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Exploratory study of the factors that influence nutrition
interventions in the United Arab Emirates' healthcare
system

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Abstract

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Exploratory study of the factors that influence nutrition interventions in the United Arab Emirates' healthcare system.

INTRODUCTION: Non-communicable diseases are on the increase worldwide, causing more than 36 million deaths each year. Evidence of the link between the role of nutrition and reducing non-communicable diseases is predominant in the literature. The factors influencing intervention strategies/policies and activities, however, need attention.

AIM: The study aims to examine the factors that influence nutrition interventions within the United Arab Emirates' healthcare system.

METHOD: This research adapts an interdisciplinary approach where a triangulation mixed methodology is applied. Both qualitative and quantitative methods are used, through the analysis of ten interviews with policy makers, four case studies and 161 questionnaires. Furthermore, the research framework, which emerged from the literature search and qualitative analysis, is tested and validated by rigorous quantitative analysis using SPSS. The statistical analysis, using factor analysis, MANCOVA and ranking analysis aims to provide solid support for the resulting factors.

MAIN FINDING: The study identifies five factors that influence nutrition interventions in a healthcare system, and could enhance the effectiveness of nutrition interventions. The factors are 1) quality and processes, 2) training and use of technology, 3) senior management involvement and responsibility, 4) patient diversity, and 5) multidisciplinary teams.

CONCLUSION: This study contributes to the emerging literature on management in nutrition interventions and the theory and importance of preventative measures in relation to nutrition. This study provides a roadmap for policy makers to adopt in order to enhance the role of nutrition interventions in healthcare settings.

KEYWORDS: Healthcare policy; mixed methods; nutrition; healthcare management; healthcare strategy; non-communicable diseases; public health; preventative healthcare system.

In the name of Allah most gracious, most merciful,

I dedicate this work to

My late father (Saleh)

Who taught me persistence and determination, may his soul rest in peace

My mother (Maryam)

Who always inspires me with her love and prayers

My daughters (Wid and Haya)

Who have been sources of love and laughter

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Glossary

Throughout this dissertation, the following definitions and meanings will refer to the following terms:

1. **Accountable care organisation:** ACOs consist of providers who are jointly held accountable for achieving measured quality improvements and reductions in the rate of spending growth. The definition emphasises that these cost and quality improvements must achieve overall, per capita improvements in quality and cost, and that ACOs should have at least limited accountability for achieving these improvements while caring for a defined population of patients (McClellan et al., 2010).
2. **Community centric:** Community-centred models include models that have different stakeholders as participants.
3. **DHA:** Dubai Health Authority is the regulative body of the healthcare sector in the Emirate of Dubai and aims to provide an accessible, effective and integrated healthcare system, protect public health and improve the quality of life within the Emirate (DHA, 2014).
4. **DHCC:** Dubai Healthcare City was launched in 2002 to meet the demand for high-quality patient-centred healthcare. Today, DHCC is home to two hospitals, over 120 outpatient medical centres and diagnostic laboratories with over 4,000 licensed professionals occupying 4.1 million square feet in the heart of Dubai (DHCC, 2012).
5. **Evidence-based medicine:** The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research (Sackett et al., 1996).
6. **Family centric:** Family-centred care (FCC) is a partnership approach to healthcare decision-making between the family and healthcare provider (Kuo et al., 2012).
7. **HAAD:** The Health Authority – Abu Dhabi is the regulative body of the healthcare sector in the Emirate of Abu Dhabi and ensures excellence in

healthcare for the community by monitoring the health status of the population (HAAD, 2014).

8. **Health promotion:** Health promotion is the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions (WHO, 2014b).
9. **Integration of care:** Integrated care is a term that reflects a concern to improve patient experience and achieve greater efficiency and value from health delivery systems (Shaw et al., 2011).
10. **MOH:** Ministry of Health is mainly responsible for the implementation of policy in all areas of technical, material and coordination with the Ministries of State, and cooperation with the private sector in health locally and internationally, in addition to members of the community (MOH, 2011).
11. **Multidisciplinary team:** A multidisciplinary team (MDT) is composed of members from different healthcare professions with specialised skills and expertise. In this thesis, the following two points were deduced from the factor analysis regarding the term MDT: 1) multidisciplinary teams in these hospitals include nutrition personnel; 2) the nutrition personnel in all multidisciplinary teams have a well-defined role.
12. **Non-communicable diseases (NCDs):** also known as chronic diseases; they are not passed from person to person. They are of long duration and generally have slow progression. The four main types of non-communicable diseases are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes (WHO, 2013).
13. **Patient centric:** Healthcare that establishes a partnership among practitioners, patients and their families (when appropriate) to ensure that decisions respect patients' wants, needs and preferences, and that patients have the education and support they need to make decisions and participate in their own care (Institute of Medicine, 2001).
14. **Patient diversity:** In this thesis the following three points were deduced from the factor analysis regarding the term patient diversity: 1) the patient

population of the hospital is considered before setting up menus; 2) the hospital considers the differences in patient ethnicity when setting up services by the nutrition department; 3) culture and diversity in the patient population is considered in the nutrition strategy.

15. **Practitioner:** In this research, practitioner refers to a healthcare professional in the clinical aspect of the hospital, such as doctor, nurse, physiotherapist, nutritionist or pharmacist.
16. **Professional:** a person who by education, training, certification or licensure is qualified to provide and be engaged in providing healthcare. This encompasses many disciplines in healthcare such as administration, quality departments as well as health technology departments.
17. **Policy maker:** a policy-maker, or policy decision-maker, is defined as an individual who has the decision-making authority to sign policy documents, or allocate funds at the national level. As a result, this study focused on national (or federal) level decision-makers, through semi-structured, in-depth interviews with policy decision-makers (Hyder et al., 2011).
18. **Quality and processes:** In this thesis, the following 13 points were deduced from the factor analysis from the term 'quality and processes': 1) quality assurance measures are used to ensure patient-centric nutrition care; 2) hospitals have quality measures in place to ensure nutritional care is delivered across all areas consistently; 3) hospitals have clear processes to ensure evidence-based nutrition interventions; 4) hospitals have clear processes in place to assess user expectation of nutrition interventions; 5) user expectation feedback is used in nutrition intervention; 6) the methods of communicating the different nutrition services provided to patients are clear; 7) hospitals have clear processes for patient orientation and empowerment; 8) in some hospitals, clear processes are available to assess the effectiveness of nutrition health initiatives; 9) in some hospitals nutrition programme impacts are measured effectively; 10) the demographic profile of the UAE is used as part of setting up nutrition programmes; 11) shared decision-making processes are used in nutrition programmes; 12) nutrition is part of patient education in

some hospitals; 13) the activities in nutrition intervention are considered part of an integrated healthcare system in some hospitals.

