test.

Table 5.12 Relationship between food choice motives and gender

Gender		Health and Wellbeing	Mood and Sensory appeal	Convenience	Ethical concern and Familiarity	Price	Taste
Male	**Median**	3.18	2.60	2.83	2.67	3.00	4.00
	Mean	3.20	2.63	2.72	2.79	2.88	4.25
	Std. Deviation	0.89	0.89	0.90	0.99	0.90	0.94
Female	Median	3.36	3.00	3.33	3.00	3.00	5.00
	Mean	3.26	2.92	3.23	2.93	2.73	4.41
	Std. Deviation	1.02	0.98	1.01	1.09	0.91	0.86
P value		**.274**	**.004**	**<0.001**	**.305**	**.058**	**.068**

As illustrated in Table 5.12, a significant difference between males and females were identified, specifically in terms of Mood and Sensory Appeal, and Convenience (at the level of 0.05); that is, these factors affected females more than males. In contrast, there were no other significant differences between genders in relation to Health, Ethical Concern, Price and Taste, which differs from Honkanen and Voldnes (2006), Steptoe *et al* (1985) and by Piggford *et al* (2008), who identified that females attached more importance to health, weight control and ethical concerns than males.

A more detailed insight into the FCQ results for this study may highlight some of the reasons why the food choice factors for Saudi Arabia differ from those in other countries. For example, the significant role that culture plays within Saudi society may be a reason for health and wellbeing and convenience factors. That is, the cultural norms pertaining to transportation for women, who are not permitted to drive by themselves to go and purchase the food they require, often leads them to purchase whatever is convenient in terms of proximity and availability. Moreover, cultural practices relating to social gatherings which are focussed around the sharing of food which is often luxurious (with energy dense macronutrients) rather than healthy may be contributing to an increase in energy intake with its subsequent impact on overweight, obesity and negative impact on health and wellbeing. In addition, due to the sample group being a group of respondents who were predominantly educated, this may have also led to a level of biasness in relation to the factors, as they have a greater comprehension of the benefits and harms are related to food.

Table 5.13 Relationship between factors and age

		Health and Wellbeing	Mood and Sensory appeal	Convenience	Ethical concern and Familiarity	Price	Taste
Age groups	**Pearson Correlation**	0.2	.070	.000	0.179	0.141	-0.106
	P value	**<0.001**	**.178**	**.995**	**<0.001**	**.006**	**.040**

As for any identified relationships between these factors and age (Table 5.13), with the p-value being greater than 0.05, there were no significant correlations between Mood and Sensory Appeal, or Convenience and age. However, the other factors (Health, Ethical Concern, Price and Taste) did show a significant correlation with age.

Table 5.14 Relationship between food choice motives and income

		Health and Wellbeing	Mood and Sensory appeal	Convenience	Ethical concern and Familiarity	Price	Taste
Monthly income	**Pearson Correlation**	0.127	-.039	.015	0.133	-.055	.017
	P value	**.014**	**.455**	**.770**	**.010**	**. 284**	**.744**

Table 5.14 showed the relationship between these factors and income, which highlighted a significant positive correlation between income and Health, Ethical Concern and familiarly (i.e. health (r^{11}=0.127, P=0.014), and ethical concern (r=0.133, p=.010)) respectively). This is interpreted as showing that if the income increased, these motivations to food choice would also increase.

[11]R= correlation coefficient

Table 5.15 Relationship between variables and education

Highest level of education		Health and Wellbeing	Mood and Sensory appeal	Convenience	Ethical concern and Familiarity	Price	Taste
Primary	**Median**	3.14	3.10	3.33	3.00	3.75	3.50
	Mean	3.23	3.13	3.17	3.00	3.58	3.67
	Std. Deviation	0.62	0.67	0.66	1.25	0.49	0.82
Elementary	**Median**	3.73	3.40	3.33	3.33	2.50	4.00
	Mean	3.28	3.24	3.00	3.02	2.67	4.20
	Std. Deviation	0.92	0.79	0.93	0.80	0.92	1.01
Secondary	**Median**	3.09	2.80	3.00	3.00	3.00	5.00
	Mean	2.98	2.88	3.12	3.13	2.89	4.42
	Std. Deviation	1.10	1.05	1.06	1.18	0.91	0.91
University	**Median**	3.36	2.70	3.00	2.67	3.00	5.00
	Mean	3.26	2.71	2.96	2.77	2.81	4.35
	Std. Deviation	0.94	0.91	0.99	1.02	0.92	0.86
Other	**Median**	3.50	2.90	3.00	3.00	2.50	5.00
	Mean	3.41	3.01	3.02	3.07	2.45	4.25
	Std. Deviation	0.97	1.12	1.05	0.98	0.77	1.17
P value		**0.377**	**0.084**	**0.770**	**0.170**	**0.027**	**0.142**

With regards to any relationships between these factors and education, Table 5.15 showed that there was no association between these except for Price (p=0.027).

5.6 Summary

This chapter provides the results that were found from the quantitative analysis of the FCQ administered on the sample for this study. A Confirmatory Factor Analysis was initially conducted, which showed that it did not fit with the initial nine-factor structure proposed by Steptoe et al. (1995). Following this, an Exploratory Factor Analysis was conducted, resulting in the identification of six factors (Health and Wellbeing, Mood and Sensory Appeal, Convenience, Ethical Concern and Familiarity, Price and Taste) that were shown to be the primary motivators of Saudi Arabian food choices as opposed to the nine factors used in the original study Steptoe et al (1995) study.

In light of this, the analysis showed that taste (4.34) and health (3.23) had the highest mean importance factor in affecting the Saudi consumer's food choice, whilst the least importance was given to price, mood and sensory appeal (2.80 and 2.79 respectively) (see Table 5.10).

Moreover, when analysing whether there were any correlations between the factors and the demographical data of the participants, gender differences in the significance of factors were noted with females identified as being significantly affected by mood and sensory appeal and convenience more than their male counterparts. A significant correlation was also found between age and the factors of health, ethical concern and familiarity, price and taste. Therefore, all of this analysis has helped in obtaining a clear foundation on the factors affecting food choices specific to Saudi Arabia, which shall be expounded upon using the qualitative data.

Chapter 6 Qualitative results

6.1 Introduction

This chapter explores the results of the qualitative study and the results gained from data generated from n=5 focus groups, followed by in-depth interviews conducted with health experts in Jeddah and Makkah, Saudi Arabia (n=13). Significant gender differences in attitudes towards health emerged as a prominent theme across both the focus groups and the in-depth interviews. This chapter begins by considering the results of the focus groups and first provides an overview of the sample characteristics. General opinions held by participants regarding food, dietary choices and health are then considered. The chapter then identifies the factors perceived to affect everyday food choices. The focus groups also explored dietary change and in respects to this, the participants provided a detailed overview of the perceived personal motivational influences to dietary change and the perceived barriers to healthy eating and dietary change. In addition, factors and initiatives that would facilitate better food and dietary choices are also identified. The chapter then presents the findings of the expert interviews, which synthesized the insights of the focus groups and provided contextual insights into current initiatives related to healthy eating in Saudi Arabia and provided data that would feed directly into the development of the social marketing plan.

Section 1: Focus group

6.2 Characteristics of the Sample

N=5 focus groups were conducted in two Saudi Arabian cities - Jeddah and Makkah. Each group included 5 participants between 18-65 age group which due to cultural conventions were gender segregated. Table 6.1 provides a detailed overview of the characteristics of the sample including, group, age, gender, geographical location of the focus group and a participant assigned code for purposes of identification.

Table 6.1 Characteristics of the sample

Focus group number	Participant number and ID		Location	Age	Gender	Health condition	Participant identification code
1	NE	1	Researcher's house	18-25	Female	Overweight	F(AGE) 18-25 (GROUP) G1.1
	MN	2		31-39		stomach infection and colon	F(AGE) 31-39 (GROUP) G1.2
	ZE	3		40-49		Obesity	F(AGE) 40-49 (GROUP) G1.3
	SM	4		26-30		kidney problems	F(AGE) 26-30 (GROUP) G1.4
	AS	5		18-25		-	F(AGE) 18-25 (GROUP) G1.5
2	SI	1	Participant's house	18-25	Female	-	F(AGE) 18-25 (GROUP) G2.1
	DL	2		50-59		Obesity	F(AGE) 50-59 (GROUP) G2.2
	SA	3		18-25		Obesity	F(AGE) 18-25 (GROUP) G2.3
	FA	4		40-49		overweight	F(AGE) 40-49 (GROUP) G2.4
	NU	5		26-30		-	F(AGE) 26-30 (GROUP) G2.5
3	MR	1	Participant's house	26-30	Female	Overweight	F(AGE) 26-30 (GROUP) G3.1
	SF	2		50-59		Diabetes and obesity	F(AGE) 50-59 (GROUP) G3.2
	JM	3		31-39		Obesity	F(AGE) 31-39 (GROUP) G3.3
	SH	4		31-39		Obesity and gallbladder	F(AGE) 31-39 (GROUP) G3.4
	ES	5		18-25		Bad digestion and colon	F(AGE) 18-25 (GROUP) G3.5
4	BD	1	Researcher's house	26-30	Male	Overweight	M(AGE) 26-30 (GROUP) G4.1
	MO	2		40-49		-	M(AGE) 40-49 (GROUP) G4.2
	MF	3		26-30		Overweight	M(AGE) 26-30 (GROUP) G4.3
	SW	4		18-25		-	M(AGE) 18-25 (GROUP) G4.4
	MJ	5		26-30		Obesity and heart problems	M(AGE) 26-30 (GROUP) G4.5
5	SU	1	Participant's house	50-59	Male	Diabetes	M(AGE) 50-59 (GROUP) G5.1
	AB	2		60-65		Diabetes	M(AGE) 60-65 (GROUP) G5.2
	FH	3		50-59		-	M(AGE) 50-59 (GROUP) G5.3
	AM	4		31-39		-	M(AGE) 31-39 (GROUP) G5.4
	MS	5		60-65		High blood pressure	M(AGE) 60-65 (GROUP) G5.5

6.3 Health

Attitudes towards health emerged as a prominent theme from the participants, particularly in terms of their concerns relating to this. For some, the maintenance of their health was extremely important and this was an integral part of their life, as the following participants identified:

- MN: *'My concern about health is good through healthy eating and exercise'*. (Female 31-39)
- AB*: 'I like to sleep early to wake up active in the morning and get exposure from the sun. I like to go to the close places walking instead of driving. Also I don't like to eat until fullness'. (Male* 60-65.)

However, for a minority of participants, much less emphasis was placed on small attempts were made to improve health through diet. This was expressed by the following participants:

- NE: *I do not care that much about my health but I try to eat and drink what is useful for my health. (Female 18-25)*
- BD: *Not that much but some time I try to eat fruits and vegetables. (Male 26-30)*
- AB: *Not that much and for any reason or illness I just go to the pharmacist instead of hospital but I try to walk every day. (Male 60-65)*
- AS: *Not that much but some time I try to reduce the consumption of fat and sugar. (female,18-25)*

A number of ways in which participants looked after their heath were identified; the most prominent of which was the maintenance of a balanced diet, and physical activity. An overview of these themes are presented in Table 6.2.

Table 6.2 Ways of looking after health

Ways of looking after health	Age group	Gender	
		male	female
Adopting and maintaining a balanced diet	18-25	SW,	NE, AS, SI, ES,
	26-30		SM, NU, MR,
	31-39		MN, SH,
	40-49	MO,	ZE, FA,
	50-59	SU, FH,	DL, SF,
	60-65	MS,	
Exercise/ walking	18-25		NE, AS, SI,
	26-30	BD,	
	31-39		JM, SH,
	40-49		FA,
	50-59	FH	DL,
	60-65	AB, MS	
sleeping well/early	18-25	SW,	AS, ES,
	26-30		
	31-39		
	40-49		FA,
	50-59	SU,	
	60-65	MS,	
regular medical check ups	18-25		
	26-30		
	31-39		
	40-49		ZE,
	50-59	SU,	
	60-65		

6.3.1 Adopting and maintaining a balanced diet

The adoption and maintenance of a healthy diet was the predominant sub-theme that emerged from the data. Interestingly the maintenance of health through diet was a strategy identified more by female participants than males. Many of the participants who cited a healthy diet as a means of looking after their health made a conscious effort to eat and drink foods that they considered to be good for them, including eating fruits and vegetables and drinking lots of water and active avoidance of unhealthy foods, which was outlined by the following participants:

- (Mn) *said my concern about health is good through healthy eating and exercise. (female, 31-39)*
- (SI) *by eating healthy food, doing exercise and avoiding fast food. (female, 18-25)*

- (Sm) *I try to avoid fast food and chose beneficial foods rich in vitamins; I prefer salad. (female, 26-30)*
- (SU) *By drinking lots of water especially in winter time because we don't fell thirsty in this season and eating fruits and vegetables (male, 50-59)*

In addition, the majority of participants felt that care should be taken when making food choices and wherever possible healthier options such as choosing whole grains, low-fat, fortified foods and ensuring the nutritional balance of food and drinks as the following participants illustrate:

- (As) *reducing calories like drinking low fat milk and consume food which contains fibres and vitamins also by drinking herbal and a lot of water. (female,18-25)*
- (Mn) *eating whole grain flour instead of white flour and trying to find the best alternative; also by eating a lot of fruits, vegetables neutral and boiled food and avoiding fast food because it contains a lot of calories and will lead to obesity. (female,30-39)*
- (FA) *I always try to eat what is useful for my health because food gives us energy and vitality, and helps to perform mental and physical activity. (female,40-49)*

Some participants were very specific about the type of foods they would consume:

- (SH) *reducing the amount of fat in cooking. Eating food which contains of omega 3 like fish and nuts. (female,31-39)*
- (ES) *I like to add onion and garlic to my food because it is strengthening the immune system.*
- (MR) *I try to eat what is useful for my health like vegetables and I like to have herbal drinks like camomile and green tea. (female,31-39)*

Others however, did not pay as much attention to the nutritional composition of the food they ate and based their food choices upon factors such as their level of hunger and need for food, availability and convenience, their mood at the time of choosing food and their taste preferences. This was highlighted by the following participant responses:

- (Sm) *it depends on my requirements and the food I like I will decide what to eat. (female,26-30)*
- (NU) *actually when I am hungry I don't think about anything I eat what available but some time I consider my health. (female,26-30)*
- (SI) *I interested in food in terms of the ingredients if it is natural and tasty, and its benefits to my body. (female,18-25)*
- (JM) *I eat what is available and convenient to me. (female,31-39)*

- (AB) *I don't care that much about my food unless somebody controls my diet. (male,60-65)*

6.3.2 Exercise

Physical activity and exercise in addition to diet was cited as an important way of staying healthy:

- (Mn) *said my concern about health is good through healthy eating and exercise. (female, 31-39)*
- (SI) *by eating healthy food, doing exercise and avoid fast food. (female, 18-25)*
- (DL) *by walking for half an hour daily and drinking a lot of water. (female, 50-59)*

Participants report to take practical steps to incorporate this into their daily routines. For instance, a male participant stated "*I like walking for example; I park my car far away from the entrance for my work to allow me to walk more.*", FH (male, 50-5) MS (male, 60-69) also explained instances where he would choose to walk, instead of driving - "*If the place is close to me, I like to walk instead of drive**".*** Interestingly, although the majority of the participants cited the importance of exercise they only referred to only mild forms, such as walking due to culture norm for female in relation to exercise outdoor and lacking of convenience gyms.

6.3.3 Sleeping habits

Participants' sleeping patterns, where identified as an additional sub-theme in the maintenance of health. Participants stated making sure they got adequate amounts of sleep each day was a means of ensuring they stayed healthy. Participants explained how going to bed early would ensure that participants were more energized in the morning.

- (MS) *I like to sleep early to wake up active in the morning and get exposure from the sun. (male, 60-65)*
- (AS) *enough sleeping is good for our health. (female, 18-25)*

6.3.4 Regular medical check up

Ensuring regular medical checkups was a final sub-theme that was identified to be important particularly to older respondents within the focus groups.

- (SU) *Also sleeping early and having regular medical check. (male, 50-59)*
- (Ze) *by going to the hospital every 6 months to do the main check-up for any health problems and lack of vitamins. (female, 40-49)*

For others regular medical checkups were not routine and self-medication *via* the pharmacy would be the standard approach rather than seeking medical assistance, the reason for this private hospitals are expensive and public or general hospitals have long queue or waiting list,

- (AB) *for any reason or illness, I just go to the pharmacist instead of the hospital (male, 60-60)*

For others seeking medical assistance in the form of regular health check-ups were initiated by the onset of a health problem that had emerged, For instance:

- (MJ) *I was not that concerned about my health, but now I really look after my health due to health problems (male, 26-30)*
- (MS) *I started to look after my health after I had health problems. (male, 60-69)*

6.4 Relationship with food and health

The second major theme that emerged from the focus group discussions was the participants' relationship with food and the meaning that they ascribed to food which addressed what importance they ascribed to food and the impact that they felt food had upon their health. Within this theme, two sub-themes were found to be important, these were protection from illness and Energy.

6.4.1 Protection from illnesses

When discussing how the participants considered how food affected their health, the results were unanimous in that all the participants viewed diet and health to be inextricably linked. Gender differences in how food was perceived were identified females considering the consumption of 'healthy' food to be vital to guard against illness protecting the body its organs to ensure good health over life-course.

- (NE) *[food] is Important in terms of the vitality of the body and organs and food is essential for the growth of the human body. (female, 18-25)*

In addition to asserting the importance of food for body and organs, a further insight into the results also revealed that the majority of females regarded food as a means of strengthening the immune system and a protection against major diseases and illnesses, such as heart problems or hypertension as the following participant identify

- (Mn) *food is very important for health because it prevent us from major diseases like heart problems and hypertension. (female, 31-39)*
- (As) *food provide us with energy and make our immune system stronger and protect us from sickness. (female, 18-25)*
- (SA) *food provides us with calcium, vitamins and strengthens the immune system. (female, 18-25)*
- (MJ) *in my opinion in the past I don't think there is a relationship between food and health. The important thing is the taste but now I have changed my mind, food is really important to health because healthy food can prevent us from having health problems like obesity. (male, 26-30)*
- (SU) *food can provide us with vitamins and prevent us from disease (male, 50-59)*
- (FH) *very important, balanced diet will reduce the percentage of health problems as a result; we will have a better ageing process and will live longer (male,50-59)*

6.4.2 Energy

In stark contrast male participants' food was viewed somewhat differently, being regarded in more functional terms being primarily seen as a source of energy. Among the reasons for this participants identified energy as essential in order to help them perform daily tasks as part of their working lifestyle:

- (BD) *food provides us with energy and vitality so we can do our works. (male, 26-30)*
- (AM) *food makes our body strong so we can do our work. (male, 31-39)*
- (MS) *Food gives us energy and protects us from disease. (male,60-69)*

6.5 Food related health problems

The perceived susceptibility of health problems as a result of food and dietary choices was a further theme that emerged from the data. Although many participants felt foods could prevent health problems, they also acknowledged that consuming the wrong types of food were a potential cause of health related problems. A number of health concerns as a consequence of dietary habits were identified by the participants and these included, obesity, diabetes, hypertension, Anaemia, week immune system, kidney disease, heart problem, cancer, bones problem like osteoporosis weakness in thyroid gland.

The health issues that were predominantly identified were obesity and diabetes, wherein all participants identified this to be the most significant dietary related concern and a prevalent issue within Saudi Arabia as the following participants recognise:

- (SA) *most of people in Saudi suffer from obesity (female, 18-25)*
- (MF) *Obesity is very prevalent in Saudi Arabia, for example, my family suffers from obesity (male, 26-30)*
- (MJ) *yes, I suffer from obesity for a long time and this caused heart problems to me (male,26-30)*

Additionally, the reasons for such an issue was because the participants recognized an unhealthy or unbalanced diet (without exercise) to be the cause:

- (Ze) *Obesity due to lack of balanced diet* (female, 40-49)
- (DL) *eating with less exercise will lead to some problems and diseases like obesity and high cholesterol* (female, 50-59)
- *Unhealthy diet can cause some health problems like obesity, diabetes and stomach disease*

In relation to diabetes, again awareness was shown that this is an issue that affected Saudi Arabian citizens, although, interestingly, participants regarded genetic susceptibility to this disease to be the main cause and diet a secondary factor.

- (SU) *I suffer from diabetes and it could be due to genetics or from my poor eating habit (male, 50-59)*
- (MO) *for example my father suffers from diabetes (male, 40-49)*

Another health issue that was noted to be related to dietary intake was high blood pressure.

- (MS) *high blood pleasure as I suffer from it* (male, 60-69)
- *(MO) for example, my mother suffers from Blood pressure (male, 40-49)*

Abdomen problems, such as "digestive problems" and "gallstones" were a further health outcome noted.

- (MN) *such as colon……and stomach diseases like digestion problem* (female, 31-39)
- (SH) *……. and gallstones (female, 31-39)*

Additionally, due to the types of foods that are consumed in Saudi Arabia, two of the participants cited high cholesterol as a health issue in relation to food.

- (DL) *eating too much with less exercise will lead to some problems and diseases like obesity and high cholesterol* (female, 50-59)
- (SH) *like high cholesterol* (female, 31-39)

6.6 Meaning of food

The fourth major theme that emerged during the focus group discussions centred on what food meant to the participants and the role it played in their lives. The responses could be categorised into two main distinct attitudes towards food; namely, for 'social' or 'survival' purposes, but also some of the participants referring to how food made them feel (i.e. their mood). Social vs survival purposes seemed to be the primary meanings ascribed to food. In regards to a social eater, this refers to an individual who often eats when they are with others. In contrast, eating for the means of survival is where food is viewed as a source of energy so that the human body can function appropriately. In light of this, the data revealed that the majority of female participants said food meant that families were brought closer together or for celebration or entertainment purposes (i.e. socially):

- (Mn) *Food is about meeting with friends and happiness. (female,30-39)*
- (Sm) *means to me family gathering. (female,26-30)*
- (NU) *Food means to me enjoyment (female,26-30)*
- (Ze) *Food means celebration because its serve variety of food. (female, 40-49)*
- (MS) *also its means happiness and family gathering because I feel happy when I eat food especially with my family (male, 60-69)*

Conversely, others (predominantly males) simply saw it as a source of energy and a means to help fulfil the need for hunger.

- (MO) *Food mean to me to fill the hunger. (male,40-49)*
- (AB) *Food means to me energy. (male,60-65)*
- (SU) *Food is the basis of life we can't live without it. (male,50-59)*
- (NE) *food is the source of energy…it is not about enjoyment it's about building energy (female, 26-30)*

Much of this was a spontaneous response, wherein male participants did not overthink their attitude towards food and they were very open when answering. However, with the female participants, there seemed to be more thought that went into how they felt about food and they gave it more value in comparison to their male counterpart, particularly in terms of how it could be used to build ties with others. Moreover, it was interesting to note that many of the responses could be seen as relating directly to the type of lifestyle the participants live. That is, the Saudi Arabian culture generally adheres to a traditional nuclear family structure, where the males are regarded as "breadwinners" and females as "housewives" (Arab-Moghaddam et al, 2007). This could account for their attitudes towards how they view food respectively, both as a means of energy to work or as a means of building relationships within the family.

6.7 Factors affecting food choice

One of the main themes that were extracted from the discussions during the focus groups related to the perceived factors that affected the participants' food choices and purchases. From the responses that were given, the results were extracted and categorised into three specific areas: i) factors directly related to the product including sensory appeal and flavour, healthy/natural content, quality, brand, price; ii) the individual; and iii) the environment for example, appetite and mood, familiarity, weight control, time, society (parents, children and partner, friends' recommendation, family preference) availability and advertising.

6.7.1 Product Factors

The product factors refer to the actual features of the food items, which motivate the participants to choose such items each of which will be considered.

6.7.1.1 Sensory appeal and flavour

Sensory appeal taste and flavor were amongst the more prevalent factors, identified by participants as a means of selecting food. For instance, SW (male, 18-25) stated, *"the taste is very important…if the smell of the food is nice I will buy it"*, whilst MO (male, 40-49) strongly expressed his views as ***"****the main important thing to me is the taste. It is not necessary to be healthy as long as it's tasty."*

With regard to the female participants that expressed sensory appeal and flavour as the motives for their food choice, they related this in the context of trying new foods; that is, they would be cautious to choose new foods if they did not like the flavour or if it did not look appealing. For instance, when asked if she would buy strange looking food, MN (female, 30-39) replied ***"****maybe I will not accept the flavour so I will not try it.**"*** *AS and JM answered the same question with a similar response:*

- AS: ***"****I avoid it because I do not know what it is taste." (female, 18-25)*
- *JM: "I will not eat it." (female,31-39)*

6.7.1.2 Healthy and Natural Content

Natural content (i.e. organic foods) and foods that were deemed as healthy were also considered. Interestingly, even though more females cited this as a factor, both male and female

participants reported favoring the natural content of food and opting for fresh foods over canned or foods that contained additives and preservatives.

- *(FA) "If the food contains preservatives I will avoid buying it so I prefer natural content." (female, 40-49)*
- *(MS) "Natural content of food is very important to me I don't like canned food. I am willing to pay extra money as long as the food is natural. For example, if I found meat and one of them is fresh and expensive and the other on is frozen and cheap I will buy the fresh one. "(male, 60-69)*

This further highlighted that some of the participants would put foods that gave them the necessary nutrients and benefits above all else, even if it meant having to pay more for these product attributes.

- *(Ne) the price is not important to me as long as the meal contain nutrients and beneficial to me (female, 18-25)*

6.7.1.3 Price

The analysis also indicated that a significant proportion of respondents regarded price and income to be a prevailing factor influencing their food choices. Many participants were explicit with regards to the price of a product. For instance, MN (female, 31-39) clearly stated "***The price is important to me",*** which was also affirmed by others:

- *(FA) If the price is high I try to find the alternative with reasonable price (female, 40-49)*
- *(As) Also the price if I can afford to buy it I will do, if not I will try to find the alternative. (female, 18-25)*
- *(AB) it depends on the price, my appetite and the requirements of my family. (male, 60-65)*

Others elaborated on the price, and in certain instances they related it to other features of the quantity of the food product itself. For example, (MO, male, 40-49) explained, *"If the quantity of the food is reasonable in relation to the price I will buy it"*. Conversely, some felt price was not important provided the food was nutritious and healthy: *(Ne) said the price is not important to me as long as the meal contain nutrients and beneficial to me (female, 18-25).* It should be noted that some of the participants specified that price was an issue due to the actual household income and also because of the household size (i.e. how many family members lived there).

6.7.2 Individual Factors

Individual factors refer to the personal attitudes and opinions that individuals have in relation to particular food items. This is demonstrated by a preference or dislike towards particular food, which could be based on how it makes the participant feel or the consequences that they feel may come from it. With regard to the participants' personal and individual reasons for food choices, the results highlighted certain trends that were formed among the genders.

6.7.2.1 Appetite and mood

The majority of participants (from both male and female groups) cited appetite and their mood as a key factor affecting their food choices. Many clearly stated that if they desired a certain type of food, they would choose to eat it. For instance:

- (Mn) *depend on my appetite if I want specific type of food I will go to the restaurant or I will cook it at home* (female, 31-39).
- *(SU) appetite can affect my food choice.* (male, 50-59)

However, it was also stated that their appetite could also be affected by their mood, which could influence them into eating certain foods or no food at all:

- *(Ze) when I am in a bad mood I eat more chocolates.* (female, 41-49)
- *(MJ) I don't like to eat when I am in a bad mood.* (male,26-30)

6.7.2.2 Familiarity

Participants cited appetite and a familiarity of the food that they used to eat during their childhood as two key motives for their food choices. For instance, (AM, male) said, *"when I chose my food also I depend on what I used to eat for example; I used to eat specific brand of cheeses since I was a child so until now I still eat it"* and (SI, female) stated, *"it depends on my appetite and the tendency to eat specific type of food."* Moreover, many males stated they would choose foods if it was an opportunity to try something new. They explained how keen they were to try new food and that the fear of the unknown would not necessarily stop them from opting to try it. For instance, (SW, male, 18-24) stated *"I love to try everything new"* and AB (male, 60-65) said, *"I don't have any problems to try new food"*. However, it should be noted, that whilst some did not mind trying new foods from different countries and cultures, as a caveat, they would only do so if a friend recommended it. Incidentally, friend/family recommendation,

which is an external influence, was expressed by both genders as a factor for food choice. (MO): *"if somebody recommends it to me I will try it. I have tried Sushi and it was good." (male, 40-49).*

6.7.2.3 Weight control

Whilst many female participants also cited the trial of new foods as a reason for their food choice the major trends that were established in relation to their personal influences were related to health and weight control. This was observed across all the age groups, more so in younger participants. Furthermore, these factors placed a significant impact on the participants' overall eating habits and, in many cases, their weight was the sole determining influence over what they would or could eat. This is highlighted concisely by the following female responses:

- *(As) I always weigh myself because my weight will determine what I eat. (female, 18-25)*
- *(NE) If my weight is high I will reduce the amount of food to come back to my original weight. (female, 18-25)*
- *(FA) If I gain weight I will try to reduce the quantity of food and I will eat more fruits and vegetables. (female, 40-49)*

6.7.3 Environment factors

Environmental factors refer to those factors are external and surround the individual but may have a direct effect on their food choices. They are in essence, out of the control of the individual, but can be strong enough to influence them. For instance, price, family preferences, advertising and availability were all factors that were cited by the participants as external environmental factors. The following sections provide an overview of the prominent environmental factors identified.

6.7.3.1 Recommendation from others and family preference

The influence of friends and family was a strong deciding factor in food choices as the following participants suggest:

- (SU) Also my family preference …. can affect my food choice. (male, 50-59)
- (NE) if my friends recommend me some new meals or flavour I will try them. (female, 18-25)
- (SA) also friend's recommendations can affect my choice. (female, 18-25)

In addition to this, many of the participants made their food choices as a result of their family requirements, which determined what would be consumed within the traditional family setting.

- (AB) *it depends on … and the requirements of my family*. (male, 60-69)
- (SU) *Also my family preference can affect my food choice* (male, 50-59)
- (FA) I cook the food depend on my husband and kids' requirements. (female, 40-49)

6.7.3.2 Availability and cultural norms

Availability and convenience was cited as a factor that affected the food choices, this was of particular importance for female participants who were the main food preparers in the home. In relation to this factor, reference was made specifically to a number of restrictions that are put on Saudi Arabian female home makers when procuring food. Culturally it is not acceptable for females to travel without a chaperone. As a result, many females found it difficult to go to certain shops or markets that stocked food they required because it was too far away from the home and organising transportation and a male relative to accompany was often difficult. This resulted in compromised food choices based on what was available or could be purchased locally as MN, said *"the location of shops is not convenient from where I live I need car to go there"*. (female, 30-39)

6.7.3.3 Advertising

Another factor influencing food choices was exposure to advertising. This was a factor predominantly mentioned by younger females' participants. One participant stated advertising stimulated interest and was a motivating tool that would encourage her try new or healthy foods: ***"****we love to try everything new so when we see any advertisement about new foods or flavour we love to try these foods.* ***"Other*** participants concurred:

- *(ES) advertising can affect my choice also sensory appeal and mood (female, 18-25)*
- *(NU) Advertising motivates me to buy and try new food. (female, 26-30)*

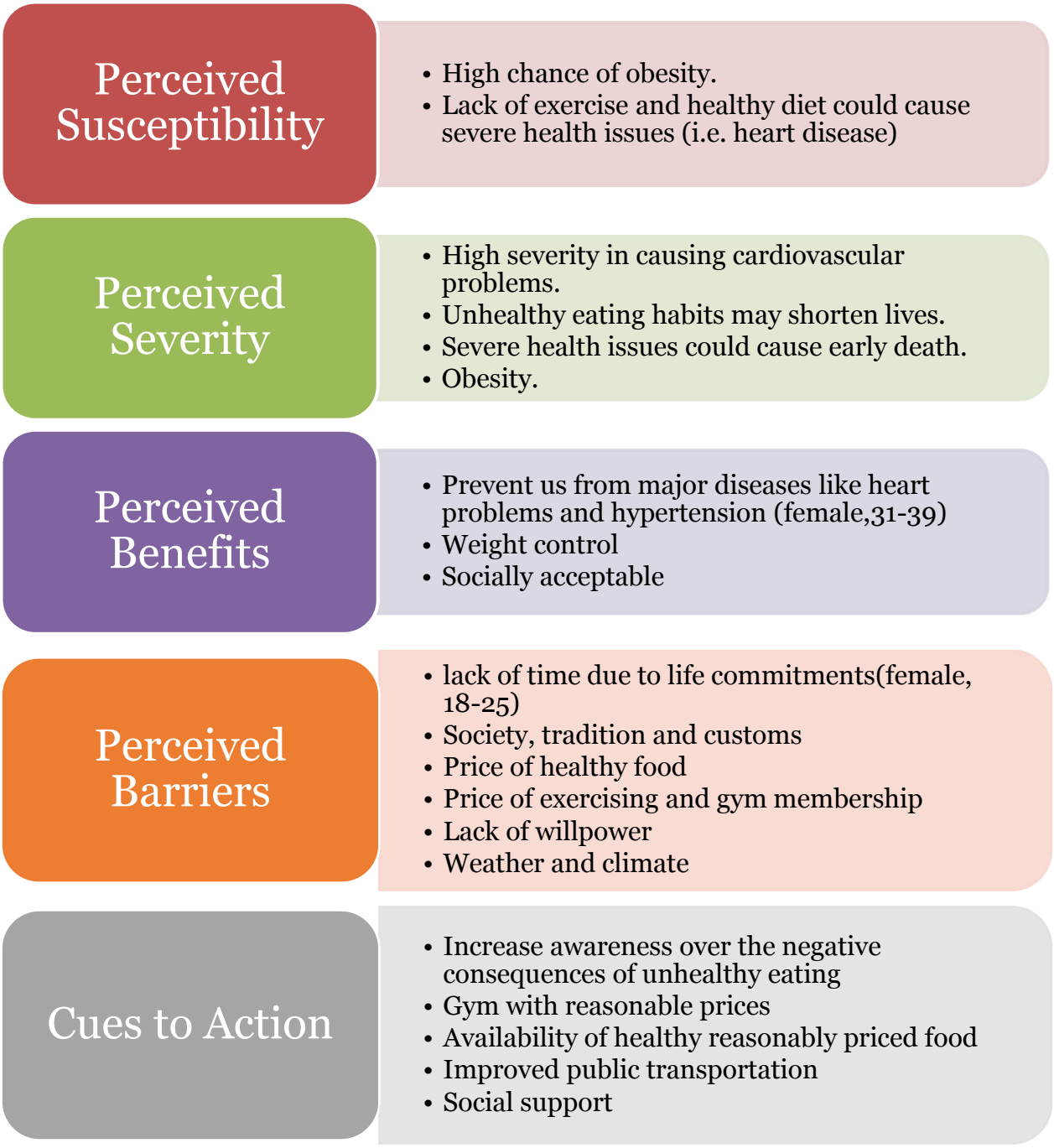
6.8 Dietary change

The focus group discussions considered attitude towards dietary change and willingness to make changes to their diets, and more importantly, what were the motivations that triggered or led to such (if any) changes. The discussion also centered on understanding the perceived barriers that prevented the participants from engaging with public health dietary advice to make dietary changes and the possible factors or interventions that may encourage more careful consideration of dietary intakes and result in lasting dietary change.