19. **Risk factors:** In this research, risk factors to NCDs are considered to be common, preventable risk factors. Most NCDs are the result of four particular behaviours (tobacco use, physical inactivity, unhealthy diet, and the harmful use of alcohol) that lead to key metabolic/physiological changes (raised blood pressure, overweight/obesity, raised blood glucose and raised cholesterol) (WHO, 2014c).
20. **Shared decision-making:** Shared decision-making (SDM) is a collaborative process that allows patients and their providers to make healthcare decisions together, taking into account the best scientific evidence available, as well as the patient's values and preferences (Healthwise, 2011).
21. **Vision 2021:** The UAE National Agenda includes a set of national indicators in the sectors of education, healthcare, economy, police and security, housing, infrastructure and government services. In this research, Vision 2021 indicates one aspect: United in Prosperity (MOCA, 2014) (see Appendix F).
22. **WHO (World Health Organization):** WHO is the directing and coordinating authority for health within the United Nations system. It is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends (WHO, 2014a).

List of Abbreviations

ANCOVA	Analysis of covariance
DHA	Dubai Health Authority
DHCC	Dubai Health Care City
EFA	Exploratory factor analysis
EMRO	Eastern Mediterranean Regional Office
GCC	Gulf Cooperation Council
HAAD	Health Authority Abu Dhabi
JCI	Joint Commission International
MANCOVA	Multivariate analysis of covariance
MMWR	Morbidity and Mortality Weekly Report
MOH	Ministry of Health
NCD	Non-communicable diseases
OECD	Organisation for Economic Cooperation and Development
WHO	World Health Organization
UAE	United Arab Emirates

Chapter 1: Introduction

1.1 Introduction

This thesis explores the factors that influence nutrition interventions with a special focus on the UAE context. This research is also aligned with the UAE Government's Vision 2021 which has health improvement targets to reduce non-communicable diseases (cardiovascular by 25%, diabetes by 14%, cancers by 18%, and respiratory diseases by decreasing tobacco users by 15% of the current levels)(UAE, 2011).

This research explores three dimensions:

1. Policy level: using in-depth interviews to obtain an overview of policy and planning within regulators in the UAE.
2. Hospital level: using in-depth case studies in order to illustrate nutrition activity in UAE hospitals.
3. Healthcare professional level: using a questionnaire to test a list of critical factors that impact on nutrition-based health strategies with the targeted population, representing clinical professionals, nursing staff, nutritionists, strategic planners and other healthcare professionals.

1.2 Background to the research

Non-communicable diseases are increasingly being recognised as a serious, worldwide public health concern. The role of nutrition in the combat of non-communicable diseases has been established by a number of studies (Nutrition Review, 1991, Musaiger and Al-Hazzaa, 2012, Popkin, 2006, Popkin et al., 2001, Puska, 2002, Sung, 2012). Historically, public health concerns date back to antiquity,

since the emergence of the human species. Ancient Greeks stressed the dietetic treatment of illnesses, while in the Middle Ages, a number of precise dietetic prescriptions for maintenance of good health were formulated (Sigerist, 1989). The first instance demonstrating the role of nutrition in healthcare research was in the 1800s and was primarily directed towards building a foundation for nutrition services. Nutritional services consisted of initiating early nutrition investigations, school food programmes such as school lunches and establishing milk stations in large cities. This was done in order to supplement the food of the poor and decrease death rates of infants and children (Egan, 1994).

During the 20th century, demographics changed, there were advances in technology, and social, political and economic changes influenced the development of nutrition services due to the public's expectations (Moore et al., 2014, Short et al., 2014, Stewart-Knox et al., 2014).

Egan (1994) states that throughout the 20th century, concerns with public health and nutrition related to nutrition planning and policy, evaluation of nutrition programmes, quality of public health nutrition and applicability of the research into public nutrition practice. These were all showed to be of interest to research. The aspects relevant to the aims of this thesis will be further discussed in the following chapters.

Envisioning and planning for nutrition policy has been discussed in research from a number of perspectives, for example, school nutrition policy (Donze, 2013), the integration of school nutrition programmes into health promotion and prevention (Nakamura, 2008), resourcing for nutrition policy planning (Quelch, 1979), and

issues and lessons from national policy and nutrition planning (Sai, 1981). Policy and planning on different levels will be discussed in Chapter 3.

Illustration of nutrition programmes (discussed in Chapter 4, Section 4.2.4) has tended to concentrate on health education programmes (Clements, 1961), building capacities for multi-site education programmes (Fourney et al., 2011), large-scale nutrition programmes (Galal, 2003) and the impact of nutrition programmes on dietary intake (Hanes et al., 1984).

Quality in nutrition interventions have been discussed in relation to pregnancy and lactation programmes (Timofeeva et al., 2008), as well as educational programmes (Dollahite et al., 2008), while quality indicators have been seen in programmes for chronic care, such as cancer (Dreesen et al., 2013). Quality in healthcare and nutrition interventions will be discussed in Chapter 3.

Application of dialogue, networks, translating policy into practice (Habicht, 1979) and developing clear, practical guidance on implementation should be the central part of future approaches to chronic care (Sautkina et al., 2014).

The important role of nutrition as a preventative measure has been seen with regard to many conditions, such as pressure ulcers (Thomas, 2014), cancer prevention and survivorship (Annals of Saudi Medicine, 2004, Arjmandi and Johnson, 2013, Byers, 2002, Michels, 2005), oral diseases (Moynihan, 2005), age-related eye disease (Johnson, 2011) and osteoporosis (Campagnoli et al., 1990, Giganti et al., 2014, Heaney, 1987). This research, however, focuses on the factors that influence nutrition interventions as a preventative measure for non-communicable diseases. Non-communicable diseases (NCDs), also known as chronic

diseases, are not passed from person to person. They are of long duration and generally slow progression. The main types of non-communicable diseases are cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes (WHO, 2011d).

This study seeks to understand the factors that influence nutrition interventions in the healthcare system in the United Arab Emirates (UAE). Since 1971, the United Arab Emirates has experienced tremendous economic and industrial development. The subsequent increase in affluence of the Emirati population and concurrent shift from a traditional, semi-nomadic lifestyle to a modern, urbanised and technology-driven lifestyle, has culminated in reduced physical activity (occupational, domestic and leisure), and an overconsumption of energy-dense convenience foods with poor nutritional content. Consequently, there has been a dramatic increase in the prevalence of obesity, diabetes and cardiovascular disease. This research is also aligned with the UAE Government's Vision 2021 which has health improvement targets that aim to decrease non-communicable diseases (UAE, 2011). Vision 2021 is the strategy of the United Arab Emirates, of which one aspect focuses on healthcare (see Appendix F) this will be further discussed in Chapter 5.

1.3 Importance of the study

There are four main reasons why the research conducted is important:

1. In line with Vision 2021, it discusses clear outputs for non-communicable disease percentage expectations in the year 2021. Therefore, this study is important in setting a roadmap to fit the UAE and to set a healthcare

profile for the role of nutrition in order to reach the targets of the vision by exploring influencing factors on nutrition intervention.

2. There has been an increase in non-communicable diseases in the United Arab Emirates thus; there is a need to tackle the risk factors leading to the conditions – one of which is unhealthy diets.
3. Patients in the UAE are well informed and well educated; they demand a better service from the healthcare industry. This research will explore the perception of healthcare professionals with regard to the importance of patient expectations, and will explain how to implement nutrition interventions that deal with patient demands.
4. The appropriate timing of this study is heightened by the UN General Assembly meeting in New York (September 2011). This meeting was the second largest of its time where world leaders came together to tackle a health issue: non-communicable diseases. The General Assembly meeting advocated the importance of and encouraged all participant countries to have a nutrition strategy that aims to reduce the risk factors associated with NCDs, where the United Arab Emirates was a member. The global aims of the meeting will be shown in Chapter 5, Section 5.3.

1.4 Research question

The principal aim of the research is to explore the influence of factors on nutrition delivery care in the United Arab Emirates. Strategies focusing on NCDs are currently growing in number (Fernstrom et al., 2012). Due to the prevalence of NCDs in the UAE, and the increasing number of deaths due to those diseases, as well as the

financial burden they cause (El-Shahat et al., 1999, Saadi et al., 2006), it is important to address key factors that could decrease those numbers.

Therefore the research hypothesis is

Ha: There are key factors that influence nutrition intervention, policies, strategies and activities in the United Arab Emirates.

Null Hypothesis: There are no key factors that influence nutrition intervention, policies, strategies and activities in the United Arab Emirates.

Out of the research hypothesis a research question was constructed:

What are the factors that influence nutrition interventions in the United Arab Emirates' healthcare system?

Although the research is centred on one question that explores the factors, the sub questions that stem from this are:

- Measurement of “what” the overall strategy is for the health sector with regard to nutrition programmes.
- Examinations of “how” the factors that affect nutrition programme implementation are dealt with in day-to-day activities.
- Exploration of “what” the view of healthcare professionals is regarding the factors that affect nutrition programme implementation.

The research design has been selected based on the methodologies explained in Chapter 6 in order to answer the research question and sub-questions.

1.5 Research theoretical significance

Various forms of literature in various disciplines of healthcare contribute to preventative health. Looking at nutrition prevention from a nutrition management point of view needs a deeper understanding of influencing factors, its own theories, as well as its own terms. Strategy is an integral part in nutrition delivery and using nutrition for prevention of diseases. The strategy process can be studied at different points of the strategic management process. One of the theories addressing this issue is that of Wit and Meyer (2004). In this theory, the different levels of strategy disseminate from the hierarchical structure shown below.



Source: Wit and Meyer (2004)

Figure 1.1: Dimensions of strategy in process, content and context

By contextualising this figure, we can understand that strategy disseminates through different dimensions (Wit and Meyer 2004). Therefore, in order to understand the nutrition intervention policies, strategies and activities in the healthcare system of the United Arab Emirates, this study will (1) undertake

questionnaires with healthcare professionals, (2) provide case studies of hospitals, (3) interview policymakers at the national level, and (4) mirror the results in terms of the international context. This will follow all the dimensions of the strategy set. The findings from these methods and tools will help in exploring the factors that influence nutrition intervention in the UAE.

Figure 1.2 shows the different factors deduced from different stages of the research.