6.9 Motivations to dietary change

As per the Health Belief Model, the motivation to change dietary habits were primarily related to the individuals' perceived susceptibility and severity to health problems and a means of preventing diseases and illnesses, in response to acute health problems and to help maintain or improve weight control. In addition to this (and external to the HBM model), marital influences were also noted to be a factor. Figure 6.1 provides an overview of the HBM model and how each area relates to the findings, which will be elaborated upon in the following sections.

Figure 6.1 An overview of the HBM and how each area related to the findings



Females identified all four of the factors to prompt dietary changes. For instance, one of the participants (SH) stated that she was motivated to change her diet because she was diagnosed with gallbladder problems and she had gained weight as a consequence.

"I have changed my diet because I gained weight and I have gallbladder so I have reduced the consumption of fats and I felt more comfortable"

Additionally, marital influences based on the tastes and preferences of their respective spouses were highlighted, indicating that key life events or turning points in their life, such as marriage, were a primary cause for dietary change.

> (AM)*" my diet has changed slightly after I got married. Before married I don't like to eat vegetables but I eat chicken, fish and rice however, after I married my wife also encouraged me to eat salad and fruits eventually salad became the main dish in my meal" (male,31-39).*

Attempts to make lasting dietary changes were evident across the groups although with varying degrees of success. Two participants were identified to suffer from dietary related health problems notably obesity, diabetes and digestive problems. In light of this attempts had been made to make dietary changes to alleviate health concerns however, these had not been sustained owing to social pressures and cultural expectations around the commensality of eating, time constraints and the inflated prices of healthier foods.

(ZE) *"customs & traditions a lot of social events witch tent to serve verities of unhealthy food, time constraints (due to busy life with children and house work), no motivation from family& friends, I can't control my weight because the taste of food"* (female, 40-49)

Three participants reported to feel that they had been successful in changing their diet and the reasons that were cited for this included having a strong will to change, constant motivation from others, as well as reading and educating themselves in changing their lifestyle.

(SH) "*Motivation from others, specifically my husband was helpful because he also does not like to eat fatty food and he is interested in imported healthy food. We changed our lifestyle to be healthier without problems and I am happy with this change"*. (Female, 31-39)

6.10 Perceived Benefits of healthy eating

In terms of the perceived benefits to healthy eating, the participants cited a number of factors that would encourage them to change their dietary habits. One of the major factors was that healthy foods would be an effective means for the prevention of major diseases like hypertension and heart problems. In relation to this, both male and female participants stated that healthy eating would not only help with health problems, but would also help maintain and improve their weight control and lifespan. Controlling weight was elaborated upon by many of the female participants, because, by improving their weight, another benefit to this would be an improvement to their self-esteem and confidence. As it stands, being overweight or obese in Saudi Arabia is often looked down upon in society and women like this are often overlooked when it comes to looking for a potential spouse. However, to lose weight or to control their weight, many of the women felt this would make them more accepted in society and eligible for marriage.

6.11 Perceived Barriers and Facilitators to healthy eating

As highlighted in Section 6.9 above, participants had varying degrees of success in attempting to make dietary changes.

A number of perceived barriers that prevented participants adhering to dietary advice and making improvements to their diets were identified. Moreover, a number of factors that could be considered to aid dietary change (facilitators) were also noted. These respective barriers and facilitators were categorised into internal and external influences. Internal influences related to those factors that the participants were perceived to have control over, whereas, in contrast, external influences referred to those that were beyond the participants' control. A summary of those Tables 6.3 provides an overview of the internal and external factors influencing food choice that constitute a perceived barrier to healthy eating or were identified to act as a facilitator to healthier food choices, each of which will be considered in turn.

Table 6.3 Barriers and Facilitators to healthy eating and exercise from focus group

Barriers to healthy eating		Facilitators to healthy eating
External	Convenience -Price and income -Location of shops and restaurants -Availability of healthy food	-Availability of healthy food and snacks in supermarkets and restaurants with reasonable price -Availability of healthy meals at school and universities
	Lack of social support	Social support
	Family cooking and preference	Recipes for healthy cooking
	Lack of public transportation	Increase public transportation
	Social events, customs and traditions	
	Lack of awareness and advertising about healthy food	Spread the knowledge and information about healthy food
	Time of preparation	
		Health problems
	Weather	
	Environmental support	
	Lack of facilities for physical activity.	Improve the facilities for physical activity
Internal	Lack of strong will, self-confident and laziness	Strong will & self-confident Believing and the conviction
	Time constraints	
	Life commitment	Changing lifestyle and routine
	Appetite	
	Taste	
	Studying	
	Getting used to	
	Psychological issue, mood and stress	
	Traveling	
		Increase healthier food in the diet
		Increase health awareness
		Quantity control

6.11.1 Perceived Barriers to healthy eating

Barriers to healthy eating were those factors that would ultimately prevent or hinder the participants from adopting healthier eating habits or change their behaviour towards healthy eating. A number of perceived barriers were identified including, Lack of strong will, self-confident and laziness, time constraints, life commitment, appetite, taste getting used to, Psychological issue, mood and stress, convenience, lack of social support, family cooking and preference, lack of public transportation, social events, customs and traditions, lack of awareness and advertising about healthy food, environmental support and lack of facilities for physical activity.

6.11.1.1 Price and availability

There was a strong feeling amongst all the groups, and particularly among female participants, that the high price of healthy or organic food, which was deemed to be healthier than conventionally grown food was prohibitive. Many participants made explicit statements that this was a significant influence over their decision to purchase such foods. For instance, one participant simply stated "*healthy food is expensive"* (DL, female, 50-59) as did another *"healthy food is expensive and not available everywhere… compared with fast food"* (MJ, male, 26-30).

The quotes above infer that the environment shapes individual food choices in the sense that often what is available to consumers in the workplace, in schools or food outlets dictates food choice. Moreover, unhealthy food (namely fast food) was noted to be significantly cheaper than healthy alternatives, was identified to be more readily available to consumers and therefore more convenient to purchase as the following participants illustrate:

- (ES) *because fast food is cheaper than healthy food and available everywhere it is easy for us to buy it more than healthy food. (female,18-25)*
- (AS) *Fast foods are available everywhere so it is more convenient for us than preparing healthy food. (female,18-25)*

In addition to the price of food many participants also indicated that the price of gym memberships to facilitate physical activity were also prohibitively high as the following participant suggests: *"also the price of healthy food is high. Also lack of gyms and it is not cheap"***.**

6.11.1.2 Culture and traditions

Another prominent barrier to healthy eating was as a result of external influences, in the form of culture and traditions. Many females from different age groups, as well as older males, saw traditional family mealtimes and social occasions as customary elements within the Arab culture; however, such occasions restricted them on the types of foods could be consumed as the following participant suggests. NE (female, 18-24) affirms, *"In our society, all family members sit together to eat the same type of food, so, I don't have a choice to eat other food."* Thus, in such settings, where unhealthy foods may be served, it would be seen as disrespectful to decline such invitations as the following participant aptly summarizes: *"social events and what my wife has cooked can*

prevent me from eating healthy because I don't have a choice to eat different type of food I have to eat what is provided." (Male, 50-59)

Additionally, access to healthy food was noted to be another factor that was shown to be closely related to Arab cultural norms. Saudi Arabian culture does not permit Arab women to travel or drive unaccompanied. This compounded by limited public transport infrastructure. The majority of female participants in this study strongly expressed such feelings, stating this impacted on how they could make changes to their diet, because healthy foods were only available in certain shops/places and they did not have that level of freedom allowing them to leave the home as and when they wished.

- (Sm) *lack of freedom of the women and we cannot go out all the time for our own needs due to lack of public transportation and we need a member of family to take us out. (female,26-30)*
- (Mn) *the location of shops is not convenient from where I live I need car to go there. (female,30-39)*

6.11.1.3 Lack of awareness and knowledge

Many males saw a lack of educational awareness and information about healthy dietary choices to be prohibiting factors in the consumption of healthy food, which was considered to be compounded by the prominence of advertising of unhealthy foods, as the following participant's remark:

- (AM) *... lack of knowledge and information about healthy food and the benefit of fruits and vegetables can prevent me to eat healthy. (male,30-39)*
- (MO) *Offers and advertising about healthy food is a few compared with fast food and its taste is different from fast food. (male,31-39)*
- (NU) *lack of advertising and information about healthy food. Also we are not used to eat healthy food from childhood. (female, 18-25)*

DL elaborated on this by stating, *"fast food is available everywhere due to the large number of advertising. However, in the past there were less advertising about fast food so most of our food was cooked at home and healthy."*

6.11.1.4 Taste

In contrast to the aforementioned external barriers, a number of internal barriers were also identified to act as barriers to healthy eating. Taste and its association with healthy foods was viewed to be a barrier especially for females, with healthier foods being argued to be less tasty than unhealthy foods as the following participants suggest:

- (FA) *healthy food is not available everywhere and its expensive and not tasty. (female,40-49)*
- (SM) *We prefer to eat fatty food because it is tasty and filling. (female,26,30)*

6.11.1.5 Lifestyle

Both male and female participants cited their busy lifestyles hindered their ability to change their diets. Time constraints in their schedule meant that it was easier for participants to eat fast foods or whatever was immediately available to them available, and therefore little time was spent preparing fresh food from first principles. For instance, MN (female) stated, *"due to busy life and time constraint we tend to eat outside."* While MO (male, 31-39) explained *"when I am at work the lunch time is short so I eat anything fast."*

6.11.1.6 Willpower and motivation

The lack of self-control or willpower was another internal barrier identified by all participants, particularly when they were asked what caused previous unsuccessful dietary changes. Thus, a lack of motivation and will-power to stick to healthy diets were noted, especially owing to the fact that there were no immediate tangible results visible as the following participants suggest:

- (MF) *it was successful in a certain period but because I did not continue I could not see the result. (male,26-30)*
- (DL) *at the beginning it was successful but I could not do it for long because there is lack of motivation. (female,50-59)*

In relation to this, some participants seemed to believe that there was an underlying external issue that may have caused a lack of motivation to exercise, which related to the weather (extreme heat) and a lack of infrastructure for physical activity, i.e. gyms.

- (SH) *the weather is really hot so we can't walk outside. (female,31-39)*
- (MJ) *In day time the weather is hot and we are working so we don't have time to do exercise. (male,26-30)*

6.11.1.7 Personal and/or domestically situated eating habits

From the views expressed by the focus group participants, the individuals' personal eating habits and the eating habits found within their homes had a significant effect on the food they consumed. For instance, foods that the participants used to eat or ate during their childhood would continue on in later life. SA (female, 19-25) stated, *"We are used to eating carbohydrates and fast food",* while MO (male, 40-49) explained, *"I am not getting used to eat healthy food since childhood"*. Moreover, due to the cultural nature of eating habits in Saudi Arabia, family meals are often consumed together and as a consequence the taste preferences of the family dictated the food choices made in order to ensure that food was consumed and enjoyed as the following mother explains: *"I cook the food depending on what my children prefer. For example, they don't like vegetables and they want fast food so sometimes I cook it or I buy it for them but at the same time I try to encourage them to eat healthy"*.

6.11.1.8 Psychological state

One of the focus group participants explained that the psychological state of an individual, such as their mood and/or levels of stress, could be a barrier to the consumption of healthy.

- (FH, male) stated "*depends on my psychological state when I select my food. For example, if I am sad I avoid eating*."

6.11.2 Facilitators of healthy eating (Cues to Action)

Upon discussing the perceived facilitators that would help to encourage healthy eating and healthier food choices, it was evident that many of these factors would directly oppose the barriers they previously cited. Thus, from the analysis that was made, a number of key themes emerged from the focus groups including: (motivation & support from others, strong will and conviction, nutritionist/dietician, education, awareness & advertising, availability with reasonable price, improve the facilities for physical activity and increase public transportation).

6.11.2.1 Self-Control and Willpower

Although self-control and willpower (or lack thereof) was regarded as a *barrier* to healthy eating, it was also viewed as a major facilitator among most of the participants as being the cause to help maintain a healthy eating habit.

- (SI) *strong will and motivation can help in changing the diet. (female,18-25)*
- (SU) *having strong will and motivation from family and friends and reading a lot about health can help to make anything successful. (male, 50-59)*
- (AM) *with strong will, encouragement and the conviction from inside any change can be successful. (male, 31-39)*

6.11.2.2 Support and encouragement from others

This willpower was coupled closely with participants having support and encouragement from other parties, such as friends or family, provided a means of motivation to maintain any positive changes to their diet as the following participants explain:

- (ES) *strong will and support from family. (female, 18-25)*
- (NU) *motivation from family and friends can help me to change my diet. (female, 26-30)*
- (MF) *support from friends, because we meet all the time so if we cooperate with each other in changing our diet to be healthier, it would be helpful. (male, 26-30)*
- (MO) *my family can help me with this change in terms of food selection, preparation and encouragement. (male, 41-49)*
- (AS) *A supportive and an encouraging family are important. (female, 18-25)*

6.11.2.3 Changing lifestyle

What further interlinked with the aforementioned facilitators was that, although both men and women saw their busy lifestyle as a reason for their unhealthy eating habits, only female participants within the groups felt changing aspects of their lifestyle would help maintain a diet change. This not only included changing eating habits, but also comprised of considerable alterations in their routine, such as incorporating daily exercise or spending less time in social gatherings where there is a tendency to eat out and to eat the wrong types of food.

6.11.2.4 Education and Awareness

Within this theme, the government could be involved in educating and raising awareness of healthy food in general. Many females from the focus groups echoed similar sentiments to (BD, male), whereby an increase in "knowledge about food and related problems can help us to change our diet" whilst others felt this awareness should be spread across various sectors within the society; namely schools and in social gatherings/events.

6.11.2.5 Price and Availability of healthy foods

Moreover, a further important facilitator to healthy eating was to improve the availability of healthy foods, as well as where possible reducing the price, which, most females within the focus group felt would encourage the wider society to purchase them. This again would be something the government could review and implement.

- (JM) *Making healthy food available everywhere with reasonable price can help* (female, 31-39)
- (ZE) *By making healthy food and snacks easily available in the supermarkets and restaurants with reasonable price* (female, 40-49).

6.11.2.6 Improved infrastructure

Lastly, governmental support and solutions could be made in response to the restrictions placed on females to travel. Many of the female participants stated that an increase and investment in public transport would resolve this issue and help them to choose foods based on health as opposed to convenience. This could also be linked to the data analysis that referred to increasing the number of gyms with reasonable price, especially for women, as highlighted by some of those in the focus groups:

- (MJ*) I hope if we have more sport centers and spaces to walk and having healthy food everywhere with reasonable price. (male, 26-30)*
- (MF) *Establish more sport and health centres for males and females with affordable price in each neighborhood* (male, 26-30)
- (ES) *I wish if we could have sport classes in schools* (female, 18- 25)

Section 2: Health Expert Interviews

6.12 Characteristics of the Sample

Following on from the focus group discussions, further data was extracted from the health experts' semi-structured, in-depth interviews (n=13). Each interview fed into the information gathered from the focus groups, but also provided a deeper insight into some of the reasons why food choices were made, based upon the experiences and opinions of the experts. What follows is the results of the interviews, as well as discussions on areas where they affirmed or rejected the findings from the focus groups.

6.13 Food related health problems

Similar to the findings in the focus groups, the health experts elaborated upon the health problems that were prevalent as a result of the food choices that were made by their patients. These matched the same as the focus groups, specifically obesity and diabetes:

- *The major problem is obesity and the other problem is diabetes, which is very common in this country; around 35 % of populations have this problem. Also, hypertension, which is related to obesity, dyslipidemia, as you know are all related to heart problem. Middle aged and commonly females suffer from obesity* (interview 1).
- *The first thing is obesity then diabetes and hypertension. In term of women, they suffer from obesity more than men and this starts from the age of 16 – adolescent - because they consume too many snacks and fast food. For old people over 30 years, they have diabetes and hypertension and it may be caused because of obesity or by genetics* (interview 9).

They also affirmed that this was due to eating an unhealthy diet:

- *The reason for this {health problems} is eating fast food without any balance or in moderation.* (Interview 9).

One of the health experts also provided their statistics of the obesity crisis among Saudi residents, which also corresponded to the findings from the focus group.

- *Diabetes is the most common problem which has a count of 24% amongst Saudi residents. And the reasons for having diabetes are caused by obesity.* (interview 3)

Some of health experts also added other health problems that were specific to women, such as osteoporosis and weakness in the thyroid gland:

- *Defect in the Thyroid gland, lack of vitamin D and arteriosclerosis.* (interview 11)
- *Boons problems due to being overweight, so they cannot do any physical activity. (Interview 10)*
- *In terms of females, they have bones problems as well like Osteoporosis. (interview 12)*

6.14 Perceived Barriers and Facilitators to healthy eating from health expert's views

In terms of the perceived barriers and facilitators to healthy eating, there were a number of points raised by the health experts. Firstly, they confirmed the views of the participants towards food price and availability:

- *"In term of availability of healthy food is not easy and available as we want".* (interview 6)
- *There are problems in schools because there is no awareness and good environment for eating healthy food because most of available food is fast food and some schools don't have healthy meals.* (interview 4)

They also affirmed the sentiments of the participants in regards to the high price of gym memberships to help improve ones' health:

- *Price and income is a problem for them because most of gyms and dietician clinics are very expensive to afford.* (Interview 11)
- *The gyms and dietician centres are expensive and not convenient* (Interview 7)
- *It cost too much if she wants to go to gym because the gyms are expensive also she can't afford to buy gym equipment as well.* (Interview 8)

The majority of health experts also agreed with the participants, in that culture and tradition caused a significant barrier preventing Saudi citizens from eating a healthily and balanced diet. This also pertained to transport for women as a clear barrier:

- *Social gathering could be a barrier for eating healthy food because most of the food is sweets and fatty*. (interview 5)
- *Society and culture - we always have lots of social gathering that contain food and most of it is sweet and fatty. Traditions and culture is very difficult to change quickly and so, if the person wants to eat healthy, he can't because he has to attend the invitation and eat as well.* (interview 9)

- *Generally, our society, culture and tradition for example, we have lots of social gathering and events, which all include little or no healthy foods. We must join every gathering with food, even if we did not consume it at home, we go outside to eat it. Women cannot ride a bicycle and go out freely - they have to go by car and so there is no physical activity for them. Also, we don't have any place to do physical activity or have fun - we only have restaurants or shopping centres.* (interview 10)
- *In terms of females, they are used to sitting at home and looking after children - it is not easy for girls or women to go out or go to gym alone - some people still have this idea it's not important for female to go out and that she is not free or it is not important for her.* (interview 10)

While lack of awareness and knowledge was cited by some of the participants to be a barrier to healthy eating, particularly in relation to how unhealthy foods were advertised more predominantly, one of the health experts expanded upon this by providing an insight into the advertising strategies used by companies:

- *"Sun top drink is a drink that is not a juice but they wrote it contains a high quantity of vitamin C. So, this was only a promotion for the product despite it being water and sugar only. Also, in some advertising there is a sports man who drinks Pepsi or some sort of an energy drink because it should help him to perform better. So all of these food advertisements are about promotions and profits not about health."* (Interview 5)

Additionally, the lack of general knowledge and information over healthy eating was also confirmed by most of health experts:

- *Lack of knowledge about healthy food they don't know about and what is good and not for their health especially in the urban area, they don't know how to choose to eat healthy food.* (interview 1)
- *Lack of awareness about healthy food and appropriate portion sizes is another issue for them because they don't understand that this behaviour is good for their health in the future and will help them to avoid health problems. They just need to cook and eat as long as it tasty they don't care about their health. Also, most of health awareness is directed to working women or schools and not for house wives.* (interview 11)

With regards to taste, although the focus group participants felt that unhealthy foods tasted better and vice versa, one of the health experts disagreed that taste was a specific barrier:

- *"Some people think a healthy diet is like medicine and they do not accept it, but in reality, it is only a change in foods by restricting the amount of fat that is consumed."* (Interview 8)

When discussing lifestyle and how this affected health among Saudi citizens with the health experts, there were varying views, particularly on how they understood the term lifestyle. One expert agreed with the participants (interview 8), stating *"Some males do not have time to exercise because they work during the daytime and at night, they are tired and want to relax and sleep";* however, there were others that did not agree with such statements and felt that any issues pertaining to time constraints were not because of work commitments or busy lifestyles, but rather, linked with other barriers such as culture, tradition, conviction and laziness.

- *Time constraint it is not a big problem if we change our views on our cooking skills from fatty rice or meat to a much healthier way it will be good but will depend on the culture, tradition or region that they have been used to for so long and this way they will find it difficult to adapt to a new behaviour.* (Interview 5)
- *Many women do not do housework - they depend on house cleaners to do everything for her and so she watches TV and eats and she does not have any activity. Nowadays, most children play electronic games and eat while they play without any activity as well.* (interview 9)
- *I am hearing all the time they don't have time and why we don't have the time, you have time for visiting and eating out so why don't you have at least an hour during the day for walking or to do any physical exercise.* (interview 1)
- *I don't think time is the big problem - if the person wants to cook and eat healthy he will, as long as he convinced.* (interview 12)

Health experts also confirmed that a lack of self-control and willpower was a barrier to maintaining a healthy diet:

- The problem is related to their belief and motivation and they don't want to continue. (interview 2)

Some of the health experts related this to external issues, such as the weather or environment around them:

- *We have a problem in terms of the weather here because it is hot, so not helping people to go out during the day time so, most of them always use cars for everything and at the night they come back from work and they are tired.* (interview 5)
- *We don't have a wide range of sports or sport centres specifically for women and it's not convenient for them to walk in the street, either because of the hot weather or due to being harassed from other people and no security in the street.* (interview 9)

In relation to personal and/or domestically situated eating habits, experts supported the findings by the focus group participants, stating, "*People are not convinced about the change because they used to this system when they were kids so this behaviour learned from family" (Interview 6). For example, "they are used to special taste like buttery or carbohydrate and it is difficult to change, so taste plays a role in food choice."* (Interview 12)

In relation to this, the adherence to taste preferences of other family members was a factor echoed by the health professionals:

- *The first barrier is family for example, if females want to cook healthy food or learn that their family member will not accept this food because they are not used to it.* (interview 5)
- *Old people now follow their culture and tradition and what they used to do and eat in their life, so it's difficult for them to change.* (interview 11)

Some of the health experts elaborated and affirmed upon the psychological state and wellbeing of individuals to play a role as a clear barrier to healthy eating problems, particularly stress and depression:

- *Also stress plays a big role in encouraging eating more* (interview 8)
- *Also, psychological situations can affect the person as well, especially if they have too many problems, so he will not follow a healthy diet - he will eat anything because he is depressed.* (interview 12)

6.15 Possible behaviour change initiatives

Due to their expertise in the area of improving health and wellbeing for the Saudi citizens, an objective of conducting the interviews with the health experts was to explore and acquire a number of solutions that they could provide to improving healthy eating habits and exercise. This

information could then be used to plan an effective social marketing strategy. While many of their solutions agreed with the participants in focus group, Table 6.4 provides an extensive list of all the solutions the health experts proposed during the interviews.

Table 6.4 Facilitators to improve healthy eating and exercise from expert's perspectives

Solutions	Interview number
Health programmes in media	1,3,6,9
social support	1, 2, 5,6,7,9,10
Teaching awareness and education	1, 2,3,4,5,6,8,9,10,12
healthier choice at restaurants	2, 4,7
Guide and follow up from experts	2,9,13
giving time for patents to explain and understand the idea	2, 3,8
Walking area in every district	2, 8,13
Calories count on meals	2,
learning by practice	3,
Monthly competition on TV	3,
Employing more experts to help the people from the beginning	3,
Big screen about healthy eating	3,
increase gyms	4, 6,7,9,11,12
improve cooking skills	4,9
nutritionist in schools and gyms	4, 6,7,9
increase public transportation	4, 11
delivery service for healthy food	4, 7
Cooperation and support from governments	5, 6,7,9,11,12
Healthy vending machines	5,12
Reviewing the price for healthy food	6,8, 11,13
Strong will and conviction	8,9,10
Increase the availability of healthy food	8,12
Increase dietician centre	8,
Subject about nutrition at schools	9,
Increase advertising about healthy food	9,
Having gyms at schools	7,10,11,12

6.15.1 Support and encouragement

In terms of support and encouragement being seen as a facilitator to healthy eating, the health experts also stressed the importance of social support networks in motivating individuals to improve their health and dietary habits.

- *If they come with a friend or a family member, they will be encouraged to continue and motivate each other so this could be a solution*. (Interview 2)
- *The person needs encouragement and support from people around him to enable him to start or carry on his healthy behavior because people tend to influence each other.* (interview 7)
- *It can be easier for example if family members and friends cooperate with each for changing they will have good results so encouragement is very important*. (interview 5)
- *Family is the main persons could help in changing behaviour and they have to use to eating this type of food and after many times they will change and like the new way of eating*. (interview 6)

6.15.2 Governmental Support

While the participants cited other key facilitators that could help them improve their diet, upon further analysis of this, one could identify that many of these factors related directly to how much cooperation and support the government could give to the general public in achieving these objectives. For instance, a male participant in the focus group stated "*Cooperation between government and individuals to make our life healthier. For examples, free distribution of healthy meals in schools with gifts like Macdonald's would be a good idea to encourage healthy eating.*" Another argued "*I wish that the ministry of health will guide and encourage people about the benefit of fruits and vegetables*."

Governmental cooperation and support was also regarded as a vital solution by the health experts, as cooperation from The Ministry of Health and Education was vital in supporting behaviour change initiatives as the following experts explain:

- *We have the idea and the campaign, but we need support from the government for example, so that we can facilitate these idea, because it is very hard for individuals to do ant thing alone*. (interview 5)
- *We should have all health activities from the government sector and for free*. (interview 9)
- *If the Ministry of Health look after this problem and do free gyms for example, it will benefit most of people because gyms are very expensive and not everybody wants to have special expenses for gym, especially when they have other things to buy.* (interview 12)
- *The ministry of health and education should cooperate to solve all these problems*. (interview 7)

Appropriate governance of public health was identified to require support in raising educational awareness and improve public facilities, which are elaborated upon in the following sections.

6.15.3 Education and Awareness

Education and raising awareness was regarded as the most important amongst health experts in resolving the issues towards healthy eating habits. In light of this, many of the experts identified different methods to spread awareness across the country, whilst some were general in nature such as mass advertising on television and media channels, others were targeted to key individuals notably parents who were regarded as 'gatekeepers' and vital to ensuring the future health of children.

- *The media should give some educational programs in the TV, radio and social media to raise awareness about the issue about our health. We have to make centres in Jeddah for teaching people about the possible side effects and known diseases like obesity.* (Interview 1)
- *I suggest for companies to inform everyone about health information like the calories count information on the meals because some patients are counting their calories.* (interview 2)
- *Have a big screen in public places it will be an attractive way for people to know about healthy eating and it will be a great idea so that while people do their shopping - they can get some useful information and apply it in their lives*. (interview 3)
- *The society must be educated, where we start in schools and with children by having nurses or dieticians who help children solve any problems from the beginning, and they educate mothers as well, so in the future, the problems will be reduced. Also I recommend having TV programs before Ramadan and festival about healthy eating habit…We have to increase advertising about healthy food in schools and shopping centres*. (interview 9)
- *Having healthy advertising on TV is also important and it is very effective way to spread any information because people like to copy anything come from media. It is also important to start spreading the knowledge and awareness in schools*... (interview 8)

6.15.4 Price and Availability of healthy foods

In addition to the participants from the focus groups, the health experts also saw this as an area that would greatly improve healthy eating habits. Solutions concerning this were provided, such as replacing unhealthy foods with healthier alternatives in foods vending machines, in restaurants and in schools.

- *Increase the places for healthy eating everywhere with reasonable price and if we have local products that will be good as well in terms of the price*. (interview 8)
- *I recommend changing the price because most of healthy food and low fat very expensive in comparative with normal food so the people buy full fat because it is value for money*. (interview 6)

- *Having vending machines with healthier choices, like fruit and sandwiches instead of chocolates or soft drinks in workplaces and public places as well*. (interview 5)
- *Some restaurants have a section for a healthier choice so I recommend this for all the restaurants because this is a good solution for helping people to eat, healthy*. (interview 2)
- *I recommend having healthy meals at schools. Some of them started to do it, but it is good idea if all school have it so the children can learn since their childhood is about healthy food*. (interview 10)

6.15.5 Improved infrastructure

The health experts also echoed similar sentiments to the focus group participants when referring to improving infrastructure, and explained how addressing these issues in particular would provide a greater impact on improving the health of Saudi Arabian citizens, particularly for women. The experts argued that by increasing public transport for women, it would mean they could have greater access to health centres and healthy food outlets.

- *Increase public transportation so that we can reach gyms and healthy food outlets. We have delivery for fast food but not for healthy food, so people find it convenient and value for their money*. (interview 4)
- *The government should facilitate the transportation to help people reach anyplace*. (interview 11)

However, one expert did not agree that an increase in transportation would resolve these issues, particularly if the transport was being used to go to the gym or health centres:" *I have always told my patients you can move and exercise inside your house, so no need to go out if you can't - so transportation is not problem for you if you want to move so it is related to their conviction*." (Interview 12).

Although that was the case, most of health experts did recommend that an increase in gyms would improve health and wellbeing and this is very important in Saudi Arabia to advocate excursing indoor due to culture norm and heat preventing which is opposite in the UK:

- *"Increasing gyms in every district and having dieticians in sport centres to educate people about healthy eating…"* (interview9)
- *I recommend to have gym in working places because we don't have time to go out with long hour of working we have a garden and in good weather we walk but we can't go all time because most of the year is hot. Also if we have specialist in nutrition with good support in universities and every*

school, this will help in deciding the appropriate food for kids and avoid related health problems in the future. (interview 6)

- *Increasing gym centres and education places with convenience transportation will help*. (interview 8)
- *I think it is important to have a class in girls' schools on exercise with competitions and rewards so from the beginning, they start the change when they grow up and they used to this behaviour and reduce health problems, because now, during break times, they only sit and eat without any physical activity*. (Interview 10).

Additionally, if gyms could not be made affordable to the general public, then the health experts suggested the government look into improving walking areas. This would make it more feasible for individuals to attend with their family and friends.

- *I suggest that a walking area in every district so that everybody can afford to go either by themselves, with a family member or with friends*. (Interview 2)
- *If we have closed and good walking area with (a/c) and security will motivate people to go for walking*. (interview 8)
- We should have an appropriate walking area especially for women who can't exercise freely anywhere. (interview 13)

6.16 Current initiatives related to healthy eating and exercise identified by health professionals

After identifying the barriers and facilitators to healthy eating and exercise, this section explains the current initiatives to improving healthy eating and physical activity, as referred to by the health expert during their interviews. Table 6.5 provides a list of the initiatives that they cited.

Table 6.5 Current initiatives in improving healthy eating and physical activities

current initiatives	Interview number
Diet centre clinic	1, 4,7,10,12
National day	1, 3, 6,8,13
Diet plan centre	2,
Walking area	2, 8,
sport clubs after school but only in three schools	3,
some sport centres	4, 6,13
voluntary lectures	4, 8,12
Healthy meals at some schools	4, 9,
campaigns (Mezan, Shsoh)	5, 11
activity in social media	5,6,8
Cooking programmes (like Dr Chef)	5,6,8
healthier options at some restaurants	5,
Calculation for calories through social media	5,10,
Aban organisation in social media	6
educational committee	6,
dieticians in some medical centre	6, 8, 9
Healthy activity during social gathering	6,

6.16.1 Diet centres (dietitians, clinics)

One of the biggest current initiatives in dealing with health concerns and issues of the Saudi citizens is the diet centres and clinics, which have been set up and maintained by both private and governmental organisations to improve health and wellbeing. The health experts felt these were extremely useful, however, there were a number of concerns over how expensive they were and therefore not affordable to all. In addition, there were issues highlighted with the public clinics in that they do not always have the necessary equipment or resources.