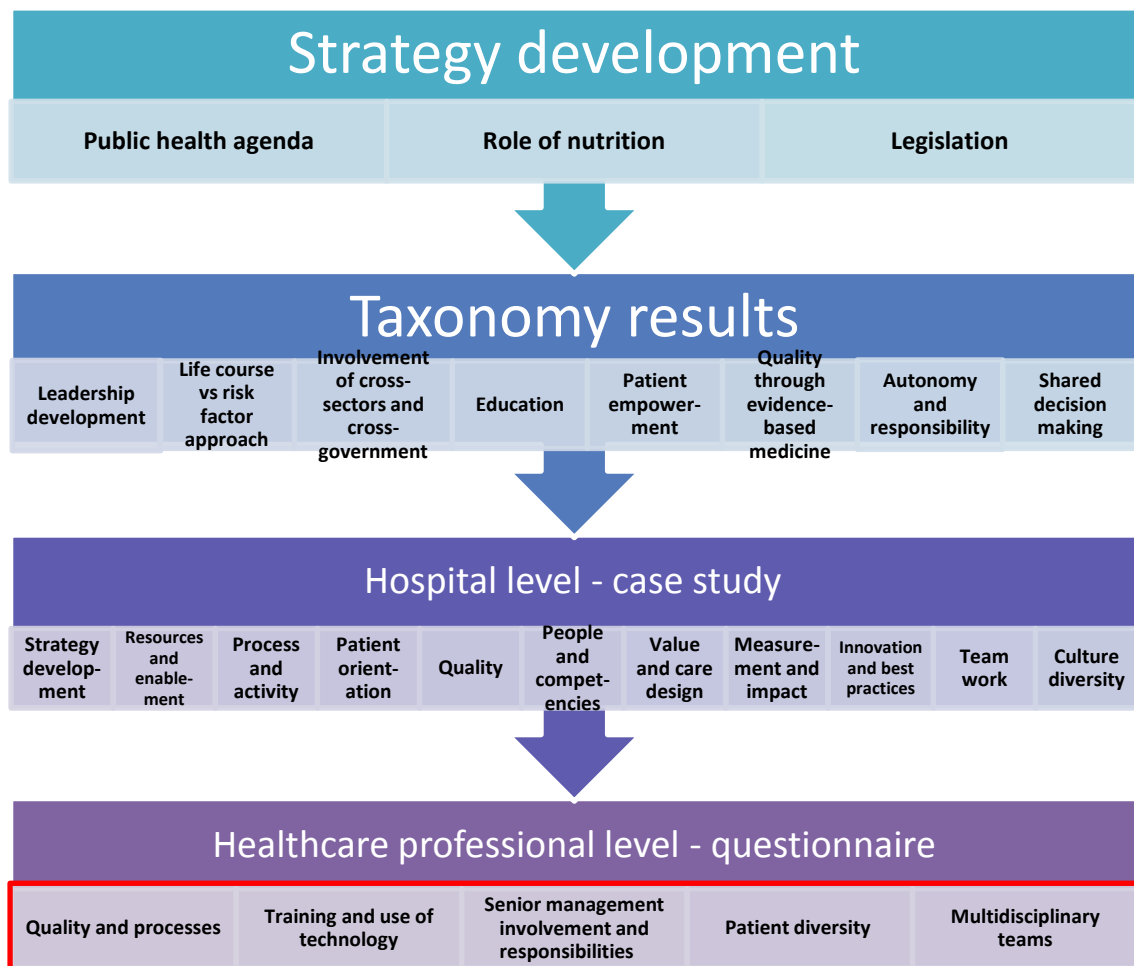


Figure 1.2: Distillation of factors

The purpose of Figure 1.2 is to explain in detail the factors deduced at each stage of the research. At the strategy development stage, in-depth interviews were

conducted with UAE healthcare officials to explore nutrition strategy development and how strategies were influenced by international level strategies, as well as whether there were any set nutrition strategies for the UAE. By questioning what factors would influence nutrition policies it was possible to deduce four themes.

While from the taxonomy of the literature, ten factors were tested qualitatively and quantitatively on hospitals (case study method) and healthcare professionals (questionnaire method). This led to the deduction of five factors seen to influence the role of nutrition. The five factors that have an influence on nutrition intervention success are quality and processes, training and use of technology, senior management involvement and responsibilities, patient diversity and multidisciplinary teams.

1.6 Contribution and originality of the study

Although non-communicable diseases are increasing and the UAE healthcare system already has some targeted health promotion programmes, research on the subject has been very limited. Most studies have investigated general nutrition interventions. No study has explored the factors that have an influence on nutrition interventions in the culturally diversified hospitals of the United Arab Emirates.

1.7 Summary

This chapter introduced the research topic by describing the background to the study. The problem statement followed and a discussion regarding the importance of the study was undertaken. The purpose of the study was discussed, which concerns discovering the factors that affect nutrition interventions in the healthcare system. Next, the research questions were developed. The methodology adopted

for this study was then briefly discussed, followed by an outline of the thesis. The next two chapters provide a review of the relevant literature upon which this thesis is built.

Chapter 2: Milestones in healthcare management

2.1 Introduction

Strategy management has developed over the years with some shifts in concepts, tools and techniques. A structured strategic management approach is needed to tackle the revolutionary change that the healthcare system has been experiencing. Today, healthcare organisations have almost universally embraced the strategic perspective that was first developed in the business sector, and have now developed strategic management processes that are uniquely their own. Over recent decades, healthcare management changes have mirrored strategic management development.

The first section of this chapter discusses factors that have an influence on current healthcare systems. This is followed by important milestones of healthcare delivery over recent decades; these are presented in the second section.

2.2 Factors influencing healthcare systems in the 21st century

Recently, four factors have been introduced (Walshe and Smith, 2011) that play a role in healthcare systems. These four factors will be discussed in more detail showing examples of their influence on nutrition delivery. These critical factors are demographics, user expectations, healthcare technologies and healthcare financing. Other factors will also be discussed, such as burden of disease, as will different milestones that have had an effect on healthcare systems.

2.2.1 Demographics

The range of age distribution of a population – demographics – is one of the main aspects affecting healthcare system policies and strategies. One of the biggest challenges that healthcare systems face is that of chronic disease. As the risk of developing chronic diseases increases with age, it is likely (as most Western countries are experiencing a growing ageing population), that this will therefore increase expenditure and have effects on work ability (Plat et al., 2012, Jedryka-Goral et al., 2006). Chronic diseases are not only considered a challenge, from a scientific medical point of view, they are also a management, budgeting and planning issue (Matheson et al., 2013, Divajeva et al., 2014). A strategy to encompass the needs of the elderly is vital, and should emphasise nutrition interventions that promote healthy ageing (Harmell et al., 2014).