- *There is centre called diet centre which gives advice and a health plan for your meals, and that depends on the patient's requirement and his health problem* (interview 4)

- *Our medical centres do not use to have dietician but now I know 2 centres in Makkah started to have dietician so this will make it easy for patents to see them in short time because transformation take long time to see the doctor*. (interview 7)
- *We have more dieticians than ever before in the hospitals. For example, people go first to health centre and they meet family specialist, and if the situation related to nutrition they refer her to dietician in hospital*. (interview 8)
- *I just know about the (diet center) clinic which helps people with health problems especially obesity. And to eat healthy food through their shop I often send my patients who can afford to pay for this service*. (interview 1)

6.16.2 Physical Activity infrastructure

While the experts did acknowledge the existing walking areas that the government had provided, one of them explained that this was not necessarily suitable for women due to the cultural nature of how Saudi women dress outside which consist of long dress with head scarf.

- *now we have a walking area made by the government and that is open to the public also they provide us with some equipment such as the machines like cycling for exercising also they put a structure for walking like a 5 minutes slow walking plan but is not appropriate for women*. (interview 2)

Similar to the walking areas, the experts also saw the existing sports centres as being a positive aspect in improving health and wellbeing; however, as stated earlier, this was an issue for those living on lower wages or for women in particular.

- *Also there are some sport centres but it can be difficult for those with low incomes if they wish to go to these please*. (Interview 4)
- *We have some gyms but unfortunately most of them for are private, or for males and expensive*. (interview 13)
- *Some schools have after school clubs which is a sport for women only but it's only in three schools*. (interview 3)

6.16.3 Activities related to awareness and education

The health experts also highlighted some of the current initiatives and activities that were used to raise awareness and education of healthy foods and healthy eating. They cited a number of different methods for this, including voluntary public service announcements in shopping centres, social

media campaigns and TV advertisements. While mentioning the various existing methods, there was no mention on how effective they were.

- *Some voluntary lectures in the shopping mall where you can hand in leaflets. We went to the elderly care home to give advice and spread awareness and they understood us*. (interview 4)
- *Some people have made a big effort in social media for example, there are groups for people for walking on Twitter and they can choose the time, place and date for doing this and if anybody would like to join them he can, but unfortunately this is only for males.* (interview 5)
- *We have also TV programmes like green apple which give advice, some exercise and recipes about healthy cooking also during Ramadan time we have program about how to cook Saudi food in healthy ways* (interview 6)
- *We have signboards in walking areas, also on Facebook and twitter, as they have good topics about health. We also have programmes in the clinic about health*. (interview 8)

All the insights from both focus group and health expert in relation to barriers to healthy eating and facilitators to improve diet will be used to form the basis of the social marketing recommendations.

6.17 Summary

This chapter has presented the overall themes that were extracted from both the focus group discussions and health expert interviews in response to food and healthy eating. Among the themes that were extracted were the different ways that the participants looked after their health, the relationship they have with food and health, followed by what food related health problems. The results showed that, although some of the focus group participants were happy with their diet and were not willing to change their eating habits, the majority of them wanted to be healthier and the barriers and facilitators towards this varied.

Some of the key barriers towards healthy eating from both the participants' and the health experts' perspectives were customs and traditions, price and availability, lack of knowledge and self-control; however, the majority of the females from the focus group only were affected by time constraints and busy lifestyles; this was not supported by the health experts who disagreed that this was an issue. Additionally, the majority of men from the focus group were affected by having a strong willpower and motivation. Such findings have confirmed previous research that showed different factors between genders affected their food choices.

In terms of facilitators, there was also key facilitators that affected both genders, such as motivation and support from others, strong willpower and education. However, in terms of females, more women cited availability and increased public transportation as issues that would facilitate their food choices. In addition to this, the participants agreed that having support specifically from the government would significantly improve the situation concerning health and wellbeing, such as an increase in gym access at affordable prices. This was highly supported by the health experts, who felt governmental involvement was also key to improving healthy eating habits and wellbeing. The health experts also placed a greater emphasis on education and raising awareness of healthy eating habits.

Chapter 7 Discussion

7.1 Introduction

This chapter discusses the implications of the primary and secondary research findings for the development of a social marketing recommendations to improve healthy eating and physical activity amongst women in Saudi Arabia. The chapter begins by first discussing the key food choice motivations of Saudi citizens based on the FCQ, and supported by findings from the focus group discussion and health expert's interviews. Following this, the barriers and facilitators to healthy eating are discussed. Thereafter, the results are used to develop the social marketing recommendations to encourage specific health behaviour changes towards Saudi females in the subsequent chapter.

7.2 Suitability of the FCQ data instrument on the Saudi Context and food choice factors

This research found that the FCQ was not applicable for the Saudi context as it failed to recognise key food choice motivations that were prevalent for this context, such as those relating to culture (commensality), tradition and religion. This also raised the question of the applicability of the FCQ in other Middle Eastern and wider Islamic states. Thus, a greater measurement of culture (commensality) would be useful for future research when using the FCQ, as Middle Easter regions are regarded as collective societies, as opposed to those found in Western societies, which are often seen as individualistic (Hofstede, 1983).

In light of this, the logical outcome when applying the FCQ in this context is to develop an expanded or revised version of it. Previous studies affirm the need to improve the FCQ, such as the study by Lindeman and Vaananen (2000), where three new scales were added under ethical reasons for food choices (i.e. ecological welfare, political values and religion).

In this study, an exploratory factor analysis of the FCQ data identified that six out of the nine factors from the original FCQ were the main factors affection food choice motivations for Saudi citizens. The most important of these were taste, health and wellbeing, and convenience, while those of lesser importance included price, mood and sensory appeal, and ethical concern. These findings from the FCQ were similar to those from Steptoe *et al* (1995), who underlined that sensory appeal, health, convenience and were important factors in the UK sample. Moreover, these

findings were also prevalent within a Russian context, where sensory appeal, health and convenience were among the most important motives behind their food choices (Honkanen and Frewer, 2009). Additionally, in the study by Januszewska *et al* (2011), which was conducted in four countries (Belgium, Romania, Hungary and Philippines), sensory appeal was ranked as the most important factor among the European countries, while health was ranked the most important in South East Asia.

Furthermore, the results from the FCQ also showed significant gender differences relating to mood, sensory appeal and convenience, with females attaching more importance to these than males. However, there were no other significant differences between genders in relation to health, ethical concern, price and taste, which differs from Honkanen and Voldnes (2006), Steptoe *et al* (1985) and by Piggford *et al* (2008), who identified that females attached more importance to health, weight control and ethical concerns than males.

The identification of taste as the most important factor motivating food choice of Saudis was prevalent in both the FCQ and focus group results and corresponds with much of the existing research in both Western and Arab countries (Kourouniotis *et al,* 2014). Furthermore, while the FCQ did not show any significant differences for taste between the genders, the focus group discussions highlighted that it was a reason why participants stated an unwillingness to try new foods. The prioritisation of taste over health as a motivating factor for food choice was more dominant amongst males than females in the focus groups and is a finding consistent with Nestle, *et al* (2008) and Shepherd, *et al* (2006). Within the FCQ, health and wellbeing was identified as the second most important food choice motivation factor, with weight control (which is a separate factor in the original FCQ) loaded under this factor. Explanations for this were revealed in the focus groups where health and wellbeing discussions were identified as revolving around the issue of weight control. Given the high rates of overweight and obesity in Saudi Arabia (Alquot and Reynolds, 2014) which are associated with the rise in non-communicable diseases, this relationship between health and weight control is understandable. Whilst the FCQ showed a significant difference between ages in relation to the importance of health as a food choice motivator, with older respondent being more conscious of their health than younger respondents, this was reversed in the focus group discussions. Here younger discussants (i.e. 18-25 and 26-30 age brackets) were more interested and conscious about their weight than older females and males, and were more reactive in addressing this issue by choosing healthier eating options and exercising. Female

concerns about weight have been noted as a highly distressing experience (Alqout and Reynolds, 2013; Cooke and Wardle, 2007) leading to individuals feeling stigmatized during social gatherings, having low self-esteem or feel less desirable when searching for a spouse (Puhl and Heuer, 2009). This has led to some extreme physical interventions and there is evidence that this is already taking place within Saudi Arabia, as indicated in Alqout and Reynolds' (2013) study of Saudi women considering bariatric surgery in a bid to improve their body size and weight.

Uncertainties about desirable body weights raise the question of weight-related social norms within the Saudi culture. The participants within this study did not explicitly elaborate upon definitions for the "ideal weight", however, there are suggestions within the literature that perceptions of the ideal body weight are gradually changing within Saudi society. As previously argued by Rasheed (1998) and Alqout and Reynolds (2014), the cultural norms of body weight and size have shifted from the perception that a heavier body was a sign of good health and affluence, in favour of aspirations for a thinner body shape that is espoused in the West. Data from the focus group discussions, recognized this shift, thereby agreeing with the findings of other similar studies in Arab counties (Musaiger *et al* 2004; Tlili *et al*., 2008). It is however clear that a desire to manage weight is an important motivating factor in Saudi women's food choices.

The FCQ also found a significant positive correlation between income and health and familiarity. This supports the existing literature that those of lower income would not be likely to purchase expensive, healthy foods, and vice versa (Reicks *et al*., 1994; Marshall *et al*., 1995; Treiman *et al*., 1996; Witherup, 2012). One may further suggest that, in the context of Saudi Arabia, with the participants stating that the cost of healthy foods such as fruits and vegetables was relatively high. Thus, even though the focus group discussion revealed some participants would prefer to eat 'healthy foods' regardless of the price, this is not something that all Saudi Arabians would agree with.

The factor of convenience had a cultural rather than a spatial or temporal aspect which are commonly identified in the Western literature (see for example Pollard *et al,* 2002). Within the focus groups, discussants identified the inability of females to travel without a chaperone as restricting them from going to certain shops to purchase foods, and indeed it is impermissible for females to shop in wet markets where meat and fish are generally sold. Thus the acquisition and purchase of food is often culturally inconvenient. Convenience can also refer to the accessibility

of stores and lack of time to acquire and buy foods. These factors were also identified in the focus group findings.

Food familiarity particularly related to personal eating habits that go back to childhood were a strong influence over their current food choices. This is in line with existing literature, and supports the argument presented by Snooks (2009) and the findings by Brug *et al* (1995), that argue that the tastes and preferences of an individual are established during early childhood. Commensality within Saudi Arabian culture which maintains a tradition of family meal times has been affirmed in previous literature (AlQuaiz and Tayel, 2009), and many discussants identified food preferences that were carried forward from their childhood. This was particularly the case with older Saudi Arabian males, who did not want to alter their food habits. This finding that has been observed elsewhere (e.g. Falk *et al*, 1996) is problematic in the sense that these habits will be difficult to change, particularly if they represent a deviation from culture and tradition which people may not want to abandon (Snooks, 2009), and may exacerbate food neophobic tendencies (where people are reluctant to try new foods (Nestle *et al*, 1998; Koivisto Hursti and Sjoden, 1997).

Price has commonly been cited as a primary factor for food choices (Ziebland, 2004; Yeh *et al*, 2008; Shepherd *et al*, 2006; HSE, 2007), particularly in the context of healthy foods. The results from this research agreed with existing research, where both gender were explicit in not only how important the price of food was to them, but also in how they would intentionally choose to find alternatives or not buy something if it was considered to be too expensive.

Within the focus groups, a further link was made between the expensive prices of healthy foods that are not always available, with cheaper unhealthy foods that are easily available in the form of fast food outlets, and is consistent with the finding of Chambers *et al*., (2008). The "overall availability" and the "immediate availability" that Nestle *et al*., (1998) refer to are evidenced in the availability of fast food outlets across Saudi Arabia, which are contributing to the obesogenic environment. In addition, because fast food outlets are widespread in Saudi Arabia, it also shows clear consumer supply and demand.

When comparing the traditional domestic setting to the increase of fast food chains across the main cities in Saudi Arabia, one could ask the question as to whether price and environment are interlinked and play a role in influencing the food that is eaten? For instance, younger people have a preference over fast food due to availability, ease of access and effective marketing, whereas

older people prefer traditional home cooked food. Moreover, the restrictions that Saudi Arabian women face by not being able to travel alone also means there are certain places they cannot go to, such as traditional marketplaces, which again could directly influence how and what foods are purchased.

In contrast to the literature (i.e. Chambers *et al*., 2008), a significant correlation between age and price was found in the FCQ as well as the focus group discussion, meaning the older the individuals got, the more concerned they were with price. For instance, most of those who were concerned with price in the focus groups were those over 40 (age brackets 40-49, 60-65), whereas the younger participants did not give price much attention. In light of this, one may postulate that this is related to the nature of how Saudi Arabian society is made up. This society is highly family-orientated as can be demonstrated through the provision of facilities specifically for families (i.e. family only sections in public restaurants) David (2005). Therefore, price may be a greater concern for the older generation (i.e. parents), who are responsible for looking after the household and budget. Adults (in many cases, parents) have to think about both their income and the size of household when it comes to purchasing food and, as a result, make sure they stick to their budget. In addition, if they think about the size of their household when buying food, they must also think about the quantity, so that they get value for their money. Conversely, for the younger generation price is not considered an important factor in food choice decisions as often they are not responsible for the management of budgets and or food purchasing decisions. For younger participants the taste of food was the most significant factor influencing food choices. Furthermore, in many cases in Saudi Arabian culture, children do not leave their parents' homes until they are married and therefore, when they attend university, they are still under the care and responsibility of their parents and therefore are not required to make food purchase decisions until slightly later in life. This is different from the findings by Chambers *et al*. (2008), who showed how much younger people in the UK worried more about the price of foods because they had to budget their money.

Price and income also has an impact on gym membership. Focus group participants identified that the price of gym memberships was too high and was a barrier to usage and is consistent with AlQauz's (2009) findings. This further highlights how much of an impact and barrier price has over participants wanting to improve their health and also how revising the price and availability of such places could improve this situation.

Although the FCQ found no significant difference between gender and price, the focus group discussion identified women were more concerned about this. This may be due to Saudi women often adopting the role of homemaker, with responsibility for food procurement and preparation. However as previously mentioned many female participants felt healthy foods were not readily available in all shops and markets and this was cited as a reason for buying convenience 'fast foods' which typically have a high fat profile.

The FCQ findings identified that price was also associated with an individual's level of education such that if the level of education is low, price will be an important factor that affects their food choice. One may also link this to income as those who are more educated generally have better employment opportunities in Saudi Arabia. In light of this, one may see that this supports existing research, which states that those who are regarded as highly educated are generally more inclined to opt for a healthier diet which are associated with being more expensive (Macino *et al*., 2004). Much of the reason for this may also stem from educated people having the ability to process, interpret and apply the information they receive (or investigate) concerning food and food choices (Contento, 2011), which means they understand the benefits and harms that are associated with certain foods.

In terms of the participants' mood and other sensory appeals (with the exception of taste), the FCQ found this affected females more than males. Within the focus group discussions, the role of mood was presented amongst both genders as desiring a particular type of food or consuming more food if they were stressed, in a bad mood or other psychological states like depression. The health experts also supported this, however only negative mental states were discussed throughout the in-depth interviews. These findings are also consistent with the existing literature where emotional states can influence what an individual eats (Snooks, 2009) and (Köster, and Mojet, J.2015).

A key factor that was not identified in the FCQ, but which underpinned many of the discussions in both the focus groups and health experts' interviews, was how culture and tradition affects food choice within the Saudi Arabian context and with Muslims in general and is a factor that has been reported in the existing literatures relating to Arab culture in general (Nestle *et al*., 1998 and Adam *et al., 2014*). As the Saudi culture promotes a family-focused ideology, many traditions that relate to this still remain. The sharing of family meals means that individuals, more specifically children and spouses, are not able to exert control over the types of food they want to eat. This research is consistent with Giskes *et al*, (2005) who shows how younger people are dependent upon the foods

their parents choose, regardless of their own desires or preferences. Thus, the influence that parents have over the family's food choices is evident in this research and in accordance to the findings by Witherup (2012). Additionally, this is also found for many married couples, (particularly females) who were identified as prioritising the tastes and preferences of their spouse and family over their own (John and Ziebland, 2004). What was interesting in this study is how some married couples would support and encourage each another to eat more healthily, particularly wives supporting their husband (as also found by John and Ziebland, 2004).

Another aspect of this is that, although some participants said their busy lifestyle meant less that it was more difficult to prepare meals from first principles, there was no mention of purchasing or eating ready-made meals, as found in Selleag and Chapman (2008). In fact, participants showed their dislike towards preserved and tinned foods, even though it was shown to be a popular trend in Western countries (Chambers *et al*., 2008). That does not mean participants opt for convenience in such situation, however, it does show that if they are in a situation where their busy lifestyle hinders them from cooking at home, they would rather choose to eat out rather than buy ready-made meals. This again may refer to the idea of eating together as a family, where a restaurant environment is more suited to this or because of how easy and convenient fast food outlets are in the urban areas across Saudi Arabia. Ethical concerns relating to foods were not spontaneously mentioned in the focus groups and were a low food choice motivating factor in the FCQ.

7.3 Barriers and Facilitators towards healthy eating habits

Findings to support Research Objectives 3-4, are drawn from the focus groups and expert interviews and are now discussed (see table 7.1)

Table 7.1 summary of the main findings from focus groups and interviews

Food choice concepts	Findings	References	Barriers	Facilitators
Willpower and motivation	Having sufficient motivation and willpower to stick to a healthy diet	Al-Khudairy, (2014).	✓	✓
Culture and tradition	Social gatherings that are part of Arab tradition include unhealthy foods affecting food choices (guests are compelled to eat food served by host so not to offend them)	AlQuaiz and Tayel, (2009; Alqout and Reynolds, (2013)	✓	✓
Social support	Support from family members and friends have been shown to be a strong influence towards healthy eating habits	Al-Ghawi and Uauy, (2009).	✓	✓
Price	Most of the participants considered the cost of healthy foods to be more expensive than other types of foods, particularly unhealthy foods like fast foods.	Reicks et al., (1994); Marshall et al., (1995); Treiman et al., (1996); Witherup, (2012); French, (2003); WHO, (2008)	✓	✓
Availability	Fast food is more available and easily accessible than healthy foods	Ahuja & Walker, (1994); Haerens, et al., (2009); Lawrence, (2009).	✓	✓
Governmental support	This was a significant key facilitator towards healthy eating, which could potentially provide changes in food prices, as well as environmental change, particularly for women (i.e. access to gyms)	DeNicola et al (2015)	✓	✓
Time constraints	Busy lifestyle and the lack of effective time planning led some participants to eating unhealthily.	Bisogni et al (2012)	✓	✓
Taste	Taste and its association with healthy or unhealthy foods has been a common issue found in existing research, and has still not been resolved.	Forwood, (2016)	✓	✓
Knowledge	A lack of knowledge towards healthy foods gave participants less of an informed decision towards their food choices.	Enjezab et al., (2012),	✓	✓

7.3.1 Willpower and motivation

From the various influences that were expressed by the participants and health experts, although motivation and willpower were not specifically highlighted as factors for food choice and exercise, they were seen as an underlying barrier or facilitator in changing and maintaining an individual's healthy diet Al-Khudairy, (2014). For instance, these two factors were the driving force for individuals to eat healthy foods, even if such food was not as tasty, more expensive and more difficult to access than unhealthy food. This raises an important question: Are motivation and self-efficacy the underlying psychological influences over healthy eating habits and exercise? From the evidence in this research participants were unanimous in the belief that they would be healthier if they had such influences behind them. These influences were also not only internal and personal to the individual but also found externally in the form of support from family and friends, which would motivate them to maintain a healthier lifestyle.

7.3.2 Culture, tradition and social environment

Personal social support systems and commensality associated with social gatherings typical within Saudi culture were identified as barriers to making dietary behaviour changes. Some male participants identified life-changing events such as marriage becoming a facilitator to healthy eating. However, compromising personal food choices in the provision of a family meal was a key barrier. Such support from family members has been shown to be a strong influence over healthy eating habits (Al-Ghawi and Uauy, 2009).

Support for healthy eating can also include friends within Saudi Arabian culture, as social gatherings were also seen as a key factor over food choices. As highlighted in these findings, as well as some research in Gulf countries pertaining to food choices, social gatherings with friends are a dominant factor affecting food choices and has a direct effect over what food is eaten (AlQuaiz and Tayel, 2009; Alqout and Reynolds, 2013). Within the Arab culture, this form of eating is quite common, as food and commensality are generally regarded as the focal point within such social gatherings and meetings. This also confirms previous studies, such as Nestle et al (1998), who show individuals must conform and comply with the social norms by eating what everyone else is eating. In Saudi Arabian culture, this is even more important, as it is culturally unacceptable and seen as offending the host if an individual does not eat whatever meal is served. From this study, the participants in the focus group discussion and the health experts clearly stated that the

consumption of sweet and fatty foods were often presented in these type of settings, which would mean they would have to be consumed.

This finding is similar to those of Alqout and Reynolds (2013), who identified that positive support from family and friends during social gatherings could improve the dietary habits of people wanting to adopt healthier food practices. Shepherd et al (2006) explain how this peer pressure can be a positive support, however it was not the case during the focus group discussions, and even though it was something the majority wished would happen. A solution provided by the participants was to simply decrease the amount of social gatherings they attend or they can eat before going to the event so as to not fall into the same pitfalls.

Although Ziebland (2004) illustrated how fruit and vegetables were not purchased or eaten due to the lengthy time it took participants to travel to supermarkets, the issue of Saudi females travelling alone (without a chaperone) highlights similar concerns from a different perspective. This issue was a concern for many of the female participants and was seen as a clear barrier to maintaining both a healthy diet and exercise. Furthermore, the health experts verified that this did have a serious impact on women's health, as it meant Saudi women were not able to go to shops of their choosing and they do not get the necessary exercise if they remain at home. A further interesting point to note with regards to this factor is that some Saudi females are greatly dependent upon their male family members when it comes to purchasing food; this relates back to the issue of how females may be compelled to eat whatever their male family members (i.e. husbands and fathers) bring home because they have limited access to transport to go shopping. As a result, female participants expressed a great emphasis on improving travel facilities to tackle this issue.

7.3.3 Price

High price was explicitly mentioned with regard to healthy foods, and these criticisms are echoed in the existing literature (Reicks *et al*., 1994; Marshall *et al*., 1995; Treiman *et al*., 1996; Witherup, 2012), where healthy foods such as fruits and vegetables are perceived to be more expensive than unhealthy foods like those found in fast food outlets. Perceived high price is therefore a clear physical barrier towards the purchasing of healthier foods. However, (French, 2003) stats that increase consumers purchasing of healthy food, price reduction intervention is an effective strategy. In addition, to encourage the consumption of healthy food products, the WHO (2008) has

recommended applying fiscal policies (i.e. taxation, subsidies or direct pricing) to influence food prices.

7.3.4 Availability

In addition to price, the participants also mentioned that unhealthy food products are often purchased and consumed because they are readily available (i.e. in homes, schools and shops) and this is similar to the exciting literature such as (Ahuja & Walker, 1994; Haerens, et al., 2009; Lawrence, 2009).

7.3.5 Governmental support

Governmental support was cited as one of the key facilitators towards healthy eating by both the participants in the focus group discussion and the health experts. According to the participants, such support has the potential to resolve many of the issues that were raised in influencing food choices, such as providing gyms and health stores/food more accessible to women and more affordable, as well as improving education and awareness of healthy foods which is similar to what DeNicola et al (2015) have suggested in relation to policy interventions. This could be interlinked with the factor of awareness and knowledge of healthy foods, such as increasing educational programmes for food on TV, radio and print media, imposing calorie information to be placed on foods or having more clinics carrying doing outreach educational programmes in schools and workplaces.

Additionally, governmental support could also facilitate healthy eating habits by interlinking it with the factors of availability and price, where a review of pricing structure on healthy foods could be conducted and make them more affordable. This would certainly facilitate and resolve the issues concerning price, while it may also resolve the availability and accessibility of such foods. Furthermore, this could also be linked with the government improving public facilities, such as finding a solution to the travel restrictions for Saudi women or accessibility to health stores and gyms.

7.3.6 Lifestyle (Time constraints)

In this study, the issue of lifestyle was highlighted as a clear barrier to the consumption of healthy foods, to the point that their busy lifestyles and limited time constraints caused them to eat foods that were readily available and required little preparation time. This is in line with existing literature, such as Bisogni et al (2012). In contrast, the feedback from the health experts opposed this view, stating that many individuals did have enough time and that they just did not plan their time effectively. In light of the focus group discussion, what was mentioned by many of the participants that a change in lifestyle would help facilitate healthier eating habits, such as incorporating exercise in their daily routine or not attending as many social gatherings.

7.3.7 Taste

As already discussed, taste is an important factor motivating food choice and therefore the perceived taste of healthy foods will influence their purchase. Taste and its association with healthy or unhealthy foods has been a common issue found in existing research and has still not been resolved (Forwood, 2016). The idea that unhealthy food is seen as "tasty", whilst healthy food is "flavourless" makes this factor a strong barrier towards maintaining a healthy diet, which was firmly supported in this study. This supported the concept of likes and dislikes that Shepherd et al. (2006) mentioned when discussing food choices, instead of individuals viewing food as healthy and unhealthy.

7.3.8 Lack of awareness and knowledge

One area that was deemed to be a clear barrier towards healthy eating habits was the lack of awareness and knowledge that the participants had over certain types of foods. Many males felt that if they were given information over the benefits that healthy foods can provide them, they would be more likely to eat these, whilst also stating that the lack of advertising for such foods makes them less familiar and hence, not consumed (which contrasts with the advertising of fast food brands). This supports the existing research, such as the qualitative study by Enjezab et al., (2012), where they looked at what internal motivations would affect healthy lifestyles on middle-aged women in Iran. Among the five themes that emerged, the participants' knowledge of health-promoting behaviours were one that would affect them in adopting a healthier lifestyle.

7.4 Summary

This chapter provides a detailed insight into the data that was extracted in the previous chapters from both qualitative and quantitative analyses. It goes into great depth to analyse and evaluate key findings, such as the suitability of implementing Steptoe et al (1995) FCQ in a Saudi context, as well as the barriers and facilitators affecting Saudi citizens. Many of the barriers and facilitators identified in this study supported the findings of previous research, but did highlight how the Saudi culture in particular has a significant impact upon food choice and dietary habits, in particular for females. Based upon these findings, the next chapter focuses on the recommendations to help change behaviour for Saudi females and improve their food choice habits.

Chapter 8 Recommendations for the design of health-related interventions

8.1 Introduction

In this chapter a social marketing plan for Saudi Arabia is proposed with the objective of encouraging and facilitating dietary change specifically amongst Saudi women. It should be noted that this plan is a recommendation based on the data that was extracted from Chapters 5 and 6; it will provide the basis for food and health policy makers in Saudi Arabia.

In order to achieve the objectives of the social marketing recommended plan, it is necessary to ensure the following aims are addressed:

- Improved healthy eating amongst Saudi females by 20% in 5 years.
- Improved physical activity amongst Saudi females by 20% in 5 years.

The construction of the social marketing plan was based on the benchmarking criteria from Andreasen (2002). This framework prioritises formative research, in line with this qualitative research in the form of focus groups and interviews were conducted, to ensure that the attitude, needs and views of the target audience are the basis upon which policy recommendations are made. In turn, this ensures the relevance of the recommendations to the target audience and helps ensure adoption and lasting behaviour change. The next section discusses the social marketing recommendations.

8.2 Social marketing recommendations plan and discussion

The framework devised by Kotler, Roberto and Lee (2002) has been used in this section which provides a detailed and systematic approach towards the development of a social ensuring that the benchmark criteria is met.

8.2.1 Focus and campaign purpose

When considering the initial stages of a social marketing plan, it is recommended to look at the market supply and demand (Kotler, Roberto and Lee, 2002). The campaign purpose therefore, focuses on what impact could be made as a result of the campaign (Kotler, Roberto and Lee, 2002). In this respect, the primary focus of the recommended social marketing plan is to deal with the increase in obesity and unhealthy eating habits amongst Saudi females. To achieve this, the following goals and objectives have been identified:

- To facilitate healthier food choices.
- Raise awareness of the harm that may come from unhealthy eating, as well as the benefits from healthy eating.
- Increase the amount of physical activity by 20% in 5 years.

a) SWOT analysis

The SWOT analysis is the acronym of a strategic framework that helps marketers understand the Strengths, Weaknesses, Opportunities and Threats of the social marketing plan. Table 8.1 provides a further insight into the SWOT analysis for this recommended social marketing plan.

Table 8.1 SWOT analysis

Strengths
The Saudi government have highlighted the obesity epidemic in the country as an important issue that needs to be addressed as high priority. Moreover, from the data extracted in the previous chapters, it is evident that many of the participants stated they would like to change their eating habits to eat healthier foods, which shows that there is a desire and motivation to change behaviour. This in turn means a social marketing plan to improve healthy eating could have greater potential to be implemented and be successful. In terms of the target group, the female participants that were part of the study showed that they indicated different level of readiness to change also, they had a basic level of knowledge in terms of healthy eating and exercise, which can be used when facilitating behavioural changes. In addition, they also have a willingness to change their current unhealthy eating habits and lifestyle.
Weakness
Changes in behaviour can be extremely difficult to implement. This means any social marketing plan that is proposed may need to be done in conjunction with other behaviour change initiatives. Moreover, the expenses for this recommended plan could be high and will require a great deal of experience and governmental support to implement.
Opportunities
Analysing past initiatives that have addressed healthy eating habits in Saudi Arabia, and learning from them (i.e. pros and cons) could add value to this recommended plan. This also includes looking at other social marketing plans that focused on healthy eating, whether in or out of Saudi Arabia, such as the Change4life initiative. In addition, having a food and health action plan that looks at many of the key intake/consumption patterns of certain foods and nutrients may help provide certain solutions.
Threats
Due to the fact that social marketing has not been done previously in Saudi Arabia, there could be potential reluctance by individuals/organisations to implement them, particularly if it requires funding. There are limited resources targeting adults or, more specifically, females over 18. Cultural practices are a huge threat to the whole social marketing plan; this is because, to disrupt the status quo in such a manner could be seen as highly detrimental (i.e. changing how social gatherings are conducted)

b) Review of past and similar efforts

Social marketing initiatives such as the Change4life initiative in the UK state that any plan to improve healthy eating habits, should focus on both food intake and physical activity. Moreover, while there is a lack of social marketing campaigns in Saudi Arabia, those that were conducted in UK and USA are used for reference.

8.2.2 Target audience selection

To ascertain the target audience for the recommended social marketing plan, information provided by the Ministry of Health, as well as the focus group participants and health experts during their interview, were considered in terms of identifying who were motivated to change their unhealthy eating habits and lifestyle and why. Thus, in order to achieve maximum uptake of the intervention initiatives, this social marketing plan targets those who are at the stages of change between contemplation and action (according to the Transtheoretical Model), which is considered ideal and applicable for an approach or strategy to be implemented (Prochaska, DiClemente and Norcross, 1992).

Upon analysis of the results and due to individuals being at different stages in their readiness to change, it seems that the most suitable theory to apply to this research would be the Transtheoretical model (also referred to as the Stage of Change model) (Prochaska, DiClemente and Norcross, 1992). Figure 8.1 revisits the different stages of change in this model.

Figure 8.1 Stage of Change Model

Source: Pro-change behaviour systems, INC (2015)

The results that have been extracted from this data seem to apply to the five different stages identified in the model, starting with precontemplation to maintenance. It can also be applied to the transition that individuals may go through between each stage. For instance, the data shows the participants did implement healthy eating habits, but had difficulty in maintaining it and, as a result, they subsequently reverted back to earlier stages of the model such as preparation or even contemplation.

The participants' motivation to change was identified during Phase 2 of this research. In turn, choosing the target group meant one has a clear understanding of the individuals within that group. This refers to an understanding of the problems that they encounter, the behaviour they wish to change, as well as their characteristics. These can be linked to the criteria from the National Benchmark Criteria for social marketing (French and Blair-Stevens, 2006), which refers to "segmentation" "customer orientation", and "behaviour" respectively. In light of this, two key target groups for this social marketing recommended plan were identified. The first were younger females who were motivated to change their food and engage in exercise, which was related behaviours due to weight gain concerns. The second target group were older females who had identified chronic health problems or who were concerned at such a diagnosis and weight control. It should be noted that from the findings, not all the participants stated they were fully motivated to change their eating habits, more specifically from the males. Furthermore, a clear distinction was to be made between the different types of people in the focus groups. They were as follows: a) those that are already leading a healthy lifestyle (i.e. food and exercise), b) those that had a desire or were active in improving their health, and c) those who have not considered implementing a healthy lifestyle.

The explanations for the selected target groups are identified in Table 8.2 and Table 8.3 using a Health Belief framework, including perceived susceptibility and severity, around which their behaviour change motivations were framed.

Table 8.2 Case studies in relation to target audience selection

These case studies have been constructed from the analysis of the focus groups data.

- ***Older female aged +40 (Lila)***

Lila is a 40+-year-old housewife who lives with her husband and 5 children in Jeddah. Lila's husband responsible for food purchasing, but not the preparation. His work demands that they frequently relocate and he also works different shift patterns during the night and day. He likes to have his meals on time with his family sitting together. Lila and her husband determine what food they purchase, but Lila who always prepares the food. The choice of the meals is made in accordance to family preferences. Lila loves to cook different types of food and she loves trying something new; she considers herself to be a very good cook. Unfortunately, Lila suffers from Type 2 diabetes and obesity and subsequently, she has tried to change her diet to reduce her weight, but she has generally been unsuccessful due to a lack of self-efficacy, life commitment and social support.

- ***Younger female aged 25 (Sara)***

Sara is 25 years old female who is married with one child and resides in Makkah. She recently started work as a teacher. Sara and her husband are responsible for buying and preparing food, but most of the time, it is Sara who prepares the food, while her husband will help occasionally. Sara does not have any health problems, but she is concerned with maintaining her weight and being in a good shape. However, there are some barriers she is facing regarding her weight management such as, a lack of gym and health facilities, the general culture, social gathering and support.

Table 8.3 Target Audience Analysis using HBM

Demographic factors	Perceived susceptibility	Motivation to change	Perceived severity	Benefits to taking action	Barriers to taking action	Cues to action
Younger group						
Women Aged +18 Living in western region Single/ married with or without children/ living in the western region of Saudi Arabia specifically Jeddah.	High chance of obesity. Without exercise, it could cause severe health issues (i.e. heart disease)	Weight control, fitness and avoid health problem	High severity in causing cardiovascular problems. Unhealthy eating habits may shorten lives.	Prevent us from major diseases like heart problems and hypertension (MN). Weight control Socially acceptable	lack of time due to life commitments(ES) our society, tradition and customs we have a lot of social events (SH) Lack of exercise facilities	Increase awareness over the negative consequences of unhealthy eating. Gym with reasonable prices
Older group						
Women Aged +40 Living in western region Single/ married with or without children/ living in the western region of Saudi Arabia specifically Jeddah.	Obesity and Health problems	Having health problems and avoid health problems like diabetes and hypertension, weight reduction	Severe health issues could cause early death	Reduce or avoid health problems , weigh control, Longer life		Improve physical activity facilities

To conclude, based on the results that were found, one may suggest that the Health Belief Model (HBM) is useful in providing an analysis of the target audience, specifically in terms of their current perception on healthy eating and physical activity, as well as their perceptions concerning these factors and the benefits/barriers that may subsequently influence their decision in changing their eating habits and lifestyle (Becker *et al*, 1977). Lastly, it provides cues to action, all of which build upon the essential details for the recommended social marketing plan.

8.2.3 Objectives and goals

There are two key objectives that have been identified as part of the recommended social marketing plan:

1. Improve the health of women through healthy food choice by 20% in 5 years.
2. Improve the health of women by increasing physical activity by 20% in 5 years.

Moreover, in terms of the objectives that are specific for females, they are as follows:

- The target audience have identified what behaviours they want to change – increasing physical activity by having more gyms. However, the problems identified in relation to physical activity are willpower and price, which is too high to afford by most of the participants. In addition, the availability of gyms or any appropriate facility poses to be another problem for Saudi females, as the culture requires female-only gyms, which are limited.
- The focus on Saudi females is changing eating habits by increasing the consumption of healthier foods and decreasing the consumption of unhealthy foods, such as fast foods and take-aways, which, according to DeNicola *et al*, (2015)" the *fast food market in the KSA is expected to reach a value of USD $4.5 billion in gross sales by 2015, driven by a growing demand from its young, affluent, westernized population*". However, when focusing attention on their understanding over the benefits of healthy food, it seems that most of them have moderate knowledge in this regard.

The above points can relate to the behavioural objectives of the social marketing plan, which, accordingly to Kotler, Roberto and Lee (2002), can be categorised into objectives pertaining to belief and knowledge; however, from this research the objectives go beyond individual to also include social network and environmental factors. These above objectives show that there are certain motives that can help the target group. Table 8.4 provides a summary of the purpose and objectives of the social marketing plan for this research. The plan is broken down into two main campaigns, which are related to their specific target market within Saudi Arabia, and the objectives (both knowledge and belief related).

Table 8.4 Purpose and objectives

Campaign title	Target market	Objectives at the level of	Objectives	Knowledge objective	Belief objective
Improve the health of nation through healthy food choice	1	Individual	1) Consume 3-4 portions of fruits and vegetables per day (Al-Dkheel, 2012) 2) Reduce fat and sugar consumption 3) Improve cooking skills 4) Increase health awareness 5) (support motivation to change) Willpower	WHO suggests consuming more than 400 grams of fruits and vegetables per day to improve overall health and reduce the risk of certain NCDs.[12] Replacing foods high in added sugar, and fat with balanced meals can reduce the risk of health (Department of Health, 2008b).	(NU) healthy food prevents us from major diseases (Focus group: 2) (Ze) The quality of the food that we eat can determine how our health and what type of illnesses that can affect us, such as diabetes, and colon disease. Drinking soft drink can affect our bones so we must increase our intake of calcium like drinking milk. (focus group: 3)
		Social net work	1) Reduce unhealthy food during social gathering and increase healthier options (social norm)		
		Environment	1) Traffic light colours to indicate the nutritional content of food items (Food Standards Agency) 2) Review the price of healthy food 3) Increase the availability of healthy food 4) Improve public transportation		
	2	Individual			
		Social net work	1) Reduce unhealthy food during social gathering and increase healthier options (social norm)		

[12] http://www.who.int/elena/titles/fruit_vegetables_ncds/en/

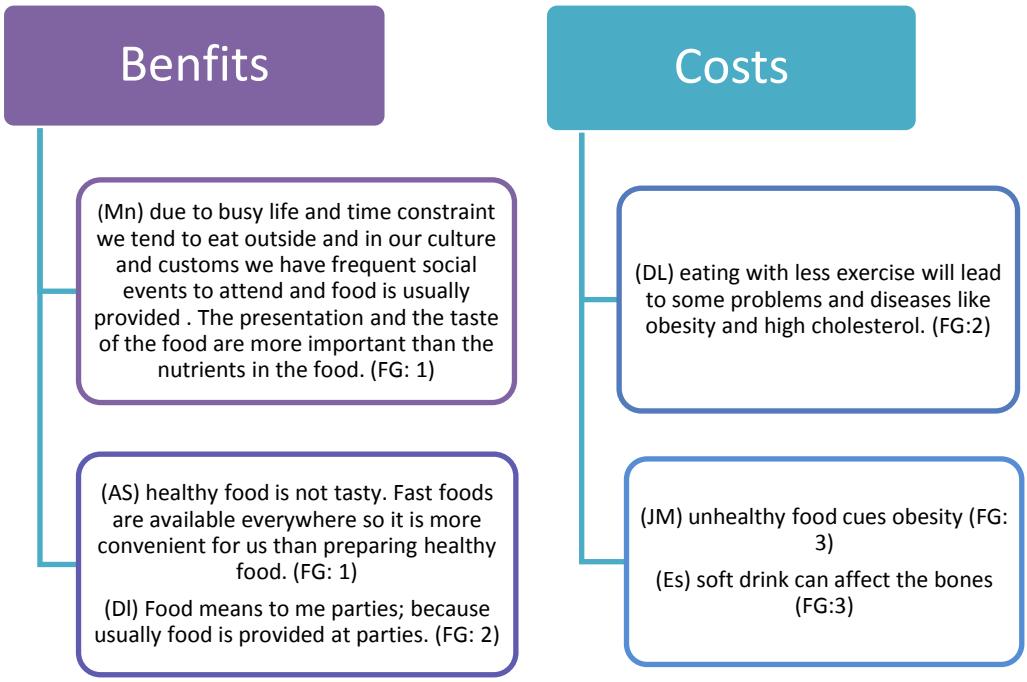
		Environment	1) Traffic light colours to indicate the nutritional content of food items (Food Standards Agency) 2) Review the price of healthy food 3) Increase the availability of healthy food 4) Improve public transportation		
Improve the health of nation by increasing physical activity	1	Individual	1) Exercise at least 5 times a week for 30-60 minutes (start with 5 minutes and increase it gradually)	Exercise 150 minutes a week, 20 to 30 minutes a day can be beneficial to protect against NCDs and for weight control, wellbeing and health. (Department of health,)	(Sm) I think physical activity is very importance to stay fit and healthy so if we have more gyms or facilities will be great. (focus group: 1)
		Social net work	1) Exercise as a group		
		Environment	1) Improve physical activity facilities		
	2	Individual			
		Social net work	1) Exercise as a group		
		Environment	1) Improve physical activity facilities		

8.2.4 Analyse target audience and competition

When analysing the target group, the benefits/cost analysis relating to their current behaviour should be taken into account as it helps to understand how the participants feel about the behavioural change. Moreover, it will aid in identifying what the participants feel could be the barriers that hinders them from achieving this desired objective, whilst keeping it in line with the national benchmark criteria (i.e. exchange, theory, insight and competition).

In recognising the benefit/cost of the current behaviour, it may provide a further insight into why the target audience does or does not want to change their healthy eating habits. Figure 8.2 gives an overview of the cost/benefit analysis towards the current behaviour of the focus group participants.

Figure 8.2 Benefits and costs to current behaviour



Although the participants had a certain perception over the benefits and cost towards their current behaviour, they still showed a willingness to change. In light of this, the data from the focus group provided further insight into what the participants already knew about healthy foods and how adopting healthy eating habits could improve their lifestyle. Moreover, many of the participants also demonstrated what they could do to implement this type of lifestyle, or what could facilitate them in doing so.

Furthermore, in addition to the participants' level of knowledge on healthy foods, they also provided their views on eating healthy foods and exercise. This is vital as it showed they had

the potential for behavioural change, particularly as many of the target group stated they would exercise if the facility was made available, or eat healthy foods if they were less expensive and easily accessible.

8.2.5 4P's

As part of implementing the social marketing plan, the marketing mix for long and short terms initiatives has been outlined in Table 8.5 and Table 8.6 for both target groups. These have primarily used the suggestions from the focus group discussion and those by the health experts, in addition to the author suggestions from existing literatures.

Table 8.5 Marketing Mix (short term initiative)

Product	Price	Place	Promotion
Apps application Videos: • healthy cookery classes, • exercise classes, • classes about the benefits of healthy food and exercise and interaction with the trainers • Rewards points in every time watching these videos • Recipes and tips	Free app Free advice	Smart phones and tablets	• Leaflets in malls, hospitals, supermarkets, universities • Media advertising

Table 8.6 Marketing Mix (long term initiative)

Product	Price	Place	Promotion
Health centre • Educational lessons • Healthy food options • Cookery lessons for healthy food • Exercise classes • Nutritionist • Free or reduced transportations • Membership card • Apps application	• Free advice • Healthy food options • Reduced price for food and gym • Reward points • Free delivery for healthy food	• Health centre in every district	• Media sources • Advice from health professionals and support from family and friends • Leaflets • Sponsorships

In relation to the various elements highlighted in the marketing mix, Abraham and Mitchie (2008) developed a taxonomy of 26 applicable behavior change techniques that can be adopted to contribute towards the effectiveness of interventions. A number of these techniques have

been identified as being applicable for this social marketing plan, in order to help ensure the target groups achieve the necessary changes, such as:

- T2: Provide information on consequences: this could refer to the benefits and costs of action or inaction in both the short and long term interventions.
- T5: Prompt barrier identification: This can be used to identify the barriers to performing the behavior, whilst also providing methods of how to overcome them (i.e. transportation issues, crèche facilities, reviewing the cost for gyms and healthy foods).
- T6: Provide general encouragement: Both the short term and long term interventions could reward the person for their efforts through incentives like vouchers or free healthy meals/medical checkups.
- T7: Set grade task: Helping the target groups to reach their goals by setting achievable tasks and gradually increase their difficulty until the target behavior is performed. This could be done in physical activity by starting to exercise for five minutes, increasing it gradually thereafter.
- T8: Provide instruction: This is done by informing individuals of how to perform a particular behavior so they are fully informed. This is necessary to ensure there is no lack of knowledge.
- T9: Model or demonstrate the behavior: This can be done through instructors via multimedia or face to face interaction.
- T18: Use follow–up prompts: Regular contact with individuals after completing the intervention, in order to encourage them to continue with the desired behavior.
- T19: Provide opportunities for social comparison: Providing opportunities for individuals to work together and help each other achieve their goals.

After outlining the aforementioned behaviour change techniques, it is important to bear these in mind during the social marketing plan for the short and long term recommendations. What follows is a detailed insight into each of these recommendations.

The short-term initiative that this recommended social marketing plan focuses upon is an application that is designed to run on mobile phones and tablets. This concept is similar to previous successful social marketing campaigns, such as Change4Life in the UK, where an app has been rolled out to fulfil the objectives of that campaign. In addition, the idea of using a smart phone/tablet app to improve physical activity and healthy eating was effective and recommended in other research. For example, in a study by Wang *et al* (2016), the users found that the combination of diet and physical activity apps were more effective in helping them

maintain a balanced diet and increased exercise, as opposed to those who used only one type of app.

In this context, the app product will be an effective way to help users eat healthier meals and have a better understanding of how eating the right type of foods can help improve health and wellbeing and remove the barriers for eating healthily and exercise. This is achieved by providing an extensive list of recipes that are easy to prepare, with all the necessary ingredients listed for the user, as well as tutorial videos for cooking and exercise. Therefore, for this product, once the target user has registered and logged in, it provides them with a number of key health awareness features, which are as follows:

- Classes: The primary goal of this app is to provide the user with a number of various classes that are available for them to download/stream. These classes including cookery classes to make healthy foods, 10 minute exercises that can be performed in the comfort of their home, classes concerning the benefits of healthy foods and exercises, as well as live interaction for question and answer time with personal health trainers and experts.
- Reward Points System: To motivate and encourage the target audience to watch these videos, a point scheme is in place, whereby users can build points and use them in exchange for free healthy meals, discounts or medical check-ups.
- Delivery Service: The app will be made functional with certain health stores and restaurants, where users can order reduced price meals (with free delivery service)
- Recipes and Tips: an exhaustive list of free recipes and tips to help maintain healthy diet and exercise.
- Pre and post-test your knowledge quizzes: To test the user's knowledge on healthy foods and diet, which also helps track behaviours and provides regular updates for progress.

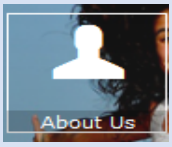
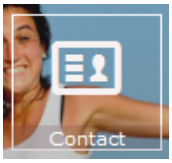
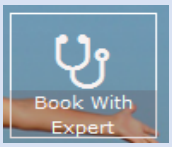
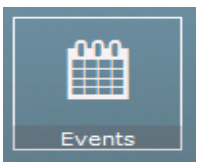
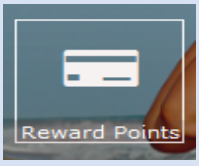
According to research conducted by Nielsen Holdings (Nielsen, 2014), 67% of the Saudi Arabian population above 16 use a smartphone, whilst 73% of those under 16 also use a smartphone[13]. This highlights the benefit and value in implementing smartphone applications for this purpose. Moreover, in examining how this app compares to that of the Change4Life, there are a number of differences that should be noted. More specifically, Change4Life have more than one app for healthy lifestyle (i.e. Change4Life fun generator for kids only, Change4Life Smart Recipes, Change4Life Smart Restart, and Change4Life Smart Step-O-Meter). This app however, will be used by combining each of the Change4Life ones into one main app, specifically dealing with healthy eating and exercise. Figure 8.3 provides a prototype

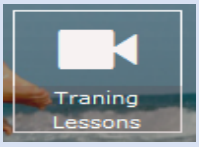
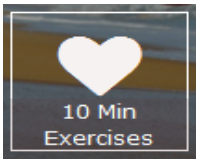
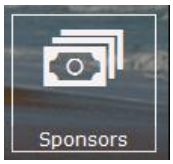
[13] http://www.nielsen.com/sa/en/press-room/2014/smartphones-driving-mobile-sales-in-saudi-arabia.html

for the design and content of the actual app; this is followed by Table 8.7, which provides details of each component on the app.

Figure 8.3 be Healthy & Active

Table 8.7 Description of be Healthy and Active App

Menu	Description
	Information about the app – what it provides the user with and how it is to be used (i.e. This App provide information about being healthy and fitness by providing exercise lessons, motivational talks and recommendations)
	Contact details for the designer and developers for the app.
	Option to book an appointment with a health expert to discuss any enquiries
	News and information concerning health and exercise.
	Provide tips and techniques on how to eat healthy food or how to avoid unhealthy habits
	Any special events or conferences related to health within Saudi Arabia or city near user.
	Collection point when the user has watched lessons to purchase healthy foods, or to have a medical check-up etc.
	An online store that provides healthy products

	
	Provide motivational and training lessons to increase awareness and give information
	Daily 10 Minute Exercises that target audience can do in the comfort of their home.
	To monitor, track participants' progress and knowledge
	Information on the Ministry of Health and Ministry of Education
 	Using social media so user can share their experiences

Based on the recommendations from the health experts and focus groups, a fully functional health centre in every district that is made affordable and accessible for the target audience

(young and old women) would be part of a long term initiative in achieving the social marketing objectives. The centre will be designed to provide a number of key features, which are as follows:

- Cookery and educational lessons on healthy foods. The purpose behind these classes will be to help spread knowledge and awareness of healthy foods for the target audience. The classes will be delivered by health experts, who will be able to demonstrate how food can improve or harm a persons' health. One of the key objectives of this is so that females are more confident in providing healthier options during their social gatherings, which, as discussed, is often problematic as unhealthy foods are normally served. These classes could therefore make users more confident to serve healthier foods due to knowledge and awareness, as well as ensuring these foods are tasty due to the cookery classes.
- Exercise classes. Similar to the cookery and educational classes, the exercise classes will be used to help the target audience improve their fitness, maintain their health and help manage weight control. The classes will provide exercises that are suited to each individual, with personal trainers providing support and guidance throughout.
- Nutrition advice and guidance. Free advice and guidance will be available from a dietician, who will provide suitable recommendations to help users improve their healthy eating habits.
- Free or reduced price on transportation. Due to the limited public transportation, the centre will offer free transportation (or at a reduced price) to encourage the target audience to come visit the centre of a regular basis.
- Healthy Food Store. A dedicated store within the health centre that provides healthy food and ready-made meals at a reduced price.
- Membership Card. A membership scheme will be set up so that users can collect and built up points each time they come and participate in the centre activities. Using their membership card, the members can then transfer their points to get free meals, free classes or vouchers that can be spent in stores that have an agreement in place with the health centres.
- Crèche facility. To allow female with children to access and engage in activities within the health centre.
- Website and Mobile App. The website and mobile app will enable users to browse what activities are scheduled within the centre and also book classes or appointments online.

- Email Reminders. Emails will be sent to users to remind them of classes, events and appointments that they have signed up for, as well as to track their progress.
- Free healthy snacks. The centre will provide free healthy snacks to all user, such as fruit and vegetables.

Tables (8.8, 8.9 and 8.10) provide a detailed description for how the various objectives of the social marketing plan is to be implemented for both target groups (younger and older Saudi females), including what approach will be taken and how it shall be evaluated

Table 8.8 Summary of Social Marketing Recommendations for healthy food choice (younger women)

Campaign title	Objectives at the level of	Objectives to address barriers	Approach taken	Evaluation
Improve the health of women through healthy food choice	Individual	1) Improve cooking skills 2) Increase health awareness 3) (support motivation to change) Willpower	- Using **App** which provides information about the portion size of food and the importance of healthy eating and how to reduce fat and sugar intake and list of recipes - **Health centre** which consist of dietitian, cookery and educational lessons on healthy foods, free or reduced price on transportation, health food Store -**Reminders Email** -**Track behaviour** over time by sending email -**Advertising** (TV, social media, magazine, radio, leaflet) - Having vending machine - Free delivery for healthy food	Number of downloaded app Number of registered people Questionnaire before and after Survey Monitoring of social media comments about the campaign
	Social net work	1) Reduce unhealthy food during social gathering and increase healthier options (social norm)		
	Environment	1) Review the price of healthy food 2) Increase the availability of healthy food 3) Improve public transportation		

Table 8.9 Summary of Social Marketing Recommendations for healthy food choice (older women)

Campaign title	Objectives at the level of	Objectives to address barriers	Approach taken	Evaluation
Improve the health of women through healthy food choice	Individual	1) Improve cooking skills 2) Increase health awareness 3) support motivation to change (Willpower)	**Health centre** (cooking and educational classes about the portion size, important of healthy eating, crèche, dietitian, Reward points	Number of registered people Questionnaire before and after
	Social net work	1) Encourage healthy eating option during social gathering (changing social norm)	**Advertising** and health programmes (TV, magazine, radio, leaflet, social media) (integration marketing communication)	Survey
	Environment	1) Review the price of healthy food 2) Increase the availability of healthy food 3) Improve public transportation	-Having vending machine -Free delivery for healthy food -Free or reduced transportation to health centre	

Table 8.10 Summary of Social marketing recommendations for physical activity

Campaign title	Objectives at the level of	Objectives to address barriers	Approach taken	Evaluation
Improve the health of women by increasing physical activity	**Individual**	1) Exercise every day for 30-60 minutes (start with 5 minutes and increase it gradually)	-**App** which provide 10 minutes' exercise video and the benefit of physical activities - **Track behaviour** over time by sending email	- Number of people who downloaded app -Number of registered participants - Counting how many people walking - Questionnaire before and after
	Social net work	1) Exercise as a group	-**Walking in mall** organized by MOH	
	Environment	1) Improve physical activity facilities	-**Health centre** which provide gym -**Closed walking area** in every district - **Gym in working places**	

8.2.6 Develop evaluation and monitoring plan

When detailing the timescale for how long monitoring should take place, it was identified that the short-term plan to be conducted between 6-12 months, while the long-term plan should be achieved over a 5-year period. Furthermore, in reference to evaluating the success of a social marketing plan, Kotler, Roberto and Lee (2002) outline two types of measurements that can be used: outcomes and process measures. The former focuses on the actual outcome of the campaign, assessing whether there are any changes in behaviour or intent in changing behaviour from the target group, as well as changes in belief, knowledge or awareness. In contrast, the latter focuses on how the plan was executed, such as analysing what policies or infrastructure was put in place to help foster a successful campaign. This includes monitoring the coverage of the campaign (i.e. in terms of how many people or whether it received media coverage), the level of support or participation from other organisation to help promote the campaign (Kotler, Roberto and Lee, 2002). Upon selection of either assessment type, quantitative and/or qualitative methods can be used to evaluate and monitor the campaign; however, one should consider tracking the campaign over three key intervals: 1) Prior to the campaign (to establish a baseline), 2) during the campaign and 3) once the campaign has been completed. (Kotler, Roberto and Lee, 2002: 334), (see Figure 8.4).

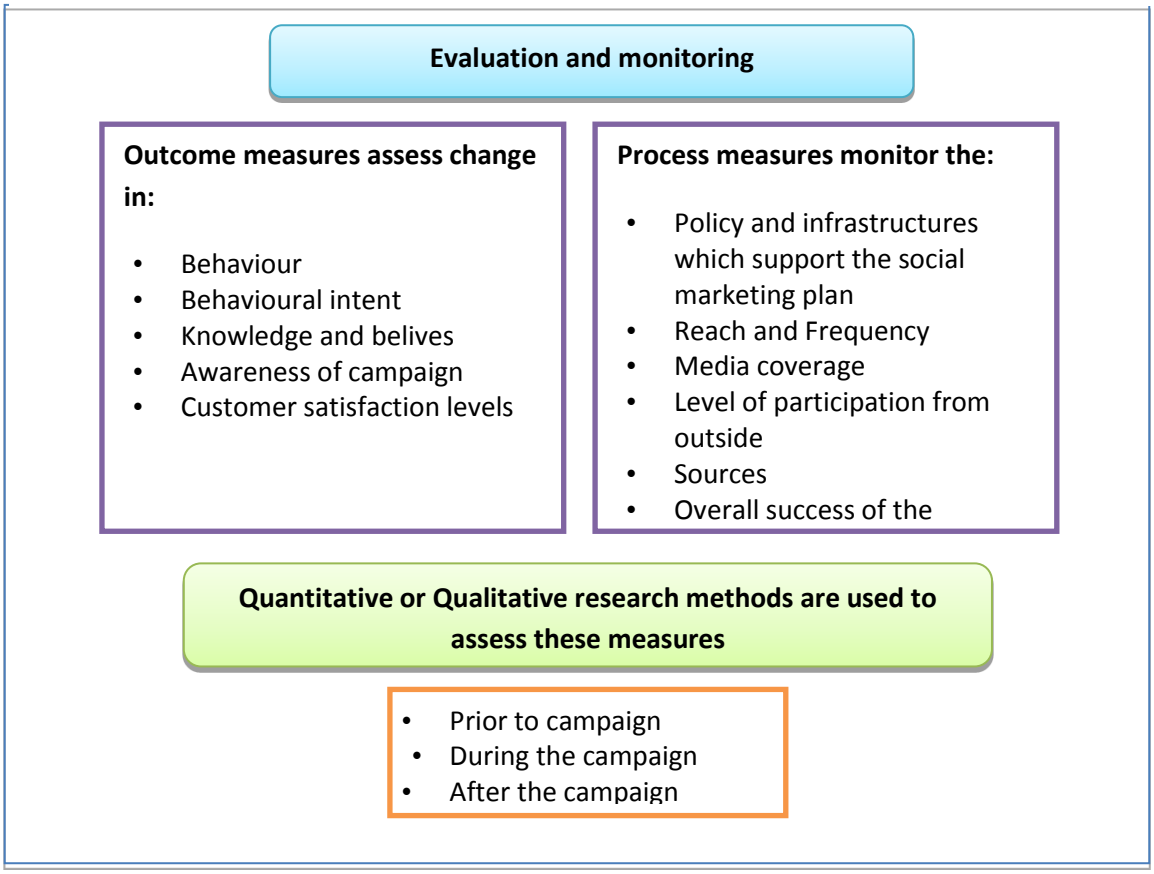
Therefore, for both short and long term initiatives, to establish the baseline (i.e. evaluation prior to the campaign), an extensive questionnaire campaign will be administered across various locations within each district where the target audience is prevalent, such as malls, shopping centres, hospitals, female universities and schools. The questionnaire for the short term initiative will ask about their existing knowledge of health and healthy eating, as well as how often they download and use applications on their phones, and their views on having an app to improve their health and wellbeing (i.e. will they use it and interact with it accordingly). As for the long term initiative, questions will be asked on their views of having a dedicated health centre specifically for women, which has the facilities mentioned above.

In terms of the evaluation during the campaign, for the app, this will be monitoring how many downloads have been made, as well as analysing how many times each of the videos/dietician advice have been accessed and viewed. For the health centre, the number of people that have registered will be analysed, as well as analysing progress reports from the health team (i.e. dieticians and personal trainers who interact and engage directly with members).

After the campaign, similar analysis will be conducted on the final number of downloads and registered member for both short and long term campaigns, and a final questionnaire will be

administered to all users to obtain their views of the app and the health centre, to see whether they found these campaigns to be beneficial and helpful in reaching their objective (the app will have a star rating so an average can also be taken).

Figure 8.4 consideration in evaluation and monitoring



Source: (Kotler, Roberto and Lee, 2002)

8.2.7 Establish budgets and find funding sources

When sourcing funding for a social marketing campaign, there are numerous avenues that can be pursued. For instance, a private/public partnership between organisations and governments could be an ideal way to help improve healthy eating habits, diet and the availability to healthy foods and exercise equipment. With respect to this particular social marketing recommended plan, it is imperative that the government supports this project and offers to fund it. To achieve this, one must gain the support of local/national government through a proposal, which will demonstrate how effective this plan can be in reducing health issues from eating habits. If they accept (including budgetary planning and timescales), it is then necessary to build relations with community groups, professional associations, and other organisations, particularly those who can help ensure the key products and services are implemented accordingly (Kotler, Roberto and Lee, 2002). This also includes having a partnership with an advertising and marketing

agency to promote the campaign effectively. In terms of the costings for the first year of both initiative, Table 8.11 and 8.12 provide a breakdown of items and total budget required[14] [15].

Table 8.11 Short term initiative costs

Item	Units	Price ($) Per Year	Total Cost
App Designer and Developer	1	22,400	22,400
Trainers	3	22,380	67,140
Nutritionist	2	23,976	47,952
IT Staff	4	15,984	63,936
Total Cost			**201,428**

Source: Authors construct

Table 8.12 Long terms initiatives cost

Item	Units	Price ($) Per Year	Total Cost
Building	1	134,000	134,000
Gym Equipment's	40	399.79	15,991
Classes	3	Included in the building	0
Trainers	3	16,000	48,000
Nutritionist	2	23,987	49,975
Crèche	1	Included in the building	0
Health Store	1		0
Transportation	3	16,000	48,000
staff	10	13,326	133,264
Total Cost			**429,231**

Source: Authors construct

8.2.8 Implementation

After securing the funding for the campaign, the implementation plan can be conducted in a number of ways. For instance, Kotler, Roberto and Lee (2002) include organising the campaign by target audience, price, distribution range, stages of change amongst individuals, objective and geographical area (Figure 8.5). Moreover, to provide a clear basis on how the

[14] https://www.mcs.gov.sa/

[15] https://www.eskan.gov.sa/

implementation plan can be conducted effectively, a complete understanding of the target audience is necessary.

In regards to this research, selecting an implementation plan by objective, goal or funding requirements is a good starting point. However, if one chooses to implement this *via* the funding requirements of their funder, it means they will have to ensure the campaign is in line with the key factors of the funding body, such as their objectives, goals and requirements. In relation to the recommended social marketing plan for this thesis, the implementation for the app will be carried out by the goal and objective because the app is an online product that can become widespread across the geographical area of Saudi Arabia. In terms of the health centre, the implementation will be conducted via geographical area, specifically in urbans areas within the Western region, as this is where the initial sample was taken from.

Figure 8.5 consideration in organising the campaign

Source: (Kotler, Roberto and Lee, 2002)

To conclude, Table 8.13 provides an overview of the decision support tools to support the recommended social marketing plan, including a cost benefit analysis of how it can reach the primary objectives in improving health and wellbeing amongst Saudi females.

Table 8.13 Social marketing decision support tools

Rank	Initiatives	Cost $	Wellbeing	Weight reduction	Avoid health problems	Awareness	Total benefits
1	Health centre (include all facilities mentioned earlier)	429,231	✓	✓	✓	✓	Very high More general benefits (interaction)
2	App application	201,428	✓	✓	✓	✓	Very high
3	Gym + transportation+ Crèche+ dietitians + Healthy food shop	300,585	✓	✓	✓		
4	Healthy food shop + free delivery +gym+ transportation	186,590	✓	✓			

8.3 Summary

Once the factors were identified and discussed in greater depth in the previous chapter, a recommended social marketing plan was devised to maximise the impact of improving healthy diet and opportunities for exercise for Saudi females. In doing so, a short-term campaign has been devised, which is in the form of a healthy eating mobile app that can provide information and awareness of the campaign to the target group. This is followed by a long term campaign, which is a dedicated health centre specifically designed for Saudi females to improve physical activity, diet and wellbeing. The next chapter provides an overall conclusion for this thesis, providing reflections, implications and further recommendations for future research in this area of study.

Chapter 9 Conclusion

9.1 Introduction

This chapter provides a final look and analysis of the aims and objectives of this research, and how this study can effectively contribute to this field of research. A number of reflections have been made by the researcher on the overall study and investigation conducted throughout this work; this shall be presented in addition to the various challenges and obstacles that were met and overcome by the researcher. Furthermore, it is important to highlight the limitations of this study, as well as discussing the implications of the research findings and how this social marketing plan could be potentially used for further implementation in the governmental plans to improve health and wellbeing in Saudi Arabia. This chapter concludes by outlining future recommendations that can be made to improve this work.

9.2 Research objectives

As explained in Chapter 1, the purpose of this thesis was to provide an empirical insight into the healthy eating behaviour of Saudi Arabian adults, with a specific purpose of informing social marketing recommendations to Saudi women. In order to address this, the research objectives were outlined as follows:

1. To review the literature regarding food choice to examine the factors that influence individual food choice, and to explore behavioural theories that define food choice and provide insights into behavioural change.

2. To apply the Food Choice Questionnaire (Steptoe, *et al*., 1995) to determine the food choice motivations of Saudi Arabian citizens.

3. To qualitatively explore the barriers preventing Saudi Arabian citizens from conforming to healthy diet and lifestyle recommendations and to identify what factors might facilitate healthier food and lifestyle choices in this population.

4. To explore health professional's perception in Saudi Arabia, to explore possible behaviour change initiatives to improve the dietary lifestyle habits of the population.

5. To develop a targeted social marketing plan and decision support tool for Saudi Arabian public health policy makers to provide recommendations aimed at achieving lasting dietary and lifestyle behaviour change amongst Saudi Arabian females.

9.2.1 Food choice motivation

The first of the two results chapters (Chapter 5) was to identify the factors affecting food choices in Saudi Arabia, with regards to this particular data, a quantitative analysis was conducted on the Food Choice Questionnaire that was devised using Steptoe *et al* (1995) and administered to 377 participants. However, upon analysis of the data, the results from a Confirmatory Analysis (CFA) indicated that Steptoe *et al*.'s (1995) FCQ model was inappropriate for Saudi consumers. As a result, an Exploratory Factor Analysis (EFA) was applied, identifying 6 factors affecting food choices specific for the Saudi sample. These were taste, health and wellbeing, and convenience, which were identified to be the most important factors influencing Saudi Arabian consumers' food choices, while price, mood and sensory appeal were identified to be less importance.

9.2.2 Exploring barriers to healthy eating

The second of the results chapters (Chapter 6) provided the qualitative data by presenting the views and opinions of the participants from the focus groups and the in-depth interviews held with health professionals in Saudi Arabia. Through thematic analysis the perceived barriers to healthy eating were identified. In addition, this chapter reported the different ways in which the participants looked after their health, as well as their overall thoughts in relation to health and food. Moreover, the health problems related to food were discussed, wherein the majority of participants identified certain barriers that would hinder them in adopting a healthy eating behaviour and exercise, whilst also addressing how their life would change if these barriers were removed or reduced. The main barriers that were perceived to prevent participants from engaging with dietary and health recommendations were culture and tradition, price, unavailability of healthy food and inconvenience of preparing healthy food from first principles, a lack of sport centres, and also a lack of self-efficacy' and motivation. One may refer back to Table 6.3, which outlined the internal and external barriers to maintaining healthy eating.

9.2.3 Facilitators and solutions to encourage healthy eating

Chapter 6 also provided the qualitative data in exploring the facilitators or the participant perceived solutions to improve dietary habits in Saudi Arabia. Similarly, a thematic analysis was conducted on the data, where the participants were asked what could help and improve their eating habits to be healthier, as well as extracting the views and opinions of the health experts over their perceptions and/or suggestions to improve healthy eating. In addition, the health experts were used to gain an insight into their knowledge of existing campaigns or efforts to improve health in their region.