There are two main arguments concerning the relationship between an ageing population and the healthcare systems' economic context. On one hand, ageing and the evolution of healthcare has been given so much attention it has been called a "red-herring" by many scholars in the literature (Werblow et al., 2007). The debate claims that ageing has no significant impact on healthcare expenditure, with the exception of long-term care. In contrast, other studies oppose this claim, suggesting that the population's age is still the most important age-related cost-driver. Life expectancy is one of the variables that has been clearly linked with an exponential increase in healthcare expenditure. However life expectancy, if calculated in terms of short-term effects, has a zero effect on expenditure, but when studied over the long-term it has a positive increasing effect (Bech et al., 2011). The argument of demographics has caused a dispute between academics. On one hand, some say

that costs will rise because we are living longer; but in contrast, other academics argue that the fact that we are living longer will hardly increase the expenditure caused by the insurance systems that are currently in place. The results of the empirical studies on this topic are contradictory and it is not clear which thesis is more accurate. Therefore, to reduce or slow the increases in health expenditure in healthcare, appropriate policy measures are needed which will affect healthcare strategies directly (Colombier and Weber, 2011).

2.2.2 Changes in consumer and user expectations

The second critical factor concerns the consumers' or nation's expectations of its healthcare system or health provider. Expectations for many nations have changed in recent times. Increases in commercialisation, exclusions of the poor, a litigious provider-patient relationship, declining respect for life and a sense of community that excludes other generations and nations, are all factors that have influenced consumer expectations (WHO, 2011d). As a result of these changes, some governments have introduced health policies which emphasise patient involvement, with some introducing Patient Acts as a new way to involve communities (DoH, 2005) within their own health education. Involvement of patients has also been shown in earlier sections, such as those relating to shared decision-making and associated models. In this section, health education and its interrelated effects on user expectation will be discussed, and changes in nutritional education from the past decade will also be reviewed.

With the evolution of healthcare systems, it has become a requirement to constantly educate the internal (medical practitioners) and external (patients)

customers involved. Healthcare systems are responsible for educating their current staff and physicians on managerial issues. Previous healthcare reforms demanded high efficiency and improvements on healthcare systems and managerial competencies were required for public health employees (Lane and Ross, 1998). The training programmes were designed to provide management and leadership within the changing landscape of healthcare delivery. The internal education of employees created a need for interaction between the management-related theories and the practical aspects. In turn, this placed a greater demand on the introduction of efficient and productive health strategies and policies.

The other form of health education is public health education. Public health education's core activities focus on increasing access to quality education, strengthening health research capacities and translating scholarship and science into policies and practices (Oni et al., 2011). Nutritional education is regarded as the most important component of public health education. According to Pelletier et al. (2011), under-nutrition is the single largest contributor to the global burden of disease. This problem can be addressed through a number of highly efficacious interventions, one of which is education.

With the growing number of older adults, healthcare strategies are focusing more and more on prevention. Furthermore, the global economic situation stresses the fundamental need for programmes that focus on education. Nutritional education is therefore likely to have a positive impact on user expectations and consumer expectations within a planned healthcare delivery system.

2.2.3 Healthcare innovations in technology

The third factor that can influence healthcare systems is the evolution of technological innovations. The implementation and adoption of e-healthcare applications has led to drastic changes in healthcare systems in recent years. Over the past 20 years, there has been an increase in consumerism as nations now have greater access to health information. Computers and advancements in telecommunication technologies have unleashed a wide range of powerful tools that have made patients demand more information (Peifer et al., 1998). This section will discuss applications, tools and the importance of e-health, as well as factors limiting its usability and the effect of e-health on nutrition-based interventions.

The literature on technology as enhancing healthcare systems has rapidly proliferated over recent years (Schumacher and Zechmeister, 2013, Norman et al., 2010). Different approaches to electronic record keeping, e-health, tele-health and mobile health, have all contributed to facilitating management development and their presence has formed a culture of change over the years (Atkinson et al., 2009, Alkhaldi et al., 2014, 2012, Mueller et al., 2014, O'Neil et al., 2014, Riazi et al., 2014). Sharing information can also make the system function better (Margolis, 2011).

Now, applications on different social media platforms are being used by healthcare departments, whether to introduce the consumer to the availability of services, or to increase the health awareness level within the online community (Kai and Yamaguchi, 2007). An example is Twitter, where healthcare is being applied via social media (Terry, 2009).

E-health tools, or devices in healthcare systems, vary between mobile health and internet-based health tools. Although these tools and mediums have spread rapidly, there are certain concerns. These concerns include privacy and security issues, system and information quality, and limitations of mobile device use (Hansen et al., 2011, Miller and Gutmann, 2009, Porensky et al., 2009).

In addition, technological advancements have changed the way healthcare systems conduct various processes. Computerised records have enabled healthcare providers to rapidly access patient data and to closely monitor patients from a distance. The significant advantages obtained through these developments can be further extended through the use of technology to increase the involvement of patients in their own healthcare management (Peifer et al., 1998).

Although there are many benefits to using such technologies, there is still much debate revolving around the need to have multiple access points, both using traditional and new technological means. Research has shown that internet users utilise symptom assessment tools in similar proportions to callers. However, internet users tend to look for different information, such as chronic illness symptoms, while phone calls tend to relate to more acute symptoms or urgent situations (North et al., 2011).

The speed at which technologies are emerging is greater than researchers can currently cope with. Policies to ensure e-health applications and services are embedded in the system have been shown to have drastic changes on healthcare. Technological innovation is being adopted as best practice in various countries, where the focus is on being patient oriented and on health prevention. This is

achieved by making nutrition a key driver and a catalyst for cutting down costs, but also in formulating and delivering personalised services that are effective. This in turn leads to the right outcomes that are desirable by governments at a high level, but with increased expenditure, due to user expectations of highly advanced technologies. The next section will explore the cost of healthcare financing by identifying some of the pressures that are acknowledged.

2.2.4 Cost: healthcare financing

In this section, the pressures affecting the healthcare financial system will be discussed in order to fully emphasise the burden of chronic diseases (See section 2.1.5).