A wide range of solutions from both participants and health experts were identified to improve healthy eating habits and wellbeing. These included motivations from others, awareness and availability of healthy foods, as well as a call to review the pricing of healthy food and sport centres; much of this came under support and cooperation from the government in improving such areas, as well as increasing public transport facilities for female citizens.

9.2.4 Social marketing framework

Before delving into the social marketing recommendation plan, it is necessary to revisit the concept of social marketing. As explained in Chapter 2, social marketing has received much attention and support as a framework for changing behaviour. In light of the existing campaigns for this thesis, a plan was devised in line with the health policies of Saudi Arabia (see Chapters 3 and 6), in order to tackle health problems pertaining to food and eating habits, such as obesity, heart disease and unhealthy lifestyle. Thus, the implementation of the social marketing framework in this thesis has been used provide a greater insight into the opinions of Saudi Arabian consumers concerning health, food choices and the factors affecting this, as well as the overall barriers and facilitators towards healthy eating, in order to develop a recommended social marketing plan for Saudi women, with the goal of improving their healthy behaviour.

Within this thesis, Section 8.2 provides a detailed discussion concerning each component of the recommended social marketing plan. One may note that the plan has been specifically designed to target Saudi females, which, according to the statistics from the Saudi government, and the views of the health experts, Saudi women are regarded as the highest risk group of having health problems, specifically obesity. As a result, this motivated the marketing plan to be directed towards women as the target group, who expressed a greater concern over their health problems during the focus group discussions and a stronger desire ‘readiness to change’ their behaviour and therefore were identified to be the targets of the social marketing plan.

In line with the social marketing plan, a SWOT analysis was conducted to identify the strengths and weaknesses of the plan, whilst also considering the threats and opportunities that could obstruct or help in the implementation and adoption of the plan. Furthermore, the Stage of Change model was adopted for the target group, as it was a fit in terms of addressing the majority of this group that wished to change their behaviour. This model was also suited to social marketing; as social marketing promotes the changing of behaviour of individuals. Furthermore, a key aspect of social marketing is to ensure specific and measurable goals are identified, and therefore, by analysing the data from both quantitative and qualitative sources, it ensured specific goals concerning healthy food choice and exercise were acknowledged.

A key aspect of social marketing is the 4Ps, which were outlined in in chapter 8. For this recommended social marketing plan, both short-term and long-term campaigns were identified and elaborated upon to improve healthy eating and exercise. The short term initiative involved the development and implementation of a mobile app, designed for smart phones and tablets, which provides a number of health awareness facilities to users, including online classes (i.e. cookery, exercise and educational classes), reward scheme to motivate users to access classes and free recipes and tips for healthy foods. The importance of social support in behaviour change has been identified in the focus groups. As a result, the app provides a digital social support community of likeminded individuals to provide support in the absence of this in social and family networks. As for the long-term initiative, this was in the form of a dedicated health centre in each region specifically catered towards Saudi females. The centre would include practical classes and facilities (i.e. for exercise, cookery and educational workshops) as well as an in-house health food store, dieticians, as well as membership benefits, such as reward scheme and online facilities.

9.3 Reflecting on the methods used

This section will explore the benefits and limitations of the data methods that were used throughout this thesis to achieve the research objectives. Although this has been discussed in Chapter 4, a reflection of these methods is given after the data has been analysed and discussed.

The methods that were used to extract the data were: 1) questionnaire, 2) focus group and 3) in-depth interviews. This provided a mixed-methods approach of quantitative and qualitative data, resulting in a wealth of in-depth information for analysis and investigation. Thus, upon reflection, one may conclude that these methods were appropriate in providing the necessary data to answer the research objectives. That is, the questionnaire helped provide a general overview and identification of the factors affecting food choices in Saudi Arabia, while the focus group helped in giving a greater insight into these factors, specifically in elaborating upon the barriers and facilitators towards healthy eating habits. This is something the questionnaire was not able to provide on its own. Lastly, the in-depth interviews gave further vital information on the barriers to healthy eating from a different perspective (i.e. health experts), and more importantly, their solutions on how this could be improved. This subsequently fed into the research objective of providing the necessary data for a recommended social marketing plan. Furthermore, the three methods were important as it ensured there was a triangulation of data found within the research, which could not have been achieved if only one method was used to inform the recommended social marketing plan.

However, it should be noted that a number of negative elements were encountered when using these particular methods. As previously mentioned, the suitability of Steptoe *et al*'s (1995) Food Choice Questionnaire Model was not necessarily suited to the Saudi sample in relation to it applicability and understanding of the Saudi culture. One may also note that there may have not been a particular fault of the method, but rather how it was applied. Moreover, in terms of in-depth interviews, it would have been beneficial to have different perspectives, such as other stakeholders from different departments (i.e. government officials).

9.4 Contribution of the thesis

This thesis has provided a number of key contributions towards this area of research in social science. One key contribution is that it is the first study to apply the Food Choice Questionnaire (FCQ) in Saudi Arabia, outlining the need to appropriately adjust the model to be more suited to this type of environment and the social norms pertaining to this type of culture. From a methodological perspective, this thesis has shown that the FCQ does have cross-cultural validity amongst adults in Western nations, but has been questioned in other age groups and national contexts (Trew et al., 2005; Eertmans et al, 2006; Milosevic et al., 2012), specifically when applying it for a Middle Eastern/Islamic context and with the inclusion of culture to be a key.

Moreover, this study has been the first to devise and adopt a social marketing approach in promoting healthy behaviours within Saudi Arabia. In light of these, the findings have provided a deeper understand of food choices within a particular context and also identified new challenges for behaviour change, which may not have been found in other cultures and geographical locations (i.e. social gatherings or limitations on transport and accessibility for target groups).

It is important to analyse and assess how the findings from this thesis may be transferred to other geographical and cultural context, as well as determining what is specific to Saudi Arabia or what can be translated to the wider world. From this perspective, one may note that the issues pertaining to specific treatment of women in terms of limited methods of transport, this would only be applicable for places where such an issue is found. It seems however, through research, that this is not applicable to other cities or countries; this is because Saudi Arabia seems to be one of the only countries in the world that does not allow women to drive alone. In contrast, the cultural and traditional practices of family mealtimes and social gatherings, this is commonplace among most Middle Eastern countries, so the findings pertaining to this would be applicable for such geographical contexts.

From a governmental and policy perspective, the qualitative findings can be used to provide evidence of the barriers to healthy eating and support evidence-based behaviour change interventions from a social marketing perspective. Since the interventions are based upon the solutions found within the data of this thesis, this could subsequently be used to benefit educational institutes, employers or nutritional experts in raising awareness of the specific barriers and facilitators that they should be made aware of, in order to combat the health problems that are prevalent. In addition, this thesis could be used as a support tool to facilitate

decisions on the potential prioritisation of the social marketing recommendations, which will be useful to stakeholders involved in wanting to encourage dietary behaviour change.

9.5 Further research

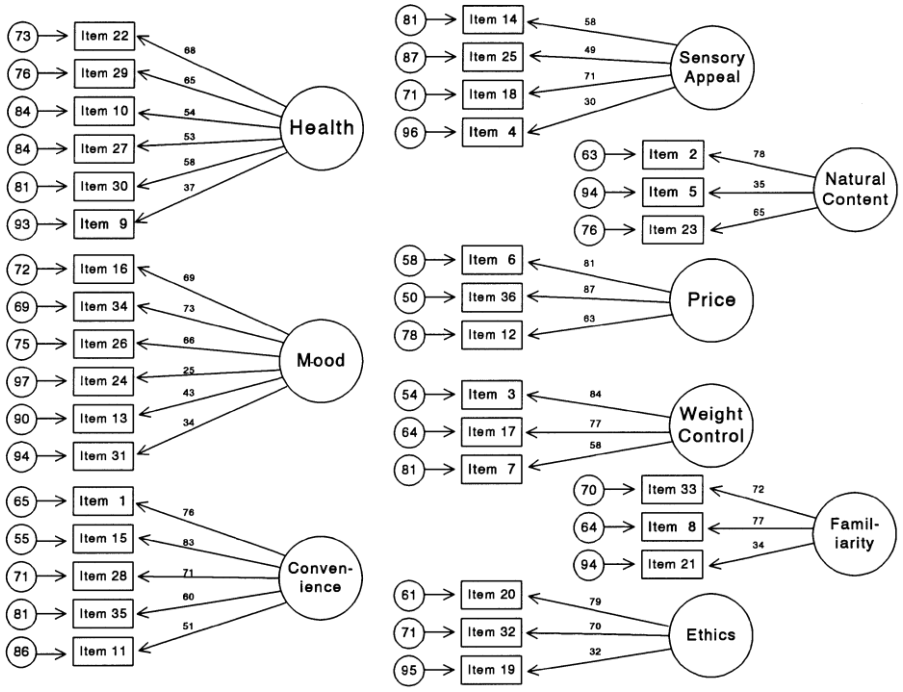
A number of recommendations have been identified for further research in this area of study. They are as follows:

- Develop, pilot, implement and evaluate the social marketing recommendation plans outlined within this thesis.
- Methodological development to the Food Choice Questionnaire to enhance its applicability of the Arab culture context by adding a culture factor.
- Increase the number of participants in the qualitative dataset.
- Having different perspective from other stakeholders from different departments.

To conclude, from the research that has been conducted in this thesis, one may assert that the current situation concerning obesity and overweight issues in Saudi Arabia must be addressed, and that a resolution in changing behaviours in food choices that are made is necessary. Saudi women in particular have been highlighted as key members within this society are at a higher risk and requires greater attention. This study therefore provides an effective contribution to the existing research of food choices and the behavioural change that influence or hinder healthy dietary habits and lifestyle through the implementation of social marketing.

Appendix

Appendix 1: Summary of Confirmatory factor analysis for Food Choice Questionnaire



Appendix 2: Test-retest reliability of the food choice questionnaire (n=245)

Scale	Time 1		Time 2		
	Mean	Standard deviation	Mean	Standard deviation	Correlation coefficient
Health	2·83	0·72	2·77	0·70	0·814
Mood	2·11	0·73	2·01	0·77	0·771
Convenience	2·75	0·80	2·74	0·79	0·830
Sensory appeal	2·99	0·63	2·94	0·65	0·729
Natural content	2·47	0·86	2·48	0·86	0·811
Price	2·83	0·80	2·79	0·79	0·773
Weight control	2·38	0·88	2·37	0·84	0·814
Familiarity	1·75	0·68	1·80	0·77	0·714
Ethical concern	1·85	0·78	1·81	0·76	0·801

Appendix 3: Food Choice Questionnaire (Arabic and English)

تقيم دوافع اختيار الأغذيه في السعودية

هل انت سعودي الجنسيه وعمرك 15سنه فاكثر اذا (نعم) الرجاء الاستمرار في ملئ هذا الاستبيان واذا كانت الاجابه (لا) لكليهما الرجاء اغلاق هذه الصفحه وشكرا على رغبتك في المشاركه.

عزيزي المشارك, شكرا لك لأخذ الوقت لملئ هذا الاستبيان اللذي يتعلق بوجهة نظرك في اختيار الأطعمه.مشاركتك في هذا الاستبان اختياريا وليست الزاميا ويمكنك الانسحاب من اكمال الاستبيان في اي وقت.

رجاء تذكر اننا نبحث عن رأيك وليس هناك اجابه صحيحة أو خاطئة. كل اجاباتكم ستحفظ بدون اسم وسوف تستخدم لغرض البحث فقط

سوف يأخذ الاستبيان حوالي 10 دقائق للاجابة عليه.

هذا البحث جزء من دراسة الدكتوراه والذي يدرس الدوافع وراء اختيار الأطعمه في السعوديه.

اذا لديك أي أسئله أو تريد المساعده يمكنك التواصل معي على بريدي الالكتروني Bshair85@hotmail.com

---

Required *

معلومات شخصيه*

1- هل انت

- ذكر
- انثى

2) مكان الاقامه*

علي سبيل المثال : جده, الرياض.....

3) الجنسية*

- سعودي
- غيرسعودي

4) الفئه العمريه *

- 15-25
- 26-35
- 36-45

- 46-55
- 56-65
- اكثر من 65

5) أعلى مستوى في اكمال التعليم*

- ابتدائي (6-12)
- متوسط (13-15)
- ثانوي (16-18)
- جامعي(18+)
- أخرى الرجاء التوضيح.....

6) الحاله الاجتماعيه

- أعزب
- متزوج
- مطلق
- ارمل

7) الحاله المعيشيه*

- بمفردك
- مع شريكك
- مع شريكك واطفالك
- مع والديك
- مع اقربائك
- مع صديق
- مع شريكك واطفالك ووالديك
- أخرى الرجاء التوضيح.....

8) وضع العمل*

- عمل بدوام كامل
- عمل بدوام جزئي
- غير موظف
- متقاعد
- طالب
- ربة منزل

9) الدخل الشهري*

- أقل من 5,000 ريال
- 5,000 الى 10,000 ريال
- 10,000 الى 15,000 ريال
- 15,000 الى 20,000 ريال
- 20,000 الى 25,000 ريال
- أكثر من 25,000 ريال

10) عدد البالغين 18 عام فاكثر اللذين يعيشون في نفس المنزل*

11) عدد الاطفال اللذين يعيشون في نفس المنزل*

12) هل انت المسؤول الرئيسي في الطبخ وتحضير الطعام في منزلك؟*

- نعم
- لا
- بعض الاحيان

13) هل انت المسؤول الأساسي في شراء الطعام في منزلك؟*

- نعم

- لا
- بعض الاحيان

استبيان اختيار الطعام

اقرأ كل نقطه جيدا وقرر مامدى أهميتها لك*

من المهم لدي ان الطعام اللذي أكله كل يوم :

	شديد الاهميه	مهم جدا	معتدل الأهميه	مهم قليلا	غير مهم على الاطلاق
(1) سهل التحضير					
(2) لا يحتوي على اضافات					
(3) قليل السعرات الحراريه					
(4) طعمه جيد					
(5) يحتوي على مكونات طبيعيه					
(6) ليس غالي					
(7) قليل الدهون					
(8) معروف لدي					
(9) عالي الألياف والنخاله (الرده)					
(10) مغذي					
(11) متوفر بسهوله في المحلات والسوبرماركت					
(12) قيمته عاليه مقابل سعره					
(13) يبهجني					

	غير مهم على الاطلاق	مهم قليلا	معتدل الأهميه	مهم جدا	شديد الاهميه
(14) رائحته جيده					
(15) يمكن طبخه بسهوله					
(16) يساعدني على التغلب على التوتر					
(17) يساعدني على التحكم في وزني					
(18) له ملمس جيد					
(19) معبأ بطريقه غير مضره بالبيئه					
(20) يأتي من دول متفق عليها سياسيا					
(21) نفس الطعام اللذي كنت اتناوله عندما كنت طفلا					
(22) يحتوي على العديد من الفيتامينات والمعادن					
(23) لا يحتوي على مكونات صناعيه					
(24) يجعلني متيقظا ومنتبها					
(25) شكله جميل					
(26) يساعدني على الاسترخاء					
(27) عالي البروتين					
(28) لايأخذ وقت في التحضير					
(29) يجعلني متمتع بالصحه					
(30) يجعلني اشعر بحاله جيده					

	شديد الاهميه	مهم جدا	معتدل الأهميه	مهم قليلا	غير مهم على الاطلاق
(31) جيد لبشرتي وأسناني وشعري وأظافري الخ.....					
(32) بلد الانتاج واضح بشكل ملحوظ					
(33) نفس الطعام اللذي أكله عادة					
(34) يساعدني على التعامل مع الحياه					
(35) يمكن شراءه من محلات قريبه من مكان معيشتي وعملي					
(36) رخيص الثمن					
(37) ليس محرما في ديني					
(38) متوافق مع وجهة نظري الدينيه					

An Evaluation of Food Choice Motivation in Saudi Arabia

Are your nationality Saudi and your age 15 and over if (Yes) please continue to fill in the questionnaire if (No) to either please close this page and thank you for being willing to participate.
Dear participant, Thank you for taking the time to fill in this questionnaire with regard to your views on food choices. Your participation is totally voluntary and you may withdraw from completing the questionnaire at any time.
Please remember we are seeking your opinions and there are no right or wrong answers. All your answers will be kept completely anonymous and only will be used for research purposes.
The questionnaire takes about 10 minutes to answer.
This survey is part of the PhD study which is examining the motives behind food choices in Saudi Arabia. If you have any questions or need assistance, you can contact me on my email bshair85@gmail.com

---

* Required

About yourself, please indicate

1) Are you *

- Male
- Female

2) Place of residence:*

3) Nationality*

- Saudi
- Non Saudi

4) Age Groups*

- 15-25
- 26-35

- ☐ 36-45
- ☐ 46-55
- ☐ 56-65
- ☐ over 65

5) The highest level of completed education*

- ☐ Elementary school (ages 6-12)
- ☐ Intermediate school (ages 13-15)
- ☐ Secondary school (ages 16-18)
- ☐ college/ University (age 18+)
- ☐ Other please state.....

6) Marital Status*

- ☐ Single
- ☐ Married
- ☐ Divorced
- ☐ Widowed

7) Please indicate your living arrangements*

- ☐ Living alone
- ☐ With Partner
- ☐ With partner and children
- ☐ With your parents
- ☐ With related relatives
- ☐ With friend
- ☐ with partner , children and parents
- ☐ Other please state.....

8) Work Status

- ☐ Full-time Job
- ☐ Part-time Job
- ☐ Unemployed
- ☐ Retired
- ☐ Student
- ☐ housewife

9) Monthly Income*

- ☐ Less than 5,000 SAR
- ☐ 5.000 to 10,000 SAR
- ☐ 10,000 to 15,000 SAR
- ☐ 15,000 to 20,000 SAR
- ☐ 20,000 to 25,000 SAR
- ☐ More than 25,000 SAR

10) Number of adults aged 18 and over living in the household *

11) Number of children living in the household*

12) Are you mainly responsible for buying food in your house?*

- ○ Yes
- ○ No
- ○ Some time

13) Are you mainly responsible for cooking and preparing food in your house?*

- ○ Yes

- No
- Some time

Food choice questionnaire

*Read each item carefully and decide how important the item is to you.

It is important to me that the food I eat on a typical day:

	Not important at all	A little important	Moderately important	Very important	extremely important
1) is easy to prepare					
2) contains no additives					
3) is low in calories					
4) tastes good					
5) contains natural ingredients					
6) is not expensive					
7) is low in fat					
8) is familiar to me					
9) is high in fibre and roughage					
10) is nutritious					
11) is easily available in shops and supermarkets					
12) is good value for money					
13) cheers me up					

	Not important at all	A little important	Moderately important	Very important	extremely important
14) smells nice					
15) can be cooked very simply					
16) helps me cope with stress					
17) helps me control my weight					
18) has a pleasant texture					
19) is packaged in an environmentally friendly way					
20) comes from countries I approve of politically					
21)is like the food I ate when I was a child					
22) contains lots of vitamins and minerals					
23) contains no artificial ingredients					
24) keeps me awake and alert					
25) looks nice					
26) helps me relax					
27) is high in protein					
28) takes no time to prepare					
29) keeps me healthy					
30) is good for my skin/ teeth/ hair/ nails etc.					
31) makes me feel good					

	Not important at all	A little important	Moderately important	Very important	extremely important
32) has the country of origin clearly marked					
33) is what I usually eat					
34) helps me to cope with life					
35) can be bought in shops close to where I live or work					
36) is cheap					
37) Is not forbidden in my religion					
38) Is in harmony with my religious views					

Appendix 4: information sheet for focus group

Food Choice In Saudi Arabia: A social Marketing Approach

PARTICIPANT INFORMATION SHEET

You are invited to take part in a study to understand what people's attitude to food choice and health issues. This research is part of a PhD study which is funded by Saudi government, and will involve people from Saudi Arabia. This research is being supervised by Dr Sharron Kuznesof and Prof Lynn Frewer from Newcastle University.

What is the purpose of the study?

This research will explore people's attitudes to food choice and the barriers and facilitators of healthy eating. The information obtained from these focus groups will be used to explore ways of promoting healthy eating behaviour.

Why have I been chosen?

You are considered to be a Saudi consumer aged between 18 and 65 years.

Do I have to take part?

Participation in the study is voluntary. You have a right to decline the invitation or to withdraw from the study at any time without providing an explanation or incurring any penalty.

What will happen to me if I take part?

If you agree to take part in the study, you will be part of a group of approximately 5 - 6 participants who will be asked to discuss issues related to food choice and health issues that you deem to be important. (This is not a test and there are no right or wrong answers, we are simply interested in your opinions on the topics under discussion.) The discussion will take place at the researcher's or recruiter's home. With your permission, the group discussion will be audio recorded. You will also be asked to provide some background details on an anonymous questionnaire which takes about 5 minutes to complete. The group discussion will last approximately one and a half hours. The audio recordings will be transcribed (copied word for word) and analysed. Your contribution on the transcripts will be

identified by a participant number. Results will be anonymous (i.e. you will not be identifiable) and will be used for research purposes only.

Are there any risks that could be incurred by taking part in this study?

The researchers have undergone training in the management of focus group discussion groups. Although no specific risks have been identified, there is always the possibility that discussion could become heated. In the unlikely event of this occurring, the researchers will ensure that any disruptive and/or upset individuals are retired from the group and provided with appropriate after care.

Are there any potential benefits of taking part in the study?

There will not be any immediate benefits to those who take part in the study. However, it is hoped that the results of the study will lead to further research into this area. These results also will aid governmental departments in health and social wellbeing, policy makers, food manufacturers and educators. Each participant will receive a £10 (60 Saudi Arabian Riyals) for their time and trouble.

What if something goes wrong?

It is extremely unlikely that something will go wrong during this study. However, you should know that the University has procedures in place for reporting, investigating, recording and handling adverse events and complaints from study volunteers. The University is insured for its staff and students to carry out research involving people. The University knows about this research project and has approved it. Any complaint should be made, in the first instance, to the researcher identified for this particular study. Any complaint you make will be treated seriously and reported to the appropriate authority.

Confidentiality:

Any information you supply will be held in strict confidence, viewed only by the named researchers (see below) and then anonymised. Names will not be attached to audio recordings or questionnaires and respondents will be identified by a code number. Anonymised interview transcripts and questionnaires will be stored in a locked password protected computer and/or a locked cupboard within secure office space.

What will happen to the results of the study?

The results will be published in academic journals for use by other professionals engaged in health promotion. A lot of data will be produced in this study. The transcripts and questionnaires may be made available to other researchers for reanalysis. In this case, anonymity and confidentiality of the participants will be maintained.

Who is funding and undertaking the research?

This research is being funded by Saudi Arabia government. The focus groups will be undertaken by the researcher in Saudi Arabia.

Contact details:

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Appendix 5: consent form

CONSENT FORM

(One copy to be kept by participant, the other by the researcher)

Title of Project: Food choice in Saudi Arabia: A social marketing approach.

Name of Researcher: ***Bshair Alharthi***

Bshair.alharthi@ncl.ac.uk ***Tel: 07411993599***

Name of Supervisor: Dr. Sharron Kuznesof

Sharron.kuznesof@ncl.ac.uk

Tel: 0191 2226900 extension 8889

Please initial box

1. I confirm that I have read and understand the information sheet dated *(June 2014)* for the above study. I have had the opportunity to consider the information and to ask questions. Any questions asked have been answered satisfactorily. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal or personal rights being affected. ☐

3. I understand that the researchers will hold all information and data collected during the study confidentially and all efforts will be made to ensure I cannot be identified as a participant of the study (except as might be required by law). I give permission for the researchers involved in the study to hold relevant personal data on me. ☐

4. I agree to take part in the above study. ☐

Name of participant (please print)	Signature	Date
Name of Researcher	Signature	Date

Appendix 6: Pre focus group questionnaire

Focus Group Questionnaire

Food choice in Saudi Arabia: A social marketing approach

For Office use only	
GN	PN

CONFIDENTIAL

The purpose of this questionnaire is to help gain an understanding of the profile of the participants in this group. Answers are anonymous.

Please indicate for the following:

1. **Gender**

Female ☐ Male ☐

2. **Age group (years)**

18-25 ☐ 26-3o ☐ 31-39 ☐

40-49 ☐ 50-59 ☐ 60-65 ☐

3. **Marital status**

Married ☐

Single ☐

Divorced ☐

Widowed ☐

4. **Household size**

-Number of adults (including yourself) _____

- Number of children within each age range *(Leave blank if not applicable)*

0-5 years	___	6-10 years	___	11-15 years	___
16-18 years	___	19 years +	___		

5. **Occupation**

Your occupation: _____

The occupation of the main income earner in your household *(if different)*:

_____

6. Please describe how much attention you pay to your health and in what way.

7. Please describe how interested you are in food.

8. Who is mainly responsible for buying food in your house?

THANK YOU

Appendix 7: focus group discussion guide

Food choice in Saudi Arabia: A social marketing approach

Focus Group Draft Protocol: Discussion Guide

The participants will be greeted by Bshair Alharthi in my house. Light refreshments (tea, coffee, soft drinks and snacks) will be provided upon arrival. Whilst waiting for all participants to arrive, participants will be asked to read the information letter about the study and read and sign the informed consent form (Appendix 1). Participants will then be asked to complete the profile questionnaire (Appendix 5).

1. Welcome

- Welcome the participants and thank them for their willingness to participate
- Briefly introduce the moderator and assistant
- Health and Safety – exits in case of fire, toilet facilities, no smoking policy etc.
- Give a brief explanation of the research and why the participants have been invited to attend
- Explain the focus group process (structure of the group, no right or wrong answers, use of audio recorders, how we report the results - commitment to confidentiality with participant responses anonymised, also remind participants participation is voluntary and they can withdraw from the focus group at any time)
- Establish the ground rules for the focus groups (e.g. no speaking over one another)
- General introductions beginning with the moderator going clockwise around the table.

2. Introduction (this is a warm-up so there won't be much need to encourage expansion or probing of responses)

i) We'd like to begin the discussion by asking you how much attention you pay to your health.

ii) We'd also like to know how interested you are in food and what does it mean to you.

3. Food choice motivation

i) I am interested in what is important to you when you buy food and why.

- Prompt with FCQ finding. (Health, Mood, Convenience, Sensory Appeal, Natural Content, Price, Weight Control, Familiarity and Ethical Concern)

Summary:

4. Health and food

We would now like to discuss the relationship between food and related health problems.

- Do you think there are any health issues related to food?
  If yes ,why?
  If no, why?
- what do you think the most comon health problems related to food ?

- Are there any other factors can effect on health instead of food?

Summary:

4. Barriers and facilitators for healthy eating

- Have any one tried to changes what he eat? Why?
- Was this changed sucsesful or not?
- Imagine that you want to change your diet ,what would help you to make this change?
- What might hinder you to make change?

Summery:

5. Wind Down

i) So, today we have discussed food choice motivation also, barriers and facilitators for healthy eating.

ii) What would make it successful? *Expand/probe*

6. Debrief, Close and Thanks

We are coming to the end of the discussion.

i) First I would like to ask how you are feeling about the discussion and its content? Provide participants with debrief letter (Appendix 3) and identify telephone numbers if anyone would like to discuss matters further.

ii) Does anyone have any further questions or comment?

iii) Thank participants for time and contribution

Appendix 8: Focus group data analysis

15 Female

SI	18-25
DL	50-59
SA	18-25
FA	40-49
NU	26-30
MR	26-30
SF	50-59
JM	31-39
SH	31-39
ES	18-25
NE	18-25
MN	31-39
ZE	40-49
SM	26-30
AS	18-25

10 Male

BD	26-30
MO	40-49
MF	26-30
SW	18-25
MJ	26-30
SU	50-59
AB	60-65
FH	50-59
AM	31-39
MS	60-65

Ways of looking after health	Age group	Gender	
		male	female
Eating healthy food/balance diet/eating habits	18-25	SW,	NE, AS, SI, ES,
	26-30		SM, NU, MR,
	31-39		MN, SH,
	40-49	MO,	ZE, FA,
	50-59	SU, FH,	DL, SF,
	60-65	MS,	
Exercise/ walking	18-25		NE, AS, SI,
	26-30	BD,	
	31-39		JM, SH,
	40-49		FA,
	50-59		DL,
	60-65	AB, MS	
sleeping well/early	18-25	SW,	AS, ES,
	26-30		
	31-39		
	40-49		FA,

	50-59	SU,	
	60-65	MS,	
drinking water	18-25		AS,
	26-30		
	31-39		
	40-49		
	50-59	SU,	
	60-65		
regular medical check up	18-25		
	26-30		
	31-39		
	40-49		ZE,
	50-59	SU,	
	60-65		

Male

(SU) By drinking lots of water especially in winter time because we don't fell thirsty in this season and eating fruits and vegetables. Also sleeping early and having regular medical check. However, I like to eat sweet and chocolates.

(AB) not that much and for any reason or illness I just go to the pharmacist instead of hospital but I try to walk every day.

(FH) I like to have honey in the morning to prevent me from illness and drinking lots of water. I mainly concentrate on breakfast meal because it is the start of the day. I like walking for example; I park my car far away from the entrance for my work to allow me to walk more.

(AM) I don't care that much about my health. For example, I don't have enough sleeping hours I sleep late and I don't do sports continually. Before I got married my consumption of water is very low I don't feel like to drink but after I married my wife encouraged me to drink a lot of water because it's good for my health.

(MS) I like to sleep early to wake up active in the morning and get exposure from the sun. I like to go to the close places walking instead of driving. Also I don't like to eat until fullness.

(AB) I don't care that much about my food unless somebody controls my diet. For example, I depend on what my wife cook for me. I like to eat anything especially vegetables and brown bread.

(SU) I like to eat a variety of food like meat, rice fruits and vegetables especially at lunch time however, in the dinner I eat light food like cheese with bread to sleep will.

(MS) I start to look after my health after I had health problem. I totally avoid salt and I like to have milk and dates every day. Also I like to eat fruits daily and I avoid food which contains fat like prawns fear of cholesterol. My dinner consists of a light meal and I eat it two hours before going to bed.

(FH) I have tried to avoid fats after I had health problem and I like salad and milk. For lunch, I don't care about meal content and quantity I eat everything even fat but at dinner I will have a light meal like dates and yoghurt to sleep well.

(AM) my diet has changed slightly after I got married. Before married I don't like to eat vegetables but I eat chicken, fish and rice however, after I married my wife also encouraged me to eat salad and fruits eventually salad became the main dish in my meal

(BD) some time I do exercises but I don't always eat healthy

(MO) I like to eat varieties of food and I prefer seafood.

(MF) not that much but some time I try to eat fruits and vegetables.

(SW) avoiding fats and sleeping well. Also I have reduced the consumption of soft drink to look after my health.

(MJ) I was not that concern about my health but now I really look after my health due to health problems.

Female

(NE) I do not care that much about my health but I try to eat and drink what is useful for my health.

(Mn) my concern about health is good through healthy eating and exercise.

(Ze) by going to the hospital every 6 months to do the main check-up for any health problems and lack of vitamins.

I'm not that concern about my health, I just try to eat healthy food but at the same time I also eat fast food and in our customs and traditions food is not healthy.

(Sm) I try to avoid fast food and chose beneficial foods rich in vitamins; I prefer salad.

(As) by doing exercise every day and drinking a lot of water and sleeping well.

Moderator: also I would like to know how interested you are in food and what does it mean to you.

(As) by reducing calories like drinking low fat milk and consume food which contains fibres and vitamins also by drinking herbal and a lot of water.

(Ze) by eating a lot of fruits and vegetables and reducing fat and carbohydrates.

(Mn) by eating whole grain flour instead of white flour and trying to find the best alternative; also by eating a lot of fruits, vegetables neutral and boiled food and avoiding fast food because it contain a lot of calories and will lead to obesity.

(NE) food is the source of energy and it is important for building our body because food determines the content of the human body, also by doing exercise and having a nutritious breakfast is really important.

(Sm) depend on my requirements and the food I like I will decide what to eat.

(SI) by eating healthy food, doing exercise and avoid fast food.

(DL) by walking for half an hour daily and drinking a lot of water.

(SA) not that much but some time I try to reduce the consumption of fat and sugar.

(FA) doing exercise, eating fruits and vegetable and sleeping well.

(NU) I try to have honey and black seed daily and drinking orange juice to maintain good health without any problems.

Moderator: also I would like to know how interested you are in food and what does it mean to you.

(FA) I always try to eat what is useful for my health because food gives us energy and vitality, and helps to perform mental and physical activity.

(SI) I interested in food in terms of the ingredients if it is natural and tasty, and its benefits to my body.

(SA) actually I eat everything tasty. Food provides us with vitamins and strengthens the bones.

(NU) actually when I am hungry I don't think about anything I eat what available but some time I consider my health. For example, in the morning I eat foods which provide me with energy and vitamins. In my lunch I eat normal Saudi food like rice with lamp or chicken and curry but the main thing to me is salad.

(DL) I like to eat fruits. .

(MR) I avoid sweets and fats.

(SF) eating lots of fruits and vegetables and drinking a lot of water, also I interested in my family's health by trying to cook what is good for them.

(JM) sometime I walk and do some exercises.

(SH) walking and buying healthy food and avoid carbohydrates.

(ES) eating well and sleep early.

Moderator: also I would like to know how interested you are in food and what does it mean to you.

(SH) reducing the amount of fat in cooking. Eating food which contains of omega 3 like fish and nuts.

(ES) I like to add onion and garlic to my food because its strengthens the immune system.

(SF) eating seafood and vegetables more than other food.

(JM) I eat what is available and convenient to me.

(MR) I try to eat what is useful for my health like vegetables and I like to have herbal drinks like camomile and green tea.

Meaning of food	Age group	Gender	
		male	female
Energy, vitality and well being fill the hunger and health, the life, survival	18-25		NE, SA
	26-30	MF,	
	31-39		JM,
	40-49	MO,	FA,
	50-59	SU, FH	

	60-65	AB, MS	
Entertainment celebration, holiday, social gathering	18-25		ES,
	26-30	MJ,	SM,
	31-39		MN,
	40-49		ZE,
	50-59		DL, SF
	60-65	MS	
good mood, happiness , pleaser	18-25		AS, SI
	26-30		NU
	31-39		
	40-49		
	50-59		
	60-65		

Food is everything for me; it puts me in a good mood and I feel healthy. (AS)

Food means celebration to me because we serve varieties of food. (Ze)

Food is about meeting with friends and happiness. (Mn)

So it is not about enjoyment it's about building energy (NE) said not necessary (Ne)

Food means to me family gathering. (Sm)

Food means to me health and energy. (FA)

Food means to me entertainment (SI)

Food provides us with vitamins and strengthens the bones. (SA)

Food means to me enjoyment (NU)

Food means to me parties; because usually food is provided at parties.(DL)

Food means to me holiday because I eat out a lot during holiday (ES)

Food mean to me family gathering. For example, on Friday all family members and relatives come to my house to have lunch together (SF)

Food mean to me to fill my hunger (JM)

Food mean to me to fill the hunger (MO)

Food means to me the life (MF)

Food means to me meeting with friends and family (MJ)

Food means to me energy (AB)

Food is the basis of life we can't live without it. (SU)

Food means to me energy because without it I feel tired also its means happiness and family gathering because I feel happy when I eat food especially with my family (MS)

Food means to me energy and it is the fuel of the life (FH)

Factors affecting food choice		Age	Gender	
			Male	Female
Product/Food	Sensory appeal and Flavour	18-25	SW,	SA, AS, ES, SI
		26-30	MF, MJ, BD,	MR,
		31-39	AM,	JM, SH
		40-49		ZE, FA,
		50-59		DL
		60-65		
	Healthy/Natural Content	18-25		SA, NE, AS, SI
		26-30	BD, MJ,	MR, SM,
		31-39		MN, SH
		40-49		FA,
		50-59	FH, SU	DL,
		60-65	MS	
	Quality, Brand	18-25		ES
		26-30		NU,
		31-39	AM,	
		40-49	MO,	
		50-59	FH,	
		60-65		
Individual/Personal	Appetite and Mood	18-25	SW	AS, SI, ES, NE,
		26-30	MJ, MF	NU, SM,
		31-39		MN, SH
		40-49		ZE,
		50-59	SU, FH	SF, DL,
		60-65	MS, AB,	
	Familiarity	18-25		MR
		26-30	MJ,	
		31-39	AM,	MN, SH, JM,
		40-49		ZE,
		50-59	FH,	DL,
		60-65	MN,	
	Weight control	18-25		AS, NE,
		26-30	MJ,	
		31-39		SH,
		40-49		FA,
		50-59	FH,	DL, SF,
		60-65		
	Time	18-25		
		26-30		

		31-39		MN,
		40-49	MO,	ZE,
		50-59		
		60-65		
Environment Situations	Price	18-25		SA,
		26-30	BD	SM,
		31-39		MN, JM,
		40-49	MO	FA,
		50-59		DL,
		60-65	AB,	
	Society • Parents, children and partner • Friends recommendation Family preference	18-25		SA, NE,
		26-30	MJ,	
		31-39	AM,	MN,
		40-49	MO,	
		50-59	SU,	
		60-65	AB,	
	Availability	18-25		AS, SA,
		26-30	BD,	
		31-39		JM,
		40-49		ZE
		50-59		
		60-65		
	Advertising	18-25		ES,AS
		26-30		NU, SM
		31-39		
		40-49		
		50-59		
		60-65		

(Ze) Sensory Appeal and the flavour of the food are important to me more than the benefit of the food. (Mn) said most of the food I purchase is fruits, vegetables and low fat meat.

(Ze) the need for and the availability of certain types of food is really important.

(Mn) depend on my appetite if I want specific type of food I will go to the restaurant or I will cook it at home. The price is important to me.

(Ne) the price is not important to me as long as the meal contain nutrients and beneficial to me.

(Sm) I will pay within reasonable limits not all people can afford to buy expensive foods. (NE) imported meat is the best and most expensive.

If the food is strange to you would you buy it or not?

(As) and (Sm) said I will try it.

(ze) if I know the ingredients I will try it, if not I will search about it.

(Mn) maybe I will not accept the flavour so I will not try it.

So knowing food is very important to you.

ALL, said yes yes

Moderator: How about Weight control; is it important to you or not? I mean when you buy food do you check calories for Weight control.

(NE) if my weight is high I will reduce the amount of food to come back to my original weight.

(As) I always weigh myself because my weight will determine what I eat.

(Ze) I cannot control my weight if the food is tasty I will eat it, it does not matter if it is healthy or not but some time I think of my health.

(Mn) my weight is already healthy so I'm not too concern about it.

Does the mood affect you?

(Ze) when I am in a bad mood I eat more chocolates.

(As) when I feel bored I eat more food.

(Sm) when I am in a bad mood or sad I avoid eating any food.

(NE) I totally avoid eating anything when I am sad.

(Mn) I also avoid eating when I am sad but if I am happy I will eat more.

Summary: sensory appeal, food flavour (Sm) said depending on the usefulness of food and Natural Content. (NE) appetite the tendency to eat specific type of food. (As) said the environment in which we live and depend on what we used to eat and availability of the food, the price is not important to me if I love the food; on a holiday we eat less healthy food.

(Ze) the large number of out-of-home; events and time constraints affect the choice of eating. (Mn) we eat fast food due to time constraint and it's cheaper.

Does the advertising and friends affect your choice?

(Sm) and (As) yes, we love to try everything new so when we see any advertisement about new foods or flavour we love to try these food.

(Mn) if somebody recommends me specific type of food I will try it or depending on the popularity of the food.

(NE) if my friends recommend me some new meals or flavour I will try them.

(FA) it depends on the flavour of the food and its taste, price and the benefits of the food to my body in terms of vitamins and health.

(NU) my appetite to eat certain type of food and advertising motivate me to choose what I want to eat.

(SI) my appetite and the tendency to eat specific type of food. Also it depends on my mood, if I am sad I will eat more.

(DL) sensory appeal of the food, price and the tendency to eat this food can motivate me to buy the food.

(SA) cost of the food because my purchasing depend on my income also friends recommendations can affect my choice.

Moderator: if the food new or strange to you would you like to try it or not?

(SA) if the food looks appetising, I will buy it and try it.

(SI) I love to try everything new.

(NU) advertising motivates me to buy and try new food.

(FA) I like to try new flavour.

(DL) if I don't know the ingredients I will not try it.

Moderator: does the neutral content of food affect your choice or not?

(FA) yes, if the food contains preservatives I will avoid to buy it so I prefer natural content.

(DL) I avoid soft drinks and foods containing fat.

(SA) I eat what is available but some time I try to eat what is useful for my health and protect me from illnesses.

(NU) it depends on the brand of the products if it has been in the market for so long I will not be worried about the ingredients.

(SI) some time, if the ingredients are natural it will motivate me to buy the food.

Moderator: does weight control affect your choice or not?

All participants said yes

(FA) If I gain weight I will try to reduce the quantity of food and I will eat more fruits and vegetables.

(DL) because I want to lose weight I consider this factor when I buy my food in terms of reducing the amount of fat and carbohydrates in my diet.

(NU) not really because I already eat moderately.

(SI) because my weight is normal I have not thought about it when I chose my food, I eat everything but moderately.

(SA) I eat what is convenient to me in term of its availability.

Moderator: at the end of this question what is the most factor affect your food choice?

(NU) advertising and friends motivate me to buy food.

(SI) my appetite and the taste of food.

(DL) going out and seeing the varieties of foods motivate me to buy the food, also weight control is important to me.

(FA) weight control, also the price, if the price is high I try to find the alternative with reasonable price but at the same time make sure it is useful for my health.

(SA) my parents because they are responsible for buying and cooking the food for me, also the price if I can afford to buy it I will do, if not I will try to find the alternative.

(SH) I always read the label to check the calories, fats and sugar. Also weight control, smells of the food, mood. The price is not important to me as long as the food is beneficial to me.

(MR) I try to avoid the food which contains of artificial ingredients. Also the flavour of the food is important to me.

(ES) advertising can affect my choice also sensory appeal and mood. My mood is influenced by my hormones (monthly period) so I tend to eat more sweet.

(SF) appetite and mood also the comfort can affect my food choice. Weight control.

(JM) price and availability of the food can affect my choice. If the food is tasty I will motivate to buy it.

Moderator: If the food is strange to you would you buy it or not?

(SH) I avoid it because I do not know what it is taste.

(SF) if the food is cooked and I can see it like in the buffet I can decide if I will eat it or not.

(JM) I will not eat it.

(MR) no if I am not familiar to eat this food I will not buy it.

(ES) yes, I will try it because I love to try everything new.

(MF) the taste of food is important to me than price.

(BD) if the food is tasty and has reasonable price, I will buy it. Depending on my budget, I will decide what to buy for example, during week days I eat normal food but at the weekend I go out and I eat more expensive food. Also I don't like soft drinks I prefer fresh juices.

(MO) value for money if the quantity of the food is reasonable in relation to the price I will buy it. The quality and brand of food it is important in terms of food choice and some time the recommendation from friends or family to specific type of food or restaurants motivate me to choose this food.

(MJ) in the past taste and smell of the food is really important to me than health and weight control but now the main important things to me are weight control and health in addition to the taste.

(SW) for me also the taste is very important.

(SW) yes, if the smell of the food is nice I will buy it.

(BD) Presentation of the food opens the appetite to eat.

(MO) the variety of food in the plate is important to me like having salad, chicken and rice.

(MF) It does not matter to me; I eat anything as long as it is tasty.

Does the mood affect your food choice?

(SW) when I am in a bad mood I don't like to eat.

(MF) when I am sad I eat more food.

(MO) no, it does not matter if I am sad or happy; I still have food it does not affect my choice.

(MJ) I don't like to eat when I am in a bad mood.

(SW) yes I love to try everything new.

(BD) yes but first I will check the ingredients and then I decide if I will eat it or not.

(MO) some time and if somebody recommend it to me I will try it. I have tried Sushi and it was good.

(MJ) no, I don't like to try new food but if somebody recommends it to me I will try it.

Summary:

What is the main factor affect your choice?

(MF) I depend on the price, reputation of the food if it's good or not.

(BD) availability of the food if it is close to me also the taste very important to me

(SW) taste and appetite

(MJ) weight control and taste can affect my food choice.

(MO) speed of preparation and the taste.

(FH) the quality of the food and brand because in my opinion the brand is the evidence of food quality. Also depend on the doctor's advice and what my family request me to buy. I try to choose natural and low fat food to reduce my weight.

(MS) natural content of food is very important to me I don't like canned food. I am willing to pay extra money as long as the food is natural. For example, if I found meat and one of them is fresh and expensive and the other on is frozen and cheap I will buy the fresh one. Also it depends on my appetite and what I am used to eating.
(SU) I like to buy natural food and what I am used to eating as well. Also my family preference and appetite can affect my food choice.
(AM) It depend on the taste, reputation, my friends and family recommendation when I chose my food also I depend on what I used to eat for example; I used to eat specific brand of cheeses sine I was a child so until now I still eat it. Sometimes the advertising can encourage me to buy new food.
(AB) it depends on the price, my appetite and the requirements of my family.

(AB) I don't like to eat food when I am in a bad mood.
(SU) yes, if I am sad I don't like to eat and buy food.
(FH) yes, depends on my psychological state when I select my food. For example, if I am sad I avoid eating.
(MS) no, my mood totally does not affect my food choice I still have my normal food.
(AM) no, it does not depends on my mood if I am hungry I will eat.
Do you like to try new food?
(FH) no,
(MS) no, if I don't know the ingredients I will not eat it but if I know it may be I will try it.
(SU) yes I like to try new food especially from different countries like India and Indonesia.
(AM) no, I don't like to try strange food or something I am not used to eat because I don't know the flavour like Salmon but I eat other type of fish. Also it is possible for me to try new flavour of chicken or meat if somebody recommends it for me because I used to eat chicken.
(AB) yes, I don't have any problems to try new food.

Summary:
What is the main factor affect your choice?
(AB) appetite, my income and family preference.
(SU) my family preference, appetite and natural content.
(MS) natural content and appetite.
(AM) taste, recommendation from my friends and family and also what I used to eat.
(FH) brand, natural content and weight control can affect my food choice

Relationship with food and health	Age group	Gender	
		male	female
Vitality, growth, wellbeing, energy	18-25	SW,	AS, NE, SA, SI, ES
	26-30	BD,	
	31-39	AM,	SH, JM
	40-49		FA,
	50-59	SU, FH,	DL, SF
	60-65	AB, MS,	

protect from illness	18-25		AS,
	26-30		SM, NU, MR
	31-39		MN,
	40-49		FA,
	50-59	SU, FH,	
	60-65	MS	
health problems	18-25		
	26-30	MJ,	SM,
	31-39		
	40-49	MO,	ZE,
	50-59		
	60-65		

(NE) it is Important in terms of the vitality of the body and organs and food is essential for the growth of the human body.

(Ze) The quality of the food that we eat can determine how our health and what type of illnesses that can affect us, such as diabetes, pressure, and colon disease. Drinking soft drink can affect our bones so we must increase our intake of calcium like drinking milk.

(Sm) Malnutrition leads to some diseases, such as hair loss and kidney problems. Good food containing all the nutrients is very important for overall wellbeing.

(Mn) healthy food is very important for health because it prevent us from major diseases like heart problems and hypertension.

(As) food provide us with energy and make our immune system stronger and protect us from sickness.

Moderator: do you mean our health depends on the type of food we consume.

Participants, yes.

(SA) food provides us with calcium, vitamins and strengthens the immune system.

(FA) food is important for life and energy, also to protect us from diseases.

(DL) food provide us with energy to do our daily activities

(NU) healthy food prevents us from major diseases.

(SI) food it is important to obtain healthy life without problems.

(MR) healthy food can prevent us from some diseases

(SF) food is good for our body and brain.

(SH) food is good for the vitality of the heart, liver and whole body.

(ES) food provide us with vitamins

(JM) food provide us with energy.

(MF) very important

(BD) food provide us with energy and vitality so we can do our works

(MO) I know some foods lead to lethargy, laziness and raise the proportion of sugar and salts in the body.

(SW) food is good for energy

(MJ) in my opinion in the past I don't think there is a relationship between food and health. The important thing is the taste but now I have changed my mind, food is really important to health because healthy food can prevent us from having health problems like obesity.

(SU) food can provide us with vitamins and prevent us from disease.

(AB) food is very important for my body and it give me energy.

(FH) very important, balanced diet will reduce the percentage of health problems as a result; we will have a better ageing process and will live longer.

(AM) food makes our body strong so we can do our work.

(MS) Food gives us energy and protects us from disease.

Health related issues	Age group	Gender	
		male	female
Obesity	18-25		SA,
	26-30	MF, MJ,	
	31-39		JM,
	40-49		ZE,
	50-59	SF,	DL,
	60-65		
diabetes	18-25	SW,	
	26-30		SM,
	31-39	AM,	
	40-49	MO,	FA,
	50-59	SU,	
	60-65	AB,	
high blood pressure	18-25		AS,
	26-30		
	31-39	AM,	
	40-49	MO,	FA,
	50-59		
	60-65		
Abdomen problems	18-25		ES,
	26-30		MR,
	31-39	AM,	MN, SH,
	40-49		
	50-59		
	60-65		
high cholesterol	18-25		
	26-30		
	31-39		SH,
	40-49		
	50-59		DL,
	60-65	MS	
Anaemia, week immune system , kidney disease, heart problem, cancer,			

(Mn) yes such as colon, blood pressure and stomach diseases like digestion problem. (Ze) Obesity due to lack of balanced diet. (As) Kidney disease and problems related to high consumption of salt. (Sm) like Anaemia and diabetes. (NE) weak immune system.

(DL) eating with less exercise will lead to some problems and diseases like obesity and high cholesterol.

(FA) diabetes, high blood pressure and heart problems.

(SI) I have allergy to Specific type of food so I always try to avoid them.

(NU) some type of food increase the strength of our memory.

(SA) most of people in Saudi suffer from obesity.

(SH) high cholesterol and gallstones.

(SF) obesity and diabetes

(MR) stomach problems

(ES) colon, soft drink can affect the bones

(JM) obesity

(MO) yes, for example, my mother suffers from Blood pressure disease and my father suffers from diabetes.

(MF) Obesity is very prevalent in Saudi Arabia, for example, my family suffers from obesity.

(SW) yes, like diabetes.

(BD) cancer disease, some fast food can caused health problems

(MJ) yes, I suffer from obesity for a long time and this caused heart problems to me.

(FH) I have liver problems

(MS) high blood pleasure as I suffer from it.

(SU) I suffer from diabetes and it could be due to genetics or from my poor eating habit.

(AM) my health is very well but I know there are some health problems like high blood pressure, diabetes and stomach problems.

(AB) I have diabetes as well.

Barriers to healthy eating	Age group	Gender	
		male	female
Customs and tradition	18-25		NE,
	26-30		
	31-39		MN, SH,
	40-49		ZE,
	50-59		SF,
	60-65		
social events & going out	18-25		
	26-30	MJ,	
	31-39		MN,
	40-49		
	50-59	FH,	
	60-65	AB,	
Price & availability	18-25		SI, ES,
	26-30	MF, BD, MJ,	SM, MR,

	31-39		MN, JM, SH
	40-49		FA,
	50-59		DL,
	60-65		
Taste	18-25		AS, SI,
	26-30		SM,
	31-39		MN,
	40-49	MO,	FA,
	50-59		
	60-65		
Time constraint & Busy life	18-25		AS, SA, ES
	26-30	MF,	NU,
	31-39		MN,
	40-49	MO,	ZE,
	50-59		DL,
	60-65		
Lack of public transportation	18-25		SA,
	26-30		SM,
	31-39		SH,
	40-49		ZE,
	50-59		
	60-65		
Lack of strong will & motivation	18-25		
	26-30		NU, MR,
	31-39	AM,	JM,
	40-49	MO,	FA,
	50-59	SU,	
	60-65	AB,	
Lack of information & knowledge	18-25	SW,	
	26-30		NU,
	31-39	AM,	
	40-49	MO,	
	50-59		
	60-65		
Family preference & prevision	18-25		SA,
	26-30		
	31-39		
	40-49		FA,
	50-59	FH,	
	60-65	MS,	
Not used to SA, NU, MO, BD, psychological state FH,			

Weather is barrier to go out for walking (SF, SH, MJ)

(NE) In our society, all family members sit together to eat the same type of food, so, I don't have a choice to eat other food.

(Ze) it is our customs and traditions that force us to eat certain type of food also some fruits and vegetables are contaminated with chemicals and some chickens are injected with hormones and this can affect our health.

(Sm) healthy and organic foods are always expensive and rarely available in supermarkets. We prefer to eat fatty food because it is tasty and filling.

(Mn) due to busy life and time constraint we tend to eat outside and in our culture and customs we have frequent social events to attend and food is usually provided . The presentation and the taste of the food are more important than the nutrients in the food.

(AS) healthy food is not tasty. Fast foods are available everywhere so it is more convenient for us than preparing healthy food.

(Ze) Lack of transportation and women's clubs and the inability to afford the clubs because it is expensive. Also lack of time due to commitments to family, children and life.

(Sm) lack of freedom of the women and we cannot go out all the time for our own needs due to lack of public transportation and we need a member of family to take us out.

(As) busy life with studying no time to think about what should I eat. I eat what my family provide to me. Also lack of awareness about healthy diet.

(Ne) The opposite is true studying can organize my life and routine but, Due to customs and traditional food which contains a lot of fat and protein, it is not easy for me to change my diet and life style because I am a part of the society. If I change my way of eating I will be different and not fit in to the society.

(Mn) the location of shops is not convenient from where I live I need car to go there. Also healthy food is expensive and not available everywhere.

(FA) healthy food is not available everywhere and its expensive and not tasty.

(SI) healthy food is not tasty. We don't have the will to change our diet to be healthy.

(NU) lack of advertising and information about healthy food. Also we are not used to eat healthy food from childhood.

(SA) lack of transportation and we are used to eat carbohydrates and fast food.

(DL) healthy food is expensive. Fast food is available everywhere due to the large number of advertising. However, in the past there were less advertising about fast food so most of our food was cooked at home and healthy.

Moderator: do your children, time and work prevent you from eating healthy?

(FA) yes, I cook the food depending on what my children prefer. For example, they don't like vegetables and they want fast food so some time I cook it or I buy it for them but at the same time I try to encourage them to eat healthy. Fast food is appetising and it taste delicious but it contains a lot of fat which cause health problems. Also fast food can be delivered to your home unlike healthy food.

(DL) advertising motivates our children to choose fast food instead of eating home cooked food.

(SI) I used to eat what my parents offer to me since when I was a child. Friends can effect on each other in terms of trying to copy what they eat. Also going out let us see varieties of foods and we want to try them. The gift comes with fast food motivate us to buy it.

(NU) lack of time for working women to cook healthy food because it takes time, so she is forced to buy fast food or canned food.

(SA) as I am student I don't have time to cook to myself so I eat what my family provide to me or I will eat fast food.

(FA) the expense of the gym and healthy food. Lack of support from family members.
(SA) standard of living, laziness and lethargy and lack of time organization
(SI) lack of transportation. Seeing other members of family eating the same type of food except me so I need to eat with them, I do not want to be different.
(DL) busy life with home and children commitments, and lack of money.
(NU) lack of self-confident and motivation from family because they said there is no benefit from doing exercises and eating healthy your weight or shape does changed no difference.

(SF) Our lifestyle, routine, environment and our customs can control our eating habits. For example, when we went to Europe we changed our routine and we were walking a lot and eating healthier.
(JM) Weakness and lack of will to change my eating habits, also the price of healthy food is high. Also lack of gyms and it is not cheap.
(MR) healthy food is expensive and not available everywhere compared with fast food.
(ES) because fast food is cheaper than healthy food and available everywhere it is easy for us to buy it more than healthy food.
(SH) imported healthy food always expensive even low fat milk is expensive compared with full fat milk. Also the weather is really hot so we can't walk outside. Also lack of transportation can prevent us from buying healthy food.

(SH) our society, tradition and customs we have a lot of social events which tend to serve sweets and fatty foods.
(ES) lack of time due to life commitments
(SF) availability of cars reduced our movement and walking, also the weather is too hot so we cannot walk.
(MR) lack of motivation and support from family can hinder us from change.
(JM) healthy food is expensive and not available everywhere.

(MO) healthy foods are not tasty and very slow in preparation compared to fast food and less satisfaction. Also lack of encouragement from the people around me to eat healthy and getting used to eat healthy food since childhood.
(MF) fast foods are available everywhere and closes to where I live compared with healthy food. Also traveling can prevent me to eat healthy because my routine will changed and I don't know where I can find what I want.
(BD) the price of healthy food is high compared with fast food and not available everywhere and takes long time in preparation. Sometime I don't have a choice to decide what to eat because I eat what my family have cooked and provide to me.
(SW) lack of awareness about healthy food, we need more knowledge and information about it.
(MJ) healthy food is expensive and not available everywhere. Also lack of motivation from family and going out with friends can prevent me to eat healthy because when I am with my friends I eat what they eat I don't have choice to eat different food.

(MF) lack of time due to long hours of working so I eat fast food instead of healthy because it takes time for preparation. Healthy food is expensive and not available everywhere.

(BD) Getting used to eating a certain type of food and some time traveling can change my diet.

(MO) when I am at work the lunch time is short so I eat anything fast. Offers and advertising about healthy food is a few compared with fast food and its taste is different from fast food.

(SW) increase public transportation and pedestrians lines and Facilitate the access to health and sport canters with reasonable price.

(MJ) the price of healthy food is high. In day time the weather is hot and we are working so we don't have time to do exercise. At night time we need to sleep early to wake up for work the next day.

(FH) social events and what my wife has cooked can prevent me from eating healthy because I don't have a choice to eat different type of food I have to eat what is provided.

(MS) depend on what my wife is cooking because she likes fatty food and I don't so I don't have a choice to eat different food. Also traveling and going to someone house can prevent me to eat healthy because I don't have a choice to choose what I want to eat and sometime I can't find what I want so I eat what is available even if it's salty.

(SU) actually I don't have any problems that can prevent me to eat healthy, when I want to eat it I will eat it. It depends on my will and appetite if I like this food or not.

(AM) in my opinion I think lack of strong will and interest to eat healthy or change the diet can prevent me to change for example , I see the fruits in the fridge but I don't feel like eating them unless somebody prepare it for me which will encourage me to eat. Also lack of knowledge and information about healthy food and the benefit of fruits and vegetables can prevent me to eat healthy.

(AB) going out to somebody house and social events can encourage me to eat what is provided. Also my appetite and lack of strong will can prevent me to eat healthy.

(AB) I don't have self-confident to change my diet or routine even if they are not good for me. Some time I am afraid of changing.

(SU) actually nothing can stop me from changing if I want but lack of strong will can hinder me.

(MS) traveling and going out especially in somebody house can hinder me to make change.

(AM) lack of strong will and support from family can prevent me from changing.

(FH) I don't have anything that can stop me to change my diet but if my psychological state is not very strong, it might affect my food preference.

Motivation to diet changing	Age group	Gender	
		male	female
Wellbeing Prevent diseases	18-25		AS,
	26-30	MF, BD,	NU,
	31-39		
	40-49	MO,	
	50-59		
	60-65		
Health problems	18-25		ES,
	26-30	MJ,	SM,
	31-39		MN, SH,
	40-49		ZE,
	50-59	SU, FH,	SF,
	60-65	AB, MS,	

Weight control	18-25		NE, SI,
	26-30	MF, BD, MJ	MR,
	31-39		SH, JM,
	40-49		FA,
	50-59		DL,
	60-65		

(As) yes, I have reduced the intake of sugar and oil but I could not do it for long. Why did you try to change your eating habits? To look after my health and prevent from diseases.

(Sm) I have tried to change my diet due to my health problems like hair loss and kidney problems.

(Mn) me too I have changed my diet due to health problems such as stomach infection and colon and some type of food create more discomfort so I try to avoid them.

(Ze) yes I have changed my diet due to health problems like diabetes so I reduce the intake of carbohydrates.

(NE) yes, I have changed my diet by reducing the intake of calories and drinking more green tea because I want to lose weight. so I want to reduce fast food consumption.

Moderator: Was this change successful or not?

(Ze) it would have been successful if I continued but I did not because I did not get motivation from family and friends. When I was on the diet I felt much better in terms of health, energy and mood.

(Ne) it was successful and I lost weight but I did not continue.

(As) it was successful I have tried to reduce the intake of fats and sugars because I want to maintain my health.

(Sm) there is no difference whether I change my diet or not. I did not continue the diet because there is no need to do so. My weight is normal but due to my health problems I try to change my diet.

(Mn) it was successful and I have less health problems than before, so now I try to avoid certain types of food that can affect my health.

(SI) yes, I have tried to reduce the consumption of fast food because I want to lose weight also I have avoided some types of food which cause allergy.

(FA) I have tried to reduce the quantity of food and fat. I have joined the gym but I feel frustrated because my weight does not change.

(DL)I went to dietician and I have changed my daily routine by doing exercises and eat healthy and I start to lose weight but after that I felt frustrated because my weight has stopped losing and I want to lose more.

(SA) I have tried to change my diet and doing exercises to lose weight but I could not continue because I do not have motivation from family and friends.

(NU) I have tried to eat more fruits and vegetables and I reduced the consumption of fast food because it is not useful for my health. I think I will eat more healthily to avoid health problems

Moderator: Was this change successful or not?

(DL) at the beginning it was successful but I could not do it for long because there is lack of motivation

(SA) it was not successful. With the frustration I could not continue.

(NU) it was successful but I became lazy to prepare and cook healthy food.

(SI) it was successful but I don't have time to do exercises because I am student.

(FA) it was a little successful but with lack of motivation and transportation I could not continue.

(SH) I have changed my diet because I gained weight and I have gallbladder so I have reduced the consumption of fats and I felt more comfortable.

(SF) yes, actually I don't like fats also I am afraid of diabetes and obesity that's why I have changed my diet.

(ES) I have changed my diet due to bad digestion and colon.

(MR) I have changed my diet to reduce my weight.

(JM) also I have changed my diet to control my weight. I think I need to do more exercise to be fit.

Moderator: Was this change successful or not?

(JM) yes, I have reduced the quantity of food also I was eating everything but without fats.

(SF) yes, it was successful and I lost 13kg fearing from diabetes.

(AS) yes, I lost my weight and my health improved.

(ES) yes but I came back to normal eating habits

(MR) not really my weight still the same

(MF) yes I have tried to change my diet to lose weight and build muscular but did not continue.

(BD) yes because I want to lose weight and be in a good health

(MO) yes, recently I have changed my diet in consuming more protein to build my body.

(MJ) yes, I have reduced the quantity of food and eat more fruits and vegetable due to obesity and heart problems.

(SW) no, I have not changed my diet because I don't need to.

Moderator: Was this change successful or not?

(MF) it was successful in a certain period but because I did not continue I could not see the result

(BD) yes, I have lost weight and built muscles.

(MO) not yet, I passed a certain stage and then I feel bored so I come back to eat what I used to.

(MJ) yes, I lost weight and start to feel better than before but I need to continue to achieve the result.

(AB) yes I have changed my diet for example, I have started to eat brown bread instead of white and drinking tea without sugar because I have diabetes.

(SU) yes, due to diabetes I have changed my diet and quit smoking but not for a long time because I felt bored and I still have diabetes so I go back to my normal diet.

(MS) yes, after I had high blood pressure I totally changed my diet I reduced the amount of salt and fat in my food.

(AM) No, I never thought of changing my diet I eat what I used to eat.

(FH) yes I have reduced the consumption of fats, due to health problems

Moderator: Was this change successful or not?

(AB) yes it was successful at the beginning and I felt better than before but I could not continue on this diet for long I felt bored so some time I do and sometime not but I still suffer from diabetes.

(SU) not that much because I have not continued.

(MS) yes, it is successful because I am continues and I do not give up.

(FH) yes, my health is much better than before.

General views of facilitators to change	Age group	Gender	
		male	female
Motivation & support	18-25	SW,	NE, SI, SA, ES
	26-30	MF, MJ	NU,
	31-39	AM,	MN, SH, JM,
	40-49	MO,	FA,,
	50-59	SU, FH,	SA,
	60-65	AB, MS,	
Strong will	18-25		AS, SI, ES,
	26-30	MJ,	SM,
	31-39	AM,	
	40-49		
	50-59	SU, FH,	SF,
	60-65	MS, AB	
going to nutritionist/dietician	18-25		NE,
	26-30		
	31-39		
	40-49		
	50-59		
	60-65		
Education , awareness & advertising	18-25	SW,	NE, SA, ES
	26-30	BD, MF,	SM,
	31-39		JM, SH
	40-49	MO,	
	50-59	SU,	DL, SF,
	60-65		
Availability with reasonable price	18-25		
	26-30	MJ,	NU,
	31-39		JM,
	40-49	MO,	ZE, FA,
	50-59		DL,
	60-65		
Increase public transportation	18-25		
	26-30		NU, MR
	31-39		
	40-49		FA,
	50-59		
	60-65		

(As) by changing my routine, sleeping pattern and drinking a lot of water. A supportive and an encouraging family are important.

(Ne) by changing my daily routine. Reading what is useful for me and educating myself. We need to change our eating habits during social events by consuming less unhealthy food and eating before going to the event; if I could not help myself I will go to a nutritionist/dietician.

(Sm) by going out less because every time when we go out there is the tendency to eat more ,also by watching health programs to raise awareness of healthy eating.

(Mn) by eating less food during social events because they tend to serve a variety of food. Also by increasing the consumption of salad and fruits.
(Ze) motivation from my husband and by making healthy food and snacks easily available in the supermarkets and restaurants with reasonable price.

(As) to continue having a healthy lifestyle and not to give up.
(Sm) having a strong will
(Ze) reduce the consumption of fast food and drinking green tea and having a balance diet along with doing exercise.
(NE) increase health awareness in food choices in general. Also help the husband to change because sometimes he buys a certain types of food for me to prepare and I don't have a choice to eat different food.
(Mn) constant motivation from my family and more time for myself to go to the gym.

(Ze) yes, I wish if we could have recipes for healthy meals with good flavours similar to what we have used to eat.
(NE) Force the restaurants to reduce the proportion of fat in the food because this is a concern for the society's health.
(As) I wish if we could have healthy meals in schools.

(SI) strong will and motivation can help in changing the diet.
(SA) motivation from family and reading more about healthy diet would help.
(FA) increase public transportation and sport clubs with reasonable price. Support ourselves and organise our time.
(NU) motivation from family and friends can help me to change my diet. Also Increase the number of healthy restaurants.
(DL) increases and improves the number of advertising about healthy food instead of fast food.

(SA) strong will .motivation and support from family and friends. Educate ourselves by searching in the internet about useful information and healthy diet
(FA) supporting from family members to each other. Increase transportation and gym. Making healthy food available everywhere with reasonable price
(SI) Self-control and encouragement from family and friends.
(DL) encourage ourselves to eat healthy for better life.
(NU) recipes for healthy food. The cooperation between family member to eat healthy food and buying the food and ingredients together.

(FA) The provision of healthy restaurants with reasonable price
(DL) I wish if we could have all the ingredients of healthy food available everywhere with reasonable price so we can cook them at home.
(NU) increase the number of public transportation can facilitate buying and selecting our food.
(SA) I hope if we could have healthy meals at schools and universities.