There are different models for healthcare financing, one of which concerns 'out of pocket' health expenditures. China's health and nutrition survey data identified significant information on the determinants of such a model. The data indicated that people perceive illness and age as the most important factors determining health expenditure. You and Kobayashi (2011), suggest that China should develop policies that help them to gain access to medical relief interventions; insurance programmes that gain from 'out of pocket' expenditures indicate that rigorous evaluation and monitoring is necessary for health insurance reforms. Key characteristic differences are shown between the financing of healthcare in different countries, where some have tax-funded systems such as in Denmark, England, Italy and Latvia. Other healthcare systems are primarily funded through statutory health insurance such as those in Austria, Germany, Hungary and the Netherlands (Nolte et. al, 2014). The centralization and decentralization of

functions as well as political and administrative authorities differ causing an effect on healthcare systems within each country. Initiatives and interventions will be different due to the factors noted above, despite the fact that all agree on the burden of non-communicable diseases, as will be discussed in the next section.

2.2.5 Burden of NCDs on worldwide economies

The burden on worldwide economies, as a result of chronic diseases, is increasing. In 2001, non-communicable chronic diseases accounted for approximately 46% of the total mortality rate worldwide; thus, accounting for 56.5 million of all deaths.

“Low-cost and highly effective solutions for the prevention of chronic diseases are readily available; the failure to respond is now a political, rather than a technical issue” (Geneau et al., 2010).

The percentage presented is expected to rise to 57% by 2020. This increase in deaths is not only due to a growing population with chronic diseases, but also due to the fact that these NCDs are starting to appear earlier in life (WHO, 2002).

Furthermore, in 2010, an average of 12% of the global expenditure of healthcare was being spent on diabetes. This expenditure varied based on a country’s demographics (in terms of age groups, regions, gender and the country’s income), but across the world, it is on the rise (Zhang et al., 2010). Research costs are highest in high-income countries, whereas low- and middle-income countries need to focus their efforts on NCDs to ensure cost-effective measures are being taken to handle the increasing numbers. To illustrate,

“More than 40% of articles in low- [and] middle-income countries/regions focused on non-communicable disease research. The percentage was highest in Eastern Europe/Central Asia (47%) and lowest in Latin America (36%)” (Hofman et al., 2006).

Other factors were introduced by literature over the years shown to influence nutrition intervention delivery in healthcare system. For example, leadership commitment to quality, structure of teams working on nutritional interventions, and the collaboration between different entities involved in these activities. These and more factors will be discussed in more detail in the following chapters. That will then form the taxonomy upon which this research is based (Table 4.6). To understand the changes that have had an effect on healthcare delivery, the next section discusses upon milestones over recent decades.

2.3 Milestones of healthcare delivery over recent decades

This literature review maps the development of healthcare delivery, redefining healthcare management in each decade. Figure 2.1 illustrates the evolution of different schools of thought from the past thirty years. In the 1980s, evidence-based medicine emerged as a science to be applied in healthcare, this changed users' expectations and specialists' approach to healthcare and medicine (Sackett and Rosenberg, 1995). In the 2000s, shared decision-making became very prominent and remains so today (Coulter et al., 2011). Figure 2.1 shows a longitudinal view of what has influenced healthcare management and how it has transitioned from reactive healthcare to more proactive healthcare that emphasises prevention.

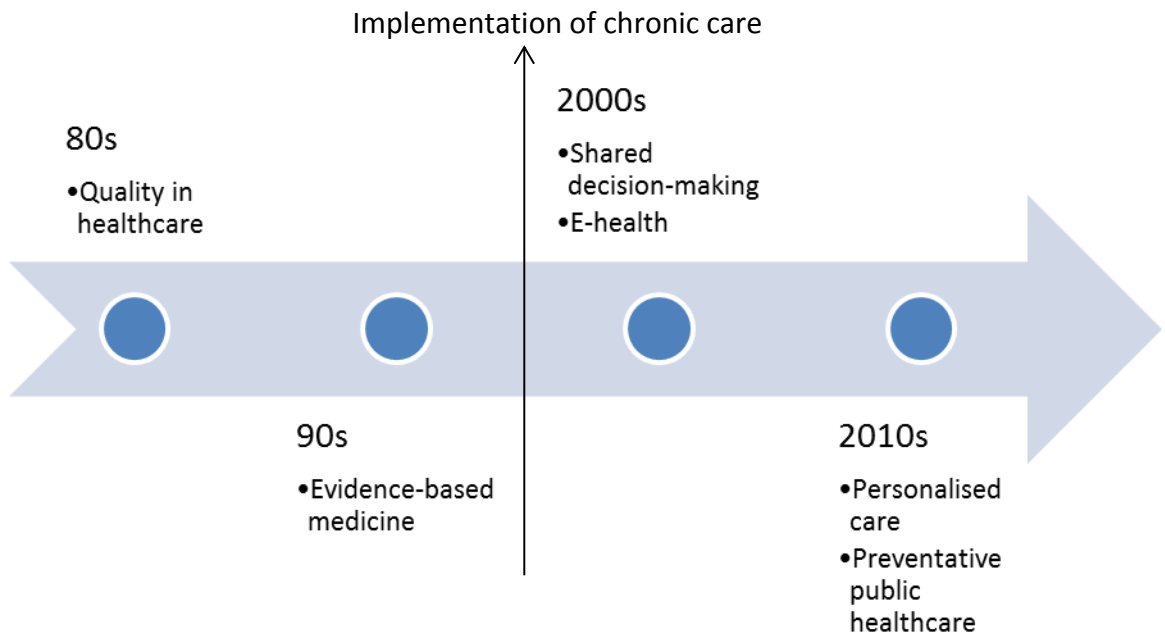


Figure 2.1: Factors that have shaped the healthcare system in the past

The following sections will explain the elements from Figure 2.1 and the influence that the factors have had on healthcare systems, beginning with the influence that quality had on healthcare.

2.3.1 Quality in healthcare

Research into quality in healthcare dates as far back as the 1960s, where one of the first articles found on the subject was entitled “Improving the delivery of health care services” (Crosby, 1967). Although other research suggests that the healthcare quality concept was coined in 1987, which up until then was isolated within a learning science. The counter argument is that this tradition of quality in healthcare dates back to Hippocrates (460 B.C.). “Medicine was then and still is, taught and learned as a craft” (Merry and Crago, 2001).