(MR) changing our lifestyle

(SH) motivation, my husband was helpful because he also does not like to eat fatty food and is interested in imported healthy food. We changed our lifestyle to be healthier without problems and I am happy with this change.

(SF) walking, reduce the consumption of fats and change our bad eating habits.

(JM) doing exercises and educate ourselves by reading about healthy eating.

(ES) strong will and support from family.

(SF) strong will can help us to change our lifestyle and diet.

(ES) the person who responsible for cooking at home can control family's food. Having more advertising and programs about healthy food will be really useful.

(MR) by reducing the consumption of fats and eating a lot of fruits and vegetables.

(JM) making healthy food available everywhere with reasonable price can help. Supporting and encouraging from family is really important.

(SH) making healthy food available in schools and educate the children about healthy food from childhood.

(ES) Yes, I wish if we could have sport classes in schools.

(SH) I think having a dietician in school to help the children from their childhood in case of obesity or other health problems.

(JM) provision of women's gyms with reasonable price would help to change our lifestyle.

(MR) increase public transportation will facilitate going out.

(SW) motivation and more information about healthy diet.

(MF) support from friends, because we meet all the time so if we cooperate with each other in changing our diet to be healthier, it would be helpful.

(MO) my family can help me with this change in terms of food selection, preparation and encouragement. If healthy food is at an affordable price and available everywhere, it would help with this change.

(BD) our culture and knowledge about food and related problems can help us to change our diet.

(MJ) being obese has motivated me to change my diet. Also support and encouragement from one of my friend helped me as well because I saw the changes in him.

(MO) spread the awareness at school so the children can be familiar about healthy eating from their childhood. Spread the awareness between families and mothers about different preparation methods for healthy food and diseases resulting from malnutrition.

(MF) spread the awareness and health education.

(BD) the person must be convinced with this change to be successful.

(MJ) change our customs to be healthier and a strong will can help change our diet. Availability of healthy food everywhere with reasonable price can help as well.

(SW) Having more advertising and information about healthy eating and lifestyle would be helpful.

(BD) Cooperation between government and individuals to make our life healthier.

Free distribution of healthy meals in schools with gifts like Macdonald's would be a good idea to encourage healthy eating.

(MF) Establish more sport and health centres for males and females with affordable price in each neighbourhood.

(MJ) I wish if everybody eat healthy and do exercises because it is useful for body. I hope if we have more sport centres and spaces to walk and having healthy food everywhere with reasonable price.

(SU) If I have strong will my diet will be successful and I will avoid health problems. Also reading and searching about healthy food and recommendations from friends can help me change the diet for example I have heard about the benefit of ginger for cold and cough. Motivation from friends and family and doctor's advice helped me to change my diet.

(AB) If someone can convince me about my health, changing my diet and explains the side effect may I will change my food. So conviction is the main important factor to change anything also motivation from family and friends can help. Also doctor's advice would help me to change my bad eating habits like reducing the consumption of sugars and quit smoking.

(FH) strong will and supporting from my family were really good to change my diet because my family have tried to eat what I eat. Also advices from doctor can help with this change.

(AM) encouragement from family or friends for example, as I said before married I don't like to eat vegetables and drinking water but after I got married my wife has encouraged me to drink lots of water and eat vegetables like salad.

(MS) having health problem motivates me to change my diet also strong will, doctors' advice and support from my wife helped me too.

(FH) continues and not despair also cooperation between family and friends to have healthy diet will be a great idea because team work is more affective and stimulator for the self.

(MS) self-confident and continues can make it successful.

(SU) having strong will and motivation from family and friends and reading a lot about health can help to make anything successful.

(AM) with strong will, encouragement and the conviction from inside any change can be successful.

(AB) if I have strong will and specific aim my change will be successful.

(SU) I wish from everybody to be honest in his work and try to do the best in his life. Also increase the knowledge and information about healthy food and health and spread it at schools so the children can have awareness since their childhood.

(FH) no thank you

(AB) I hope if everyone can change his believe in healthy eating and quit smoking.

Ways of looking after health

Meaning of food

Factors affecting food choice

Relationship with food and health

Health related issues

Barriers to healthy eating

Motivation to change

Facilitators

Appendix 9: Information sheet

Food Choice In Saudi Arabia: A social Marketing Approach

PARTICIPANT INFORMATION SHEET

You are invited to take part in a study to understand attitudes and perception of health experts on the health status of Saudi females, addressing the perceived barriers and facilitators in order to inform and improvement dietary habits and health. This research is part of a postgraduate study which is funded by Saudi Government. This research is being supervised by Dr Sharron Kuznesof and Prof Lynn Frewer from Newcastle University.

What is the purpose of the study?

This research will explore expert's attitudes to food choice and the barriers and facilitators of healthy eating. The information obtained from this interview will be used to develop a questionnaire to examine consumer perceptions for health related information.

Why have I been chosen?

You are considered to be an expert in food and/or health related area.

Do I have to take part?

Participation in the study is voluntary. You have a right to decline the invitation or to withdraw from the study at any time without providing an explanation or incurring any penalty.

What will happen to me if I take part?

If you agree to take part in the study, I will contact you to arrange a meeting at a time convenient to yourself. There will be 6 main topic areas that I would like to explore with you. These include:

1- The current key health issues amongst Saudi citizens.
2- Target groups, who are most at risk of having health problems.
3- The future /emerging health related challenges for Saudi women.
4- The barriers and facilitators towards healthy diet for Saudi women.
5- Current initiatives to help improve diet/health behaviours of Saudi women.
6- Recommendations to improve this situation in the future.

(This is not a test and there are no right or wrong answers, we are simply interested in your opinions on the topics under discussion.) With your permission, the interview will be audio recorded. The interview will last approximately 30-45 mints. The audio recordings will be transcribed (copied word for word) and analysed. Your contribution on the transcripts will be identified by job role e.g. Dietician. Results will be anonymous (i.e. you will not be identifiable) and will be used for research purposes only.

Are there any risks that could be incurred by taking part in this study?

No specific risks have been identified.

Are there any potential benefits of taking part in the study?

There will not be any immediate benefits to those who take part in the study. However, it is hoped that the results of the study will lead to further research into this area. These results also will aid governmental departments in health and social wellbeing, policy makers, food manufacturers and educators.

What if something goes wrong?

It is extremely unlikely that something will go wrong during this study. However, you should know that the University has procedures in place for reporting, investigating, recording and handling adverse events and complaints from study volunteers. The University is insured for its staff and students to carry out research involving people. The University knows about this research project and has approved it. Any complaint should be made, in the first instance, to the researcher identified for this particular study. Any complaint you make will be treated seriously and reported to the appropriate authority.

Confidentiality:

Any information you supply will be held in strict confidence, viewed only by the named researchers (see below) and then anonymised. Names will not be attached to audio recordings. Anonymised interview transcripts will be stored in a locked password protected computer.

What will happen to the results of the study?

The results will be published in academic journals for use by other professionals engaged in health promotion. A lot of data will be produced in this study. The transcripts and questionnaires may be made available to other researchers for reanalysis. In this case, anonymity and confidentiality of the participants will be maintained.

Who is funding and undertaking the research?

This research is being funded by Saudi Arabia government. The Interviews will be undertaken by the researcher in Saudi Arabia.

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Appendix 10: interview guide for participants and researcher

Food choice in Saudi Arabia: A social marketing approach

Interview Guide for participants

Introduction:

The aim of this interview is to explore the attitudes and perception of health experts on the health status of Saudi females, addressing the perceived barriers and facilitators in order to inform and improve dietary habits and health. The purpose of this research is to use these finding to identify potential solutions.

Interview questions:

1- According to your information, what are the current key health issues amongst Saudi citizens?

2- Are there particular target groups, who in your opinion are most at risk of having health problems?

3- In your opinion, what are the future /emerging health related challenges for Saudi women?

4- What you do believe are the barriers and facilitators towards healthy diet for Saudi women?

5- Are you aware of any current initiatives to help improve diet/health behaviours of Saudi women?

6- What would you (personally) recommend to improve this situation in the future?

7- Thank you for your time and participation, do you have any comments or questions?

Food choice in Saudi Arabia: A social marketing approach

Interview Guide for researcher

Introduction:

The aim of this interview is to explore the attitudes and perception of health experts on the health status of Saudi females, addressing the perceived barriers and facilitators in order to inform and improve dietary habits and health. The purpose of this research is to use these findings to identify potential solutions.

Interview questions:

8- According to your information, what are the current key health issues amongst Saudi citizens?

(Prompt obesity, type 2 diabetes etc.)

9- Are there particular target groups, who in your opinion are most at risk of having health problems?

(Prompt: young people, women with children, old women, old men etc.)

My research focusing on women,

10- In your opinion, what are the future /emerging health related challenges for Saudi women?

11- What you do believe are the barriers and facilitators towards healthy diet for Saudi women?

(Prompt: Barriers and Facilitators identified from focus group study).

Internal Barriers	External Barriers	Internal Facilitators	External Facilitators
Female			
Lack of strong will and self-confident	Convenience.	Strong will & self-confident.	Availability of healthy food and snacks in supermarkets and restaurants with reasonable price.
Time constraints.	Price and income.	Belief and conviction	Social support.
Life commitment.	Location of shops and restaurants.	Changing lifestyle and routine.	Recipes for healthy cooking.
Appetite.	Availability of healthy food.	Increase healthier food in the diet.	Increase public transportation.
Taste.	Lack of social support.	Increase health awareness.	Spread the knowledge and information about healthy food.
Studying.	Family cooking and preference.	Quantity control.	Health problems.
Mood	Lack of public transportation.		

12- Are you aware of any current initiatives to help improve diet/health behaviours of Saudi women? (Fact)

13- What would you (personally) recommend to improve this situation in the future?

(Prompt: I have looked at initiatives elsewhere and these are what I have found, and I would like to know if these could be applicable in Saudi Arabia or not?

Intervention purpose	Theoretical underpinnings	Mechanism	References
1- Eating less overall **Eating less 'unhealthy' foods**	-Portion size reduction. -Substitution - less healthy foods for healthier foods e.g. low fat in food.	-Information and educational campaign. -Advice on appropriate portion sizes. (information- packaging) -Simplified front-of-pack nutrient labels to support healthier choices, on packaged foods or in grocery stores, cafeterias, vending machines, and restaurants. - (Economic incentives) tax strategies to increase prices of less healthful foods and beverages. -Developing good tasting low-fat recipes. -Cutting down on foods high in saturated fat and replacing them with foods that are rich in unsaturated fat.	-The influence of food portion size and energy density on energy intake: implications for weight management1–4 Ello-Martin, et al (2005) - Population Approaches to Improve Diet, Physical Activity, and Smoking Habits. Mozaffarian et al (2012) http://www.nhs.uk/Change4Life/Pages/cut-back-on-fat.aspx
2- Increase intake of fruit and vegetables **- Skills to purchase and prepare food.**	-Displacement theory.	-5 a day- information. -Promote environmental, organisational & policy changes to establish social norms supportive of long term maintenance of new behaviour. -Improving access to retail stores (supermarket, grocery...) and increasing the availability of high-quality, affordable fruits and vegetables (university, work place…) - (Economic incentives, Food pricing) Subsidy strategies to lower prices of more healthful foods and beverages. -Choose fruit or vegetable options in the vending machine over candy or other high-fat snacks. -Eat a piece of fruit or some vegetables as a mid-day snack.	-An Intervention Portfolio to Promote Fruit and Vegetable Consumption. -Centers for Disease Control and Prevention. Strategies to Prevent Obesity and Other Chronic Diseases: The CDC Guide to Strategies to Increase the Consumption of Fruits and Vegetables. Atlanta: U.S. Department of Health and Human Services; 2011. - Population Approaches to Improve Diet, Physical Activity, and Smoking Habits. Mozaffarian et al (2012)

3- Increase physical activity.	- Energy expenditure > energy intake weight lost "Move more, eat less".	-Join an indoor sports team -Go for a walk with a friend instead of sitting in a cafe and eating cake. -Using point-of-decision prompts which are signs placed by elevators to encourage use of stairs. -Use the stairs instead of lift. -Provide people greater access to places for physical activity (e.g. include building walking or biking trails and making exercise facilities available in community centers or workplaces. -Increase awareness about ways to increase physical activity in the community. -Using mass media campaign which designed to increase knowledge, influence attitudes and beliefs, and change behaviour by using channels (e.g. Newspapers, radio, and television.) -Structured worksite programs that encourage activity and also provide a set time for physical activity during work hours. -Tax incentives for individuals to purchase exercise equipment or health club/fitness memberships.	-The Effectiveness of Interventions to Increase Physical Activity Am J Prev Med(2002) -Population Approaches to Improve Diet, Physical Activity, and Smoking Habits. Mozaffarian et al (2012)

14- The term social marketing is being used in relation to behaviour change.

- Have you heard about it? If **No** (give brief explanation if still no - don't prompt further)
- If **Yes,** can you describe it please?

15- Thank you for your time and participation, do you have any further questions or comments?

- Are there any issues that we have not considered or discussed in relation to Saudi Arabian women and dietary change?

Social Marketing background information

Social marketing (*"the use of marketing principles and techniques to influence a target audience to voluntarily accept, reject, modify, or abandon a behaviour for the benefit of individuals, groups or society as a whole"*) (Kotler and Zaltman 1971)

Social marketing is "*...A process for influencing human behaviour on a large scale, using marketing principles for the purpose of societal benefit rather than commercial profit.*" (W. Smith, Academy for Educational Development)

Social Marketing campaign examples:

- Social marketing campaign examples from UK (Change 4 life) and America (VERB).

Change 4 life:

- Is a public health programme in England which began in January 2009, run by the Department of Health. It is the country's first national social marketing campaign to tackle the causes of obesity.
- Change4Life aims to help families and middle-aged adults make small, sustainable yet significant improvements to their diet and activity levels. It uses the slogan *"eat well, move more, live longer"*.

- **Change4Life encourages people to adopt six healthy behaviours:**
  1. 5 A Day – suggestions for ways to eat the recommended 5 portions of fruit and veg each day.
  2. Watch the salt – advice on reducing the amount of salt eaten each day, ideally keeping it to below 6g for adults.
  3. Cut back fat – information about the (mainly saturated) fat found in foods and ways to reduce this.
  4. Sugar swaps – information about sugar found in foods and suggestions for healthier alternatives.
  5. Choose less booze – ways for adults cut down on alcohol consumption to within government lower-risk guidelines.
  6. Get going every day – why it's important to lead an active lifestyle and ways for adults and children to do this cheaply and easily.

- Change4Life also has six sub-brands that help intermediaries to promote a single issue with either a food or an activity focus (Bike4Life, Breakfast4Life, Let's Dance with Change4Life, Play4Life, Swim4Life and Walk4Life). A range of resources is provided to enable them to disseminate these healthy living messages within their own context.

VERB campaign:

It is a multi-ethnic media campaign with a goal to increase and maintain physical activity among tweens or children aged 9 to 13 years. Parents especially mothers aged 29 -46 and other sources of influence on tweens (e.g. teachers) are the secondary audiences of the VERB initiative. VERB applies commercial marketing techniques to address the public health problems of sedentary lifestyle of American children using the social marketing principles of product, price, place, and promotion. The campaign aske tweens to discover new activities they like to do. To sell VERB successfully to tweens as their brand for having fun, the campaign associates itself with popular kid's brands and celebrities and products that cool, fun and motivating also with popular kids channels (e.g. Nickelodeon, Cartons Network).

Appendix 11: cycle 2, 3, 4

Table 5.7: Rotated Component Matrix: FCQ cycle 2

Variables	Factors							h2
	1	2	3	4	5	6	7	
1-easy to prepare	.111	.011	.798	-.019	.153	.067	.061	.682
3-is low in calories	.467	.093	.195	.165	.095	-.064	.611	.678
4- tastes good	.147	-.160	.111	.058	.021	.784	-.012	.679
5- contains natural ingredients	.740	-.009	.065	.096	.177	.194	.274	.705
6- is not expensive	.120	.005	.132	.050	.731	.055	.304	.665
7- is low in fat	**.583**	.101	.063	.005	.182	.040	**.558**	.700
9- is high in fiber and roughage	.576	.218	.105	.158	.185	-.086	.265	.527
10- is nutritious	.776	.120	.001	.124	.116	.193	.112	.695
13- cheers me up	.053	**.483**	.152	.034	.097	**.603**	-.047	.636
14- smells nice	.093	.409	.080	.117	.125	.714	.033	.722
15- can be cooked very simply	.125	.314	.753	.119	.118	.217	.093	.765
16- helps me cope with stress	.274	.594	.234	.211	.100	.123	.151	.576
17- helps me control my weight	.551	.342	.107	.066	.174	.098	.451	.679
18- has a pleasant texture	.164	.563	.043	.327	.270	.118	.307	.634
19- is package in an environmentally friendly way	.309	.245	.139	.700	-.046	.135	.194	.723
20- comes from countries I approve of politically	.221	.139	.068	.797	.022	.026	.035	.710
22- contains lots of vitamins and minerals	.838	.183	.077	.205	.042	.072	.111	.802
23) contains no artificial ingredients	.730	.092	.063	.251	.012	.000	.189	.645
24) keeps me awake and alert	.290	.685	.230	.133	.047	-.087	-.037	.635
25) looks nice	.224	.630	.073	.038	.051	.363	-.004	.588
26) helps me relax	.335	.718	.128	.156	-.040	.004	.037	.671
27) is high in protein	.680	.297	.152	.153	.014	-.062	-.092	.610
28) takes no time to prepare	.137	.270	.778	.171	.161	.058	-.014	.755
29) keeps me healthy	.774	.217	.191	.061	.132	.166	.023	.731
30) is good for my skin/ teeth/ hair/ nails etc	.660	.433	.132	-.005	.143	.200	-.107	.712
31) makes me feel good	.707	.326	.118	.140	.155	.089	.007	.671
32) has the country of origin clearly marked	**.574**	.122	-.005	**.532**	.150	.058	-.075	.659
33) is what I usually eat	.135	.194	.171	.480	.295	.139	-.433	.610
34) helps me to cope with life	.541	.383	.016	.277	.251	-.093	-.236	.644

35) can be bought in shops close to where I live or work	.340	.155	.127	.107	.636	.157	-.241	.655
36) is cheap	.141	.079	.176	-.003	.778	.028	.025	.664
Eigenvalue	11.447	2.544	1.790	1.446	1.413	1.143	1.044	
% variance	22.375	11.701	7.321	7.157	6.821	6.361	5.451	
% Cumulative variance	22.375	34.076	41.397	48.554	55.375	61.736	67.187	

Cycle 3 (10-11-2015)

Items	Component						
	1	2	3	4	5	6	7
22- contains lots of vitamins and minerals	.846						
10- is nutritious	.790						
5- contains natural ingredients	.772						
29) keeps me healthy	.767						
23) contains no artificial ingredients	.758						
31) makes me feel good	.696						
27) is high in protein	.654						
17- helps me control my weight	.630						
30) is good for my skin/ teeth/ hair/ nails etc	**.623**	**.416**					
9- is high in fiber and roughage	.619						
3-is low in calories	.586						
32) has the country of origin clearly marked	**.529**			**.478**			
26) helps me relax		.721					
25) looks nice		.692					
24) keeps me awake and alert		.643					
18- has a pleasant texture		.626					
16- helps me cope with stress		.585					
1-easy to prpare			.787				
28) takes no time to prepare			.780				
15- can be cooked very simply			.768				
20- comes from countries I approve of politically				.781			
19- is package in an environmentally friendly way				.716			
6- is not expensive					.786		
36) is cheap					.761		
33) is what I usually eat				**.405**		**.627**	
35) can be bought in shops close to where I live or work					**.519**	**.522**	
34) helps me to cope with life	**.470**					**.519**	
4- tastes good							.829
14- smells nice		**.453**					**.642**
Eigenvalue	10.924	2.231	1.687	1.377	1.359	1.134	1.025

% Variance	23.271	11.879	7.877	7.004	6.723	5.818	5.485
% Cumulative variance	23.271	35.151	43.028	50.032	56.755	62.572	68.058

cycle 4

Rotated Component Matrix[a]

Variables	Component					
	1	2	3	4	5	6
22- contains lots of vitamins and minerals	.851					
10- is nutritious	.792					
5- contains natural ingredients	.781					
23) contains no artificial ingredients	.770					
29) keeps me healthy	.763					
31) makes me feel good	.696					
17- helps me control my weight	.653					
27) is high in protein	.648					
9- is high in fiber and roughage	.639					
3-is low in calories	.625					
30) is good for my skin/ teeth/ hair/ nails etc	.606	.421				
26) helps me relax		.729				
25) looks nice		.717				
24) keeps me awake and alert		.642				
18- has a pleasant texture		.630				
16- helps me cope with stress		.563				
1-easy to prpare			.808			
28) takes no time to prepare			.764			
15- can be cooked very simply			.760			
20- comes from countries I approve of politically				.780		
19- is package in an environmentally friendly way				.670		
33) is what I usually eat				.649		
6- is not expensive					.819	
36) is cheap					.766	
4- tastes good						.808
14- smells nice		.454				.628

Participant Debriefing Information

Food choice in Saudi Arabia: A social marketing approach

Thank you very much for participating in this study. Our research relies upon the voluntary contributions of participants and these contributions are greatly appreciated.

This research is part of a postgraduate study which is related to food choice motivation in Saudi Arabia and using social marketing to promote healthy behaviour. Today's focus group research will help us understand peoples' opinions of food choice motivation also the barriers and facilitators for healthy eating.

The focus group discussions, which have been recorded, will be transcribed (written word for word) and the transcriptions will be analysed. The transcripts and audio recordings will be kept in an electronic format and accessed through a password protected computer. We will assign participants with a number to ensure participant anonymity.

This project is commencing in April 2012 and will end in April 2016. The outcome of this study may be published by academic journals and may be the basis of further research in the future.

If you have any further questions about the research or would like any further information please contact Bshair Alharthi or Dr Sharron Kuznesof at:

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Interview data analysis

Health issues

Health issues	Target group	Interview number
obesity	women middle age	1, 2,3,4,5,6,8,9,10,11,12
diabetes	Both middle age	1,2,3,4,5,6,8,9,10,11,12
hypertension	old	1,2,4,5 ,8,10,11,12
cardiovascular		2, 4,10
bones problem like osteoporosis	women	6,8,10,11,12
weakness in thyroid gland	middle age	8,11,

1) Major problem is obesity and the other problem is diabetes, which is very common in this country; around 35 % of populations have this problem. Also, hypertension, which is related to obesity, dyslipidemia, as you know are all related to heart problem

Middle age and commonly female who suffer from obesity.

2) Most of the patients who are coming to the clinic are obese and a few are underweight so the key problem is obesity.

   Diabetic of course, hypertension and cardiovascular diseases are all problems that are related to obesity because most of my patients suffer from hypertension or cardiovascular diseases are obese.

   Both men and women but most of them are female who are aged 40 years old and above, and men from age 50 years old. Women usually come in the clinic to be treated for obesity and diabetes, but men come for reducing their weight and they are from the age of 30 years old. There are also other diseases from the age of 40-50 years old and above. most of my patients are women.

3) Diabetes is the most common problem which has a count of 24% amongst Saudi residents. The reasons for having diabetes are caused by obesity,

   In terms of obesity, women over 35 year's old speciality married with kids

4) Lack of physical activity, then bad eating habits. Diabetes and obesity, but according to my knowledge diabetes is common for both males and females.

   In the hospital the majority who have diabetes are males and females and both are over the age 40 years old. Of course, women complain about obesity more than men and also when they become obese, this causes heart problems and hypertension.

5) Diabetes and hypertension, and some other problems which are caused by it are diabetes which causes kidney problems or hypertension. These health problems cause heart diseases, so it is important to control it beforehand to avoid health problems.

Diabetes could come to children through genetics but the majority who suffer from chronic diseases are adults. For example, we have a man in the age 30 years old who suffers from heart problems and this is because of obesity and not taking care of his health. So no specific age for having health problems but the majority is adults.

Obesity is the main factor that causes other health problems.

6) Diabetes is the most common health problem and most women suffer from bones problem like osteoporosis, and they can't do exercise so they put more weight on and most women have a weakness in their thyroid gland.

Thyroid gland, it usually happens to women and most of our patients are women. In term of males, they come for building their muscles and most of them are strict and follow what we give them. In term of diabetes and obesity, they are likely to be seen in both male and female and this has started from the age 15 years old, because the family only discovers that their children are obese in this age.

8) Obesity, diabetes, hypertension, cholesterol and thyroid glands the next are boons problems, cardiovascular and kidney disease, fatty liver, cancer and constipation

All age groups have health problems but the more common one are diabetes and thyroid, specifically for middle-aged people; but others over 40 years also have a variety of problems

9) The first thing is obesity then diabetes and hypertension, and the reason for this is eating fast food without any balance or in moderation.

children, they have obesity and diabetes as well. In term of women, they suffer from obesity more than men and this starts from the age of 16 – adolescent - because they consume too many snacks and fast food. For old people over 30 years, they have diabetes and hypertension and it may be caused because of obesity or by genetics.

10) The first thing is obesity, which other problems happened due to it like diabetes. The main 2 problems are obesity and diabetes, with other problems like kidney problems, boons problems due to being overweight, so they cannot do any physical activity. Also cardiovascular, hypertension and cholesterol problems related to obesity.

Those over 40 years suffer from obesity, cardiovascular, diabetes, and hypertension, but most of the old people suffer from diabetes and hypertension - both male and female. Women come to the clinic and try to solve their problems, but we have too many men sleeping at hospital because of cardiovascular diseases and they have diabetes, hypertension and cholesterol

11) Diabetes, obesity, hypertension, defect in the thyroid gland, underweight, lack of vitamin D and arteriosclerosis.

People over 35 years old, they have more problems that need special solutions and care. Most of these females suffer from obesity, bones problems and diabetes. However, males have diabetes as well, but not obesity likes women and they follow the guidance from the dietician.

12) Diabetes, obesity, hypertension and heart diseases these are the common. In terms of females, they have bones problems as well like Osteoporosis

Over 40 years old who are suffering from these problems, especially women because most of them stay at home with low physical activity, so the problems increase. Children suffer from being either underweight or obesity. Men have similar health problems with females like obesity, diabetes, heart problems and hypertension.

Barriers

Barriers	Interview number
Lack of knowledge and awareness	1, 3, 5,8,9,10,11
Used to bad eating habit	1, 4,6,9,11,12
Taste	1,8,11, 12
Expenses	1, 3, 5,8,11
Time	1, 5,8,11
Life commitments	2,
Getting bored	2,
Lack of transportation	2, 8,
belief and motivation	2,
Culture and tradition social events	3, 5,6,8,9,10,11,12
environment support	3, 5, 6,8,9,10
Lack of gyms	3, 5,8,9
psychological issue ,mood and stress	3,5,8,12
income	3, 4
Lack of strong will	4, 6,8
availability of healthy food	4, 6,8
Family preference and support	4, 5,6,8
convenience	4, 5,6, 9,10,11,
laziness	4, 9,10,
lack of nutrition information on some products	5,
Lack of healthy advertising	5, 8,
Weather	5, 8,9,
Difficulties of doing any activities	6

1) Is lack of knowledge about healthy food they don't know about and what is good and not for their health especially in the urban area.

They don't know how to choose to eat healthy food.

Bad habits about eating fatty foods which they say are tasty. e.g (I am telling my patients to have more fruit and vegetables and they said no because they have got bad food habits of eating such food, and that it is very strange that they only know of rice and meat.)

It is hard to transmit such information to them.

Some people cannot afford to pay a visit the nutritionist and continue.

I am hearing all the time they don't have time and why we don't have the time, you have time for visiting and eating out so why don't you have at least an hour during the day for walking or to do any physical exercise

but for the price I don't believe it's an issue for them because there is no difference between healthy food and what they want to eat if they can.

2) They don't have anybody to take them to do exercise or they are busy with their family, but for their diet, usually they are motivated to stay on a good diet for a week only and then they get bored. Sometimes, they lack material about food and diet because if they are not familiar with dietary items.
The problem is related to their belief and motivation and they don't want to continue.

but for some patients it's difficult to calculate and they need time and more information and some of them they just want to know what they have to eat and they don't want to keep track of their count.

3) Lack of awareness about healthy food, culture and tradition in term of the food, also a lack of physical activity due to the environment and lifestyle that we live in. We don't have enough gyms especially public and government sectors, and these gyms that are the most available to us are expensive. Most of the women can't go out alone and they need somebody to take them, but if the person who want to take them out busy, then she has to stay at home because it is far away to walk and there is also lack of public transportation
It is related to a psychological issue and the situation for example, for some married women who have been in a relationship for 10 years and who have problem with their husband and they don't feel happy they tend to eat more. Also, some teachers aged 40 years old and either males or females suffer from diabetes and hypertension and it increases after retirement especially for males because they feel they don't have anything to do, and at the beginning they feel happy then they start feeling bored and so they start smoking more and behave differently.

They are used to eating their type of food and this brings it back to their culture and tradition and can be a problem that is difficult to change. Most people do not have awareness about the variety in their meals and most of them eat rice with meat and then have dessert.

We still have families with low income which can cause a problem for some people, because they said that it is good that we found food to eat and when I tell them to drink some low fat milk, they say that we are given full fat and white flower from the charity.

Most of diet and healthy food are expensive and it looks like people don't want to eat healthy food so they buy what is cheap and reasonable for them because they have other expenses.

even if we have programmes on the TV, which include general information and advice that are not related to a specific disease and this can be a problem because everybody will follow this advice and try to apply it in his/her situation and it might not be appropriate.

4) When I told them you have to change your diet they said that we have been eating this type of food for 60 years and now you want us to change our diet, this is very strange but when they are not very well and they come to the hospital, they accept the advice and changes but for a short time until they feel well and then they return back to their old diet so they are lacking in strong will.
The lack of availability of healthy food ingredients because the income for some people are not helping them to buy healthy products.
We don't have local healthy food only we have some fresh fruit, vegetables and brown bread. It's difficult to change people's mind and opinions and this is one of the barriers.

family member could be a barrier, some of them, don't want to eat alone special food, so the house wife has to cook depending on her family preference because they will not accept it despite its being healthy dish, even if it has become more tastier than before.
Indeed, some of it depends on the husbands who are used to eat this type of food since their childhood and his life before marriage, so it becomes difficult for them to change these bad eating habits especially if they are over the age 40 years old.

There are problems in school because there is no awareness and good environment for eating healthy food because most of available food is fast food and some schools don't have healthy meals.

Here we don't have ready to eat fruits and veg, so we have to prepare it by ourselves and for this reason some people prefer to buy fast food because it is more convenient for them and because they are lazy.

5) E.g If we sow the lifestyle for working and non-working women, we would find that with both they could have obesity, so working women would have lack of time and unemployment have a lack of physical activity, mood and motivation so they would spend their time for eating.
When they want to go out they only have a choice to go either to the malls or places that include food so that they can set and eat. There is no room for activity, only to visit their family or friends and all festivals include food o most of our time is eating without doing any movement and we made our lifestyle to be wrong.

The first barrier is family for example, if females want to cook healthy food or learn that their family member will not accept this food because they are not used to it.

Social gathering could be a barrier for eating healthy food because most of the food is sweets and fatty.
In term of physical activity, women don't have the chance to do it as males, because there isn't a walking concept or some family don't allow women to walk in the streets because it causes discomfort and it depends on their culture. Even, if they go out to the mall, there is no place for physical activity so they set and eat. Even with the availability of some of the gyms, if we compare it with male gyms is more expensive and with less flexibility of time. So, if we solve these problems, it will be easier for them to change it.

Time constraint this is not a big problem if we change our views on our cooking skills from fatty rice or meat to a much healthier way it will be good but will depend on the culture, tradition or region that they have been used to for so long and this way they will find it difficult to adapt to a new behaviour.

There is no support from the husband or family members.

Some products until now in Saudi do not have nutritional information on their packages or it's just not translated into Arabic.

Our lifestyle has changed and most of our food contains additives.

Sun top drink is a drink that is not a juice but they wrote it contains a high quantity of vitamin c. So, this was only a promotion for the product despite it being water and sugar only, also we have vegetable oil and it was written as no cholesterol it already does not have cholesterol. Also, in some advertising there is a sports man who drinks Pepsi or some sort of an energy drink because it should help him to perform better. So all of these food advertisements are about promotions and profits not about health.

We have a problem in terms of the weather here because it is hot, so not helping people to go out during the day time so, most of them always use cars for everything and at the night they come back from work and they are tired.

Some parents see obesity as a good health benefit and some restaurants ask people to add more money so that they can increase their food quantities so the person prefers a bigger meal size with a lesser price (value for money) which most of the marketing is all about profit and not for the sake of the well-being of the society.

6) For women, when it comes to a social gathering they tend to break their diet.

Support in Saudi schools is very bad and that's why we have difficulty in spreading any awareness between societies.

Some mothers cook healthy food and the rest of her family do not like it so she has to cook depend on their preferences but if they cooperate and support each other they will achieve good results.

In term of availability of healthy food is not easy and available as we want. For example, here in the hospital it is very difficult to fine healthy food so I have to bring my own food from home and sometime I don't have time to prepare it so we don't have healthy ready meal.

People do not convince about the change because they used to this system when they were kids so this behaviour learned from family.

spreading the awareness in the shopping centre very difficult because its take time to accept this program even at schools we have to wait until we get acceptance form ministry of education that way we go to private school if we need to apply any programme because they welcoming the idea.

we don't have support even at school when we asked dinner lady and she is not expert in health why you provide children with crisp or fried food this is not good for them she said because our budget not enough.

7) "the available gyms and dietician centres are expensive and not convenience"

8) Most women cannot do exercises freely. It cost too much if she want to go to gym because the gyms are expensive also she can't afford to buy gym equipment as well.

Unawareness of healthy eating habits.

Culture and certain family members do not support women in doing exercises or bringing them to our centre.

Also stress plays a big role in encouraging eating more. Some males do not have time to exercise because they work during the daytime and at night, they are tired and want to relax and sleep.

Some people think healthy diet is like a medicine and they do not accept it, but in reality, it is only a change in foods by restricting the amount of fat that is consumed. Also, old people do not accept any advice about eating; they say 'we are old! Let us eat what we want we will die soon'.

Some husbands want their wives to eat the same food that they eat, so she finds difficulty to continue with what we give her in term of a suitable diet for her – meaning there is no social or family support.

Sometimes at the beginning, they are very enthusiastic to continue but after about 4, month go back to their normal weight and old eating habits so they don't have a strong will and sometimes it's difficult to find healthy products. Lack of advertising about healthy meals is also an issue.

We don't have gyms for kids.

Also the weather is not helping in walking.

9) Society and culture - we always have lots of social gathering that contain food and most of it is sweet and fatty. Traditions and culture is very difficult to change quickly and so, if the person wants to eat healthy, he can't because he has to attend the invitation and eat as well

They buy more than their daily requirement.

They want to eat anything easily. Even at dinnertime they don't eat it 2 hours before bedtime but they eat and go to bed straight away and this causes obesity and difficulties in digestion. Also, women don't want to cook at home - they want everything from outside the house and it does not matter if it is healthy or not, as long as it is tasty and filling. Most people have bad eating habits - they drink soft drinks after meals because they think it will help in digestion.

They have the money and fast food is not expensive and all people can afford to buy it.

Individuals have to follow a healthy diet to avoid health problems, but the majority want to take medicine only and have good health without any changes to their diet. Also, even if they follow a healthy diet and then they find themselves in good health, they come back to old eating habits.

We don't have a wide range of sports or sport centres specifically for women and it's not convenient for them to walk in the street, either because of the hot weather or due to being harassed from other people and no security in the street.

Bad eating habits, also, many women do not do housework - they depend on house cleaners to do everything for her and so she watches TV and eats and she does not have any activity. Nowadays, most children play electronic games and eat while they play without any activity as well.

We have centres to teach healthy foods, but they are not free - it is from the private sector.

10) Generally our society, culture and tradition for example, women cannot ride a bicycle and go out freely - they have to go by car and so there is no physical activity for them. Also, we have lots of social gathering and events, which all include little or no healthy foods. We must join every gathering with food, even if we did not consume it at home, we go outside to eat it. We don't have any place to do physical activity or have fun - we only have restaurants or shopping centres.
They say we have social gathering and I have to go and eat there, so I don't have a choice to refuse the invitation.
In terms of females, they are used to sitting at home and looking after children - it is not easy for girls or women to go out or go to gym alone - some people still have this idea it's not important for female to go out and that she is not free or it is not important for her.

Most of them are lazy - they want to lose weight without any changes to their diet. I have one patent, she asked me for referral to hospital to do operation in her stomach to lose weight! She does not want to change her diet. Or some of them ask about medicines to reduce weight.
But it is not important for them, as long as it is fast way to reduce the weight. They will agree that they don't have any confidence in changing their diet.

11) Old people now follow their culture and tradition and what they used to do and eat in their life, so it's difficult for them to change

Price and income is a problem for them because most of gyms and dietician clinics are very expensive. Also, time constraints - they have lots of housework and they need to look after the kids. Lack of awareness about healthy food and appropriate portion sizes is another issue for them because they don't understand that this behaviour is good for their health and will help them to avoid health problems. They just need to cook and eat as long as it tasty they don't care about their health.

Our culture and tradition, some of them think women should stay at home and look after kids where they can't go out easily and at any time.

It is not convenient for them to walk and gym expenses are very high for people to afford. Also, most of health awareness is directed to working women or schools and not for house wives.

This is especially for working women who don't have time to cook and most of their food is from fast food restaurants because it's convenience for them. Also, it's difficult for women to be exposed to the sun in order to get vitamin D because they are always wear long clothes outside, so if we have special places that can help women be exposed to the sun, for example at gym or schools. Some obese women can't do any exercise because they have knee problems.

12) The biggest problem is obesity and overweight and I think it will increase in the future because our lives change and most of our food is from outside the house - we don't cook like before.

Culture, tradition and behaviour that people are used to. For example, they are used to special taste like buttery or carbohydrate and it is difficult to change, so taste plays a role in food choice. Also, psychological situations can affect the person as well, especially if they have too many problems, so he will not follow a healthy diet - he will eat anything because he is depressed.

I don't think time is the big problem - if the person wants to cook and eat healthy he will, as long as he convinced. From place to place it's different. For example, where I used to work was a village, so they found price and availability of healthy food to be a problem for them and most of them are from a low class. But here, most of them live in the city and everything is available for them, but the problem is their culture.

Solutions

Solutions	Interview number
Health programmes in media	1,3,6,9
social support	1, 2, 5,6,9,10
Teaching awareness and education	1, 2,3,4,5,6,8,9,10,12
healthier choice at restaurants	2, 4
Guide and follow up from experts	2,9
giving time for patents to explain and understand the idea	2, 3,8
Walking area in every district	2, 8
Calories count on meals	2,
learning by practice	3,
Monthly competition on TV	3,
Employing more experts to help the people from the beginning	3,
Big screen about healthy eating	3,
increase gyms	4, 6,9,11,12
improve cooking skills	4,9
nutritionist in schools and gyms	4, 6,9
increase public transportation	4, 11
delivery service for healthy food	4,
Cooperation and support from governments	5, 6,9,11,12

Healthy vending machines	5,12
Reviewing the price for healthy food	6,8, 11
Strong will and conviction	8,9,10
Increase the availability of healthy food	8,12
Increase dietician centre	8,
Subject about nutrition at schools	9,
Increase advertising about healthy food	9,
Having gyms at schools	10,11,12

1) We have to make health programs in the media about healthy food and healthy eating. Secondly, encourage people to exercise - this is the main issue: changing lifestyle.
   Social support from family and friends.
   Teach them and encourage them to eat healthy food at home.
   Through clinic and media, like the TV and the internet. Have a teaching center.
   They need more information and education. We can do it through the means of giving out pamphlets, through diet centered services or the media.
   The media should give some educational programs in the TV, radio and social media to raise awareness about the issue about our health.
   We have to teach them and make centres in Jeddah for teaching people about the possible side effects and known diseases like obesity.
   Changing eating patterns.
   We can educate parents and the small age group people like kids but not the old people about eating healthy and fast food.
2) I am trying to use an open diet plan to give them many choices so they can pick the suitable ones for them and actually, this works better.
   If they come with a friend or a family member they will be encouraged to continue and motivate each other so this could be a solution.
   Some restaurants have a section for a healthier choice so I recommend this for all the restaurants because this is a good solution for helping people to eat healthy.
   They want someone to encourage them and explain them what they need to do and not to do.(E.g I have two patients who are husband and wife and they make a competition between each other on who is going to lose more weight and they support each other and this is good. Also she cooks the food and he buys the ingredients and they stick with their diet plan for about 5-6 months and they lose about 40kg).
   Ask them what you want to change and what would you like and tell me about your eating habits for 3 days and I will work from what you eat and I will help you.
   More knowledge and information e.g. (I have an old woman who comes with her house worker or driver and she said tell my house worker on what should I eat because she cooks for me so they really need some knowledge in this area or someone with them.)

I suggest that a walking area in every district so that everybody can afford to go either by themselves, with a family member or with friends.

I suggest for companies to inform everyone about health information like the calories count information on the meals because some patients are counting their calories and they don't want to exceed more than 1500cl.

Start gradually by educate them how to control and deal with it from the beginning and avoid side effect in the future like strokes and high hypertension.

Awareness depends on the person who delivers the information which should be easy to understand with attractive ways.

3) It is best if we go to shopping centres so that the person would be already coming in for shopping and he can attend the event rather than going to a specific place.

We need to improve our health programmes.

Increase health awareness because what we have is not enough.

e.g so why don't we spend time on awareness and help the individuals from the beginning to avoid the problem. For example, if the person has diabetes why is it that we don't let the patient stay at the hospital for a short time? And why it is difficult to understand what type of food is suitable for them, and what is practical for them so that they can learn in a better environment instead of reading and listening only.

Give the patient time for talking and understanding the doctor because we have too many patients, and we don't have the time to stay longer with them, so we could have a special day in the week that will allow the doctor to explain everything and practically as well.

I suggest having a monthly competition on TV about learning about healthy food. For example, it will be as groups and we will see which group can come up with a healthy diet plan and have sponsored companies that can provide us with a present for the winner. We have to change the idea of spreading the knowledge through speaking only and without practicing. Schools are good places to spread the knowledge because not all teachers, students and parents know everything.

Employing people who have recently graduated from a nutrition school and other places instead of the hospitals only, so they can help anyone from the beginning would be a good idea.

Have a big screen in public places it will be an attractive way for people to know about healthy eating and it will be a great idea so that while people do their shopping, they can get some useful information and apply it in their lives.

4) If the awareness has increased and mothers become more aware, this will produce new generation with good health and more knowledge, and if the gyms increased we will also have more people become more active and have fewer problems. Also, maybe the restaurants will have more of a healthier option in terms of selling healthy food.

If the awareness has increased, the health problems will reduce but if people stay as they are they will be no change. So I am focusing on awareness.

But it is not important to buy expensive food but the idea is about the skills of cooking.

Increase the awareness through TV advertising, schools and social media like WhatsApp and Instagram, so it's easy to spread the knowledge to the society. Having a nutritionist in schools and gyms will help to change because by doing only exercise and eating whatever at home will not give a good result.
If there was a gym in the workplace, it would have helped employee to move and change their routine.
Increase public transportation so that we can reach gyms and healthy food outlets. We have delivery for fast food but not for healthy food, so people find it convenient and value for their money.

5) If the awareness for females increased and if they had the ability to face any problems and challenges they would succeed. For example, the percentage of stressed and unemployed people is large and all of this could cause problems.

If the persons want to change alone it can be difficult for them but if they decide to change as a group, it can be easier for example if family members and friends cooperate with each for changing they will have good results so encouragement is very important.

We have alternative healthy food so if the awareness increased and the person found the encouragement he will motivate to changes even if it is small changes.

Having vending machines with healthier choices, like fruit and sandwiches instead of chocolates or soft drinks in workplaces and public places as well.

So we have the idea and the campaign, but we need support e from the government for example so that we can facilitate these idea.
We have to spread the awareness between adults and parents because they are responsible for everything so the next generation will be much educated and aware with a healthier choice than before.

6) cooperating and encouraging each other that would be very good
Spread the awareness everywhere using different places such as schools, work places and social gathering. for example, one of my relatives likes to give advice during social and family gathering, she said gathering is not about eating and talking, but we also have to do something useful so that we could be helpful for other people who do not have the time to read or search for information and that includes the elderly as well.

Family is the main persons could help in changing behaviour and they have to use to eating this type of food and after many times they will change and like the new way of eating.
I recommend for these (healthy) TV programs or channels to be available for everyone so they can benefit from it.

So if we have specialist in nutrition with good support in universities and every school this will help in deciding the appropriate food for kids and avoid related health problems in the future. Even here in the hospital the food is not good so it is very difficult in working place to find good food

I recommend changing the price because most of healthy food and low fat very expensive in comparative with normal food so the people buy full fat because it is value for money. Also we concentrate on food supplements because a lot of people need it but the hospital does not provide it to everyone so they have to purchase it, it is only available for inpatients in hospital unless you have special case so thy refer you to house care when you can have it for free.

I recommend to have gym in working places because we don't have time to go out with long hour of working we have a garden and in good weather we walk but we can't go all time because most of the year is hot.

8) We have to teach them about what the best diet is for them and how to understand the measurements for blood sugar in order to avoid high risk health problems and to live longer. Also, reducing their weight and having strong willpower will help them in reducing other health problems.

Spread health and food awareness and make it easier to find any workshop or health resources. Participation during a national day for some diseases like diabetes or obesity in malls, for example, but some people does not care about any advice or health information. Also, if we have closed and good walking area with (a/c) and security will motivate people to go.

Increase the places for healthy eating everywhere with reasonable price and if we have local products that will be good as well in terms of the price. There are lots of women who know how to prepare healthy food so if they cook it at home, it will be another solution for busy people. I recommend increasing the amount of drinking water because it is good for health. Using social media to write about valuable information. Also, give the patients the chance to explain their problems with doctors and receive appropriate advice and information. Increase health information between children because they are main people in the future. Increase dietician centres on KSA for all health problems.

9) So the society must be educated, where we start in schools and with children by having nurses or dieticians who help children solve any problems from the beginning, and they educate mothers as well, so in the future, the problems will be reduced.

They want someone to control their diet. For example, the patents at hospitals eat what the doctors say, but when they go home, they return back to foods they would normally eat.
Increasing gym centres and education places with convenience transportation will help. Having health advertising on TV is also important because everyone has it in his or her home and it is very effective ways to spread any information because people like to copy anything come from media. It is also important to

start spreading the knowledge and awareness in schools because children spend most of their time there, so we have to do talks and workshop about nutrition and healthy diet for them, their mothers and teachers.

Increasing gyms in every district and having dieticians in sport centres to educate people about healthy eating because doing exercises without having a balanced diet will not give good results.

I recommend children to move more and reduce these types of games. Also, having sport classes at schools will help children to be fit and reduce obesity early on, if the school cooperates with dietician to know about recommended walking time and the best diet for children. It will also be a good idea to even meet mothers of obese children to discuss their diet at home and try to help them and solve the problem. Most girls nowadays are aware of looking after themselves and having slim bodies, but we need to spread more awareness in health education. I recommend having TV programs before Ramadan and festival about healthy eating habit because most foods are consumed during these time, many of which are fried and carbohydrates without having any fruits and vegetables. Why we do not do it from the government sector and for free? Also, I wish if we have subject at schools to teach healthy eating habit and how to prepare healthy food under supervisions of experts in health. Also, why we don't we have teachers for nutrition like any other subject in school? It will benefit the children, especially in their advice about school meals.

The person must have good will and self-conviction to change his selves for the better. It is important for working people in health departments to be role models for the rest because I found some of them drink Pepsi and smoke in hospitals and this is not good - the patient will not listen to their advice.

We have to increase advertising about healthy food in schools and shopping centres. If the Ministry has a team consisting of dieticians, doctors and nurses in every region with a guide book explaining the idea, aims, time and the method for doing this program will be useful. So we should apply this program on specific samples and see if it is successful or not. We do questionnaires every month and at the end, we compare the results - if we get a 50% success rate, it means we have to extend the period to achieve more results and we have to record the pictures and the results to approve everything. Social affairs are responsible to do this.

10) Family support is very important because now some of them, when they see their daughters or wife fat, they don't care and they connect pregnancies with gaining more weight

e.g Spread awareness like TV, social media and brochures, but they are not convincing. I know one person, his weight is 100kg and his father tried to help him to lose his weight. He told him 'I will give you money for every kg you lose' and so the boy loses some kg and he took the money, but he went back to his weight before because he is not convinced about losing weight. Only when he travels outside and he sees how people play and go for fun are and live comfortably, then he understands that he has to reduce his weight - so he starts to do diet properly and loses weight. So the main thing is conviction.

I think it is important to have a class in girls' schools on exercise with competitions and rewards so from the beginning, they start the change when they grow up and they used to this behaviour and reduce health problems, because now, during break times, they only sit and eat without any physical activity. Also, I recommend having healthy meals at schools. Some of them started to do it, but it is good idea if all school have it so the children can learn since their childhood is about healthy food.

Having sport classes at schools for all levels, to encourage children to be active during their childhood, so that they are used to it later in their life. This is because it is very difficult to talk to adults and try to ask them to change their diet and do physical activity, especially if they are not used to it.
Having awareness lectures about diet regularly and free in specific places.

I have a problem with some patents that can't distinguish between nutrient if it is proteins or fruit and vegetables, especially teenagers so they need more awareness.

11) If they exploit parents meeting at schools to spared awareness about healthy food and how to prepare such foods and avoid health problems, it will be good idea for house wives. Some patients in our clinic proposed the need of ready-made healthy meals with reasonable prices, even if for a short time until they know how to prepare it at home.

Having dieticians and availability of healthy food at schools, because most of food and drinks are not healthy and contain water and sugar, not real fruits. Also having healthy meals choice at restaurants and work places where they don't exchange fizzy drink with real juice or salad instead of chips. Finding solution for exercise and exposure to the sun for example, having sport class at schools will encourage children and teenagers to move more and have enough vitamin D. Availability of sport centres in every district and increase public transportation.

12) I have always told my patients you can move and exercise inside your house, so no need to go out if you can't - so transportation is not problem for you if you want to move. In term of the facilitators, education is the main thing in changing everything available for them, but they need more awareness. Another point if we have healthy vending machine in public places will help to encourage them to eat healthy.

We need more awareness and education - for example, going to individual's houses to know the problem and try to find the solution with some advice for them.

Education and awareness, If the Ministry of Health look after this problem and do free gyms for example, it will benefit most of people because gyms are very expensive and not everybody wants to have special expenses for gym, especially when they have other things to buy. The next point is availability of free healthy meals at schools - some schools have started to do it but not all of them. It is important for the Ministry of Health to concentrate on awareness about the problems and diseases from the beginning because this will lead to health problems in the future if it is not controlled from the beginning. So if +the Ministry of Health and Education can control all of these ideas, it will be very successful in spreading the awareness and the change between the individuals because

they can do anything at any place and nobody will ask or stop them; but if it is a private company, they will ask why you want to do this thing and it not easy. We don't have regularly awareness

If we have social workers to go to houses, they will understand the problems and try to solve it like health status, economic status and social status. We have this idea, but it is only for disabled people - but if it is spread to include all people and this team consists of dietician and doctor for example, it will be useful to understand them and provide appropriate advice and solutions.

The price for healthy food should be reviewed to encourage all people to buy it. (interview 13)

Current initiatives

current initiatives	Interview number
Diet center clinic	1, 4,10,12
National day	1, 3, 6,8
Diet plane center	2,
Walking area	2, 8,
sport clubs after school but only in three schools	3,
some sport centers	4, 6
voluntary lectures	4, 8,12
Healthy meals at some schools	4, 9,
campaigns (Mezan, Shsoh)	5, 11
activity in social media	5,6,8
Cooking programmes (likeDr Chef)	5,6,8
healthier options at some restaurants	5,
Calculation for calories through social media	5,10,
Aban organisation in social media	6
educational committee	6,
dieticians in some medical center	6, 8, 9
Healthy activity during social gathering	6,

1) I just know about the (diet center) clinic which helps people with health problems especially obesity. And to eat healthy food through their shop I often send my patients who can afford to pay for this service. We do national days for some problems in the clinic, basement we do advertising in the hospital so they know about it but they do not attend and we don't know why, maybe because they are alone or husband at work

2) We have now something called a diet plan at home like a diet centre program, so that the person can go to their clinic or shop and explain his or her problem, and they will give him a suitable diet for all day at a specific price and the person has the choice of either collecting his diet items by himself or they can get

it delivered to their address. So, this is a solution for busy people who don't have time to cook or buy their diet items.

now we have a walking area made by the government and that is open to the public also they provide us with some equipment such as the machines like cycling for exercising also they put a structure for walking like a 5 minutes slow walking plan but is not appropriate for women .

3) We have but it is very little and it is not very effective and it focuses on educated people and not all classes. We have normal events like the National day of diabetes and which lasts for one week. Through advertisement in newspaper, TV and the social media. Association of chronic diseases is responsible to provide diabetic people with everything they need for their equipment.
We provide the patients with the details of the next event which could include gifts, free check-ups and advice. Some schools have after school clubs which is a sport for women only but it's only in three schools.

4) There is centre called diet centre which gives advice and a health plan for your meals, and that depends on the patient's requirement and his health problem. Also there are some sport centres but it can be difficult for those with low incomes if they wish to go to these please.

Some voluntary lectures in the shopping mall where you can hand in leaflets

We went to the elderly care home to give advice and spread awareness and they understood us.
Some school have just started providing children with healthy meals so this will help to increase the awareness from child hood, so they get used to eat it later on in their rest lives, and will be more likely to have any health problems in the future.

5) Actually the concept of healthy food has spread more than before and there are good efforts. For example, hospitals are always making campaigns in hospitals itself or in shopping malls .also some people have made a big effort in social media for example, there are groups for people for walking on Tweeter and they can choose the time, place and date for doing this and if anybody would like to join them he can, but unfortunately this is only for males

Cooking programs, like doctor chef and using Instagram as well to explain healthy ways for cooking. Also, some restaurants have started to give a healthier food choice for example, if someone prefers a specific meal like a burger with chips and a soft drink he can replace chips with salad or a soft drink with some fresh juice or water.

Some people who work through social media started doing some calculations about some types of food with calories. Also, there is an application in the IPhone for food analysis like the coffee in Starbucks but our restaurants do not practice it yet whereas other countries depends on their rules and regulations that they have to provide customers with nutritional information or calories.

I know one doctor who concentrates on a walking concept and he has an account on tweeter called "walking morning", so that everyone records what he does and he attaches his pictures by this way we can motivate and encourage people to change their behaviour for the best.

We did something similar to this (social marketing idea) when I was at university which was called (5 colours a day) the target groups were children at school, we did a questionnaire before and after and we found some improvement but the main persons who was responsible for changing were the family because they are responsible for feeding and cooking for their families. Even if we did spread the awareness between children, it would have not been effective because we need to change parents' behaviour since children copy their parents.

6) We have to start from ourselves first, family and then schools or other places For example, one of my relatives likes to give advice during social and family gathering, she said gathering is not about eating and talking, but we also have to do something useful so that we could be helpful for other people who do not have the time to read or search for information and that includes the elderly as well.

We have an organisation called Aban that specialises in therapeutic feeding and every day they put a new advice on Tweeter and Facebook. They have an activity every month in specific places for example, they give a talk in schools about one topic and this will be around KSA

We have educational committee who spread the awareness some time through short video 15 min about exact topic.

We did a programme in reception children to help them how to choose healthy food and we did some activities like choosing 5 colours in their plate and it was very good they understand it so when they come back home they think about these colours and how important to have variety of food in the day.

we have some gyms in some hospitals but in Jeddah and it have dietician and they can come at night time as well it is very good also useful for employed in hospital that don't have time to go out.

We have also TV programmes like green apple which give advice, some exercise and recipes about healthy cooking also during Ramadan time we have program about how to cook Saudi food in healthy ways but unfortunately not available for everybody you have to buy extra channels to enable you to see these helpful programs

Also we have campaigns in the hospitals like the national day for some diseases and we do some visiting to orphanage and the house for old people to aware them and they asked us to have clinic in their place where they live and they want to eat healthy.

Our medical centres do not use to have dietician but now I know 2 centres in Makkah started to have dietician so this will make it easy for patents to see them in short time because transformation take long time to see the doctor.

I know one family during social gathering they make healthy food like dates, fruit or unsalted nuts instead of sweet or fatty food with the time they will used to this diet and the next generation will learn from them.

8) One day it was a national day for diabetes by the sea and there was a lot of healthy food sample and some activities arranged, but the situation was very bad because most of people who were there in different social classes just wanted to try the food without any aim.

We have more dietician than ever before in the hospitals. For example, people go first to health centre and they meet family specialist, and if the situation related to nutrition they refer her to dietician in hospital.

Some big companies like Aramco where they do a workshop on health for their employees and their families every 6 months. We have signboards in walking areas, also on Facebook and twitter, as they have good topics about health. We also have programmes about health.

9) Health centre we now have - dietician clinics are in most GPs to reduce the number of people who go to hospitals and where individuals can be educated through brochures in the ways of preparing balanced healthy food.

We cut out soft drinks and some fast food from schools and we started to provide them with healthy meals, but this is not in all schools yet. We also do some talks and give brochures about health in schools. We are working on a programme that we will start to apply next year, where we will have healthcare centres that include dieticians to educate individuals. It will be a trip every month for obese and diabetic people and we will have programme for mothers and children, so it is about female education who are trying to change their bad behaviour to be better. Also, it will include recipes for healthy food. We will start with people who have problems first because we cannot have all people in the region at the same time, but later we will make it available for everybody.

We now have decisions about having healthy guides at schools for both girls and boys and we will apply it soon. In term of school cafeteria, we started to include healthy meals in some schools, but in the future, we will be in all of them and we will have a special company to prepare the meals and deliver it to schools with health qualifications.

10) We have gyms and diet clinic that offer healthy meals and deliver it to homes. Also, we have lectures and talks about health more than before, in shopping centres and social media. We have a variety of

awareness about counting like count calories for some meals, so individuals have more awareness about calories in their food.

11) There is a campaign called Mezan, which includes male and female doctors - they do event at schools and they record it to send it via social media to spread the awareness between others. Also they write about their life in terms of their diet and exercise with pictures to encourage people to follow them. They do meeting at cafés for example, and anyone can join them to benefit. Also, there is the national day for diabetes.

They distribute brochures at hospitals, advertisement in social media and hospital members also send the information to their family and friends. They record the event and after they've finished, the broadcast it on TV. Also, we did an awareness campaign at schools and shopping centres called Sahsoh, who is a good character and Taktok, who is the bad character - so we encouraged children to be like Sahsoh - fit and healthy. We did this by talking about healthy food and how to have a proper healthy breakfast. We then distributed brochures and coupons but unfortunately this was for one year only and it was from private hospitals with cooperation from the Ministry of Health.

There are TV programs about healthy food and habits but in unknown channels so most of people do not know about it.

There are diet centres that provide healthy diet programmes. We have gyms and lectures about health.

Social marketing

1) No and he recommended at schools. we can use it especially in schools and will be very good for them.
2) No

4- No, this is very good if we have it in Saudi

Female sample:

Factors	1NE	2 MN	3 ZE	4 SM	5 AS	6 SI	7 DL
Age	18-25	31-39	40-49	26-30	18-25	18-25	50-59
Marital status	married	married	married	single	single	single	married
No of children	0	1	5	0	0	0	6
working	student	housewife	housewife	Unemployed	student	student	housewife
Motivation to change	weight control fitness	prevent health problems	prevent health problems & lose weight (diabetes)	wellbeing	Prevent diseases and maintain health.	no need to change I am normal	lose weight
Perceived susceptibility	Low	high to avoid reoccurrence	health problems	health problem	low	low	health problems
Perceived severity	Low	colon, blood pressure & digestion problem	diabetes	Malnutrition led to some problems like hair loss, Anemia, diabetes & kidney problems.	low	low	Obesity & high cholesterol.
Barriers to change	Customs & traditions (In our society, all family members sit together to eat the same type of food, so, I don't have a choice to eat other food.) also family member like husband he wants certain types of food to prepare which I don't have a choice to eat different food.	Busy life, time constraint and social events. The location of shops is not convenience so I need car to go, also healthy food is expensive and not available everywhere.	customs & traditions, time constraints, no motivation from family& friends	lack of public transportation	Busy life with studying no time to prepare food. Lack of awareness about proper healthy diet.	Time, lack of transportation and strong will. Taste of healthy food	Lack of motivation, busy life with home and children commitments lack of money. Price of healthy food.

Perceived control			I can't control my weight because the taste of food				
Facilitators	Changing daily routine, reading educating our selves about what is useful. Change our eating habits during social events by consuming less unhealthy food and eating before going to the event; if I could not help myself I will go to a nutritionist/dietician. Increase health awareness in general	Eating less during social events and increasing the consumption of salad and fruits. Constant motivation from family and more time for myself to go to the gym.	motivation from husband, making healthy food available everywhere, reasonable price	strong will , raise awareness and going out less	Supportive and an encouraging family are important. Changing routine. Healthy meals in schools.	strong will , motivation and encouragement from family and friends	Increases and improves the number of advertising about healthy food instead of fast food. Encourage ourselves to eat healthy diet

Continued

Factors	8 SA	9 FA	10 NU	11 MR	12 SF	13 JM	14 SH	15 ES
Age	18-25	40-49	26-30	26-30	50-59	31-39	31-39	18-25
Marital status	single	married	single	single	married	married	married	singles
No of children	0	6	0	0	6	4	3	0
working	student	housewife	Unemployed	Teacher	housewife	housewife	Teacher	Unemployed
Motivation to change	loss weight	energy, vitality & weight management	maintain good health	weight reduction	obesity and diabetes	weight reduction (obesity)	weight reduction & gallbladder	bad digestion and colon
Perceived susceptibility	high (obesity)	low	low	health problems	high	high	Health problems	health problems
Perceived severity	health problem	medium	low	stomach problems	health problems	medium	High cholesterol and gallstones.	low
Barriers to change	Lack of motivation from family and friends. Frustration. Time organization, laziness	Lacking of availability of healthy food with reasonable price and delivery service. Taste of healthy food. Lack of motivation & transportation.	Lack of advertising and information about healthy food. Also we are not used to eat healthy food from childhood. Laziness ,lack of self-confident & motivation from family	Healthy food is expensive. Lack of motivation & support from family	Our lifestyle, routine, environment and our customs can control our eating habits. The weather is too hot so we can't walk.	Weakness and lack of will to change, also the price of healthy food is high. Lack of gyms and it is not cheap.	Low fat milk and snakes are expensive. Hot weather prevents us from walking also lack of public transportation. Our society, tradition and customs we have a lot of social events which tend to serve sweets and fatty foods.	Lack of time due to life commitments.
Perceived control		outside from my control				low control		
Facilitators	Motivation from family,	Increase public transportation and	Motivation & cooperation from	Changing our lifestyle reducing	strong will can help to change	Doing exercises and educate	Husband's support (he also does not like	Strong will and support from

	knowledge about healthy diet, strong will. Having healthy meals at schools and universities.	sport clubs with reasonable price. Support ourselves and organize our time. Supporting from family. Availability of healthy food everywhere.	family and friends. Increase the number of healthy restaurants. Increase the number of public transportation to facilitate buying and selecting the food	the consumption of fats and eating a lot of fruits & vegetables. Increase public transportation.	our lifestyle & diet	ourselves by reading about healthy eating. Provision of women's gyms with affordable price. Availability of healthy food with reasonable price also support & encouragement from family and friends	to eat fatty food and is interested in imported healthy food. We changed our lifestyle to be healthier without problems). Having dietician at schools to help the children with any problem and educate them about healthy food from childhoods. Making healthy food available in schools.	family. The person who responsible for cooking at home can control family's food. Having more advertising and programs about healthy food will be really useful

Male sample:

Factors	BD	MO	MF	SW	MJ
Age	26-30	40-49	26-30	18-25	26-30
Marital status	Single	Married	single	Single	single
No of children	0	2	0	0	0
working	Engineer	Teacher	student	Engineer	Engineer
Motivation to change	lose weight and wellbeing	body builder	lose weight & build muscular	no	loss weight, health problem, support from friends
Perceived susceptibility	low	low	medium	low	high health problem
Perceived severity	low	low	low	low	high (heart problem)
Barriers to change	The price of healthy food is high compared with fast food, not available everywhere and takes long time in preparation. Sometime I don't have a choice to decide what to eat because I eat what my family have cooked and provide to me	Taste of healthy food, slow preparation, lack of encouragement from family and friends and not used to eat healthy from childhood. Getting Bored. Not enough advertising and offers about healthy food	Availability of healthy food also travelling because the routine will change and it is difficult to find what you want. Not continue. Lack of time due to long hours of working. Long preparation. The price of healthy food is high.	Lack of awareness about healthy food, we need more knowledge and information about it.	Availability and price of healthy food. Lack of motivation and going out with friends. Hot weather and no time
Perceived control	medium				some time
Facilitators	Culture and knowledge about food and related health problems. The conviction with changing. Cooperation between government and individuals to make our life healthier. Cooperation	Family support in food selection, encouragement and preparation. Availability of healthy food with good price.) spread the awareness at school so the children can be familiar about healthy eating from their	Support from friends, because we meet all the time so cooperation is important. Spread the awareness and health education. Establish more sport and health centres	Motivation and more information about healthy diet. Increase public transportation and pedestrians lines and facilitate the access to health and sport canters with	Strong will & continues. Change customs to be healthier. Availability of healthy food with reasonable price. More sports centers and spaces to walk.

	between government and individuals to make our life healthier. Free distribution of healthy meals in schools with gifts like Macdonald's	childhood. Spread the awareness between families and mothers about different preparation methods for healthy food and diseases resulting from malnutrition.	for males and females with affordable price in each neighborhood.	reasonable price. Having more advertising and information about healthy eating and lifestyle	

Continued:

Factors	SU	AB	FH	AM	MS
Age	50-59	60-65	50-59	31-39	60-65
Marital status	married	married	married	married	married
No of children	5	3	5	1	6
working	Nurse	Retired	Duty manager	Engineer	Retired
Motivation to change		Diabetes	liver problems	encouragement from my wife, well being	high blood pleasure, strong will doctors' advice
Perceived susceptibility		Health problems	high Health problems	Low	Health problem
Perceived severity	low	Getting worse	high (cancer)	Low	cholesterol
Barriers to change	well power	Going out to somebody house and social events can encourage me to eat what is provided. Also appetite and lack of strong will and self-	Social event and what my wife has cooked can prevent me from eating healthy because I don't have a choice to eat different type of food I have to eat what is	Lack of strong will and interest to eat healthy or change the diet can prevent me to change for example, I see the fruits in the fridge but I don't feel	wife cooking no choice to eat different , social events and traveling

		confident can prevent me to eat healthy. Feeling bored.	provided. Psychological state.	like eating them unless somebody prepare it for me which will encourage me to eat. Also lack of knowledge and information about healthy food and the benefit of fruits and vegetables	
Perceived control	low	low	high		medium - high
Facilitators		conviction , belief and motivation from family and friends, doctors' advice	Strong will, continues not despair and supporting from family. Also advices from doctor	encouragement from family or friends and conviction from inside	Self-confident and continues. Encouragement and guide from ministry of health about the benefits of fruits and vegetables

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