The emphasis on quality care was the sole responsibility of providers in the past, whereas currently high quality care is seen as an integrated responsibility within the

healthcare industry (Lohr, 1991). A number of definitions have been sought with regard to quality; however, the US Institute of Medicine states that:

“[Quality is] the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.”

Today, total quality management, international accreditations and quality and excellence in public health services are what governments are opting for (Sinha, 2007, Allen and Hommel, 2006). Quality accreditation systems and organisational excellence models such as The Malcolm Baldrige National Quality Award (MBNQA) are awarded to US companies that have successfully implemented quality management systems. Additionally, the EFQM model (European Foundation for Quality Management) is used in numerous health authorities and organisations (Vakani et al., 2011, Vallejo et al., 2007, Venero et al., 2007). Currently, governments such as Scotland, have “The Healthcare Quality Strategy” which shows the penetration of the science of quality into healthcare and the merging of new concepts between the two fields. Its aim is stated as:

“Provide a renewed focus on creating high quality person-centred, clinically effective and safe healthcare services for Scotland” (Scottish Government, 2010).

Similarly, on an international level the Organisation for Economic Cooperation and Development (OECD), an intergovernmental institute, has developed various initiatives by working on the development of quality indicators (Mattke et al., 2006). This has been done by working together with international organisations such as the International Society of Quality in Healthcare, the WHO, 23 OECD countries and several universities. In the 23 OECD countries, a number of experts identified the

five priority areas for development of quality indicators: (1) cardiac care, (2) diabetes mellitus, (3) mental health, (4) patient safety, and (5) prevention and health promotion together with primary care (Millar et al., 2004). This shows that non-communicable diseases, such as (1) cardiac care, (2) diabetes and (5) health promotion, appear high on the list for bridging the gap between quality and healthcare. Health promotion and prevention emphasise the role of nutrition in quality indicators.

This is similar to what is considered a priority when setting nutrition strategies, whereby the (WHO) states that the priority areas in non-communicable diseases are cardiovascular disease, cancer, stroke, chronic respiratory diseases and diabetes. The WHO's brief recommendations in 2011 emphasised the importance of quality and safety, and access to medicines in order to combat the increasing burden of NCDs. Improving the performance of nutrition screening through a series of quality improvement initiatives has been highlighted in current research (Lim et al., 2014). This could be done in a number of ways, such as through effective implementation of information technology in healthcare (Ovretveit et al., 2007), through implementation of screening protocols on a national level (Lim et al., 2014), as well as through identifying nutrition quality indicators (Dreesen et al., 2014, Dreesen et al., 2013, Folguera et al., 2012, Verotti et al., 2012).

Due to the increase in evidence that improving quality of care reduces medical expenditure by decreasing the number of unnecessary procedures, many governments are opting for a quality strategy in the healthcare industry based on evidence. This is viewed as a requirement for evidence-based health policy (Millar

et al., 2004). A patient-centred primary care practice approach using evidence-based quality improvement is what current research is focusing on (Rubenstein et al., 2014). Patient-centred care will be explained in Section 4.2.5. The next section will, however, explain the evolution of evidence-based medicine, and its applicability in policy making in the healthcare sector.

2.3.2 Evidence based medicine: history and implementation

In the early 1990s, evidence-based medicine (EBM) was introduced as a new approach to teaching the practice of medicine (Auerbach, 2006) and a new method to enhance patients' medical experiences (Knecht, 2007). The introduction of the concept of EBM into clinical nutrition, however, dates back to the late 1980s, and has increased exponentially ever since (Li and Sun, 2002). This has had an effect on the practice of medicine as well as policy makers. This section fully defines evidence-based medicine, explains the difficulties faced, and the recommendations for better integration into the healthcare systems.

“Evidence-based medicine (EBM) is defined as the process of systematically reviewing, appraising and using clinical research findings to aid the delivery of optimum clinical care to patients” (Sackett and Rosenberg , 1995).

A number of institutes have devised guidelines and user guides on how to introduce evidence-based medicine into practice (Batalden and Davidoff, 2007, Peters, 2007, Chang et al., 2006). Translation of evidence-based practice guidelines into summary recommendations for nutrition departments at different institutions was then required (Lu and Carey, 2014). Recent research suggests that many areas of nutrition management still require more evidence to support high-level recommendations. Therefore, there is a need for more research before evidence-

based guidelines can be written. As physicians, the best possible evidence is needed to make decisions. Therefore, the ability to compile research on the validity and usefulness of any intervention and add that to the rapid growth of evidence for clinical practice is currently known as evidence-based medicine (Sackett and Rosenberg, 1995). The importance of closing the gap between research and practice is undeniable (Longworth et al., 2011).

The need for ongoing linkages between data collectors, providers and users, requires that data is presented in plain language, in order for policy to be implemented effectively. Also, the data collected has to be representative of population variation; therefore the major challenge when applying evidence-based medicine to chronic diseases is that it comprises multiple risks and therefore a nutrition strategy is needed that encompasses different age groups, sectors and policies. Age groups will be discussed in the results sections, qualitatively in Chapter 8 (see Section 8.3.2) and quantitatively in Chapter 9 (see Figure 9.8). This also reiterates the need to have a surveillance system to make sure all factors are captured from many sources (Stachenko, 2008). A number of things need to be accomplished to move from policy literacy to implementation, such as policy development activities, and attainment of skills in policy analysis (Hewison, 2008). Recent research shows that the key to dealing with non-communicable diseases such as diabetes is individualisation (Franz et al., 2014).

“Treatment goals, personal preferences (e.g. tradition, culture, religion, health beliefs, economics), and the individual's ability and willingness to make lifestyle changes must all be considered by clinicians and/or educators when counselling and educating individuals with diabetes (Franz et al., 2014).”

This shows the importance of evidence-based interventions, while individualisation shows that integration of care and shared decision-making are vital when it comes to caring for chronic illnesses, such as non-communicable diseases. Shared decision-making and integration of care will be explained in the next sections. These factors will be compiled into a table to cross compare among different models and tools that affect nutrition delivery care (Table 4.2 and Table 4.3).

2.3.3 Decision-making processes in healthcare

Up until the 1980s, decision-making processes in the National Health Service in the UK, in all aspects, including distribution of resources and control of the day-to-day flow of work, were dominated by doctors. This has changed over time, with the concept of general management, i.e. that one person is responsible for the managerial activities (Griffiths et al., 1983). In the early 1990s, an internal market, boards and chief executive board strategies, were introduced to hospitals. This inclusion has changed the influence and power in the healthcare industry (Walshe and Smith, 2011).

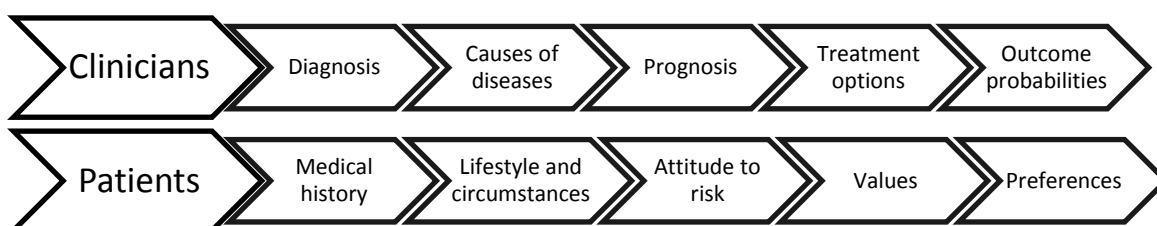
In the past, the main idea of the healthcare system revolved around the thought that patients did not have enough knowledge to decide for themselves (Yasin and Green, 1995). Many healthcare professionals during that time assumed that patients could not determine what was right and best for them. For the system to work at its best, patients, carers, clinicians and managers need to work together (Asthana, 2011). Shared decision-making nevertheless emphasises the same point, performance of the healthcare system depends on responsiveness. Shared decision-making is defined as follows:

“Responsiveness includes two major components: (a) respect for persons (including dignity, confidentiality and autonomy of individuals and families to decide about their own health); and (b) client orientation (including prompt attention, access to social support networks during care, quality of basic amenities and choice of provider)” (Atkinson and Merry, 2001).

An example of shared decision-making is illustrated in an Italian-based study (Lopez et al., 2012). The study shows a model which uses three categories of professionals, diabetologists, nurses and dieticians to empower patients through highly efficient utilisation of telemedicine resources. This was revealed to improve metabolic control and the major cardiovascular risk factors that affect diabetic patients, while allowing diabetologists to dedicate more time to patients with more acute disease (Lopez et al., 2012). This recent literature demonstrates that multidisciplinary teams and shared decision-making are essential when dealing with chronic diseases on an organisation level. Shared decision-making and multi-sectorial collaboration are also required on a national and international level (Mamudu et al., 2011).

Currently, shared decision-making with the patient is regarded as the standard in high quality healthcare services, as illustrated by the example above. Delivering the “Right Care for Patients”, which is derived from a policy prepared by Right Care in the NHS, is shown in Figure 2.2.

2.3.3.1 NHS: Shared decision-making processes



Source: NHS, Right Care (2011)

Figure 2.2: Shared decision-making processes

Figure 2.2 shows that clinicians and patients differ in the process of sharing information on different aspects. Patients share information relating to medical history, lifestyle, attitude to risk, values and preferences, while the clinician shares the diagnosis, the causes of the disease, the prognosis, as well as treatment options and outcome possibilities, this therefore facilitates in reaching the best outcome and preferred treatment. Patient involvement and patient orientation has been shown in recent literature to have a positive impact on delivery care when sharing information (Abiola et al., 2014, Gountas et al., 2014, Weng et al., 2014).

Patients with chronic diseases require enough information to understand the course of action to be chosen (Baker et al., 2005). This leads to resolving the problems of informed consent, and collectively explores the important roles of nurses and the patient's family in the decision-making process (Karlawish, 1996). This will be illustrated in the patient-centric models and the family-centric models later in this chapter (Section 3.2.6); as well as the table of critical factors that affect nutrition delivery care in Section 3.3. In the next section, however integration of care and increasing the number of professionals in the continuum of care will be explained. This section will illustrate the changing trends in integration of care over the years, showing cross-department and cross-government interactions to ensure that impactful programmes are available for the population.

2.3.4 Integration of care

Quality and service delivery through process configuration means that nutrition-based strategies can be offered through a seamless approach. This can be attained using different partnerships and involving different professionals to offer integrated

interventions that are effective. Integration of services will be explained showing the difference in responsibility over recent years. Healthcare has developed numerous impact measures to integrate care through inter-professional working and patient-centred care. For example, multidisciplinary care was a particular concern in the 1960s; partnership working in the 1970s; and shared care and disease management in the 1980s and 1990s (Stein and Reider, 2009). Table 2.1, shows chronologically what has happened in the past three decades.

Trends in integration of care		
1980s	1990s	2000s
Coordinated working	Inter-agency working	Inter-professional working
Shared planning	Intermediate care	Whole systems working
Coordinated care	Shared protocols	Integrated delivery networks
Care programmes	Managed care	Patient-centred care
Case/care management	Disease management	Shared decision-making
		Integrated care pathways

Source: Adopted from Shaw et al. (2011)

Table 2.1: Trends in integration of care

It also shows where healthcare is today, due to the change in people’s interest in the 1980s towards coordinating working in the care management process. This change developed until we reached a shared decision-making process in the 2000s (Shaw et al., 2011).

As “shared decision-making” is fairly new as a concept, so is the concept of “integrated care pathway”. Although there is a growing interest in integrative healthcare, collaborative care and interdisciplinary care, there is no consistency in

their goal setting or terminology. Understanding terminology is necessary for those teams who have come together for the good of the patient. Collaboration is often understood as not needing integration, while integration, on the other hand, needs collaboration (Boon et al., 2009).

The desire for better integration of care has been expressed in different ways (Steer and Steinberg, 2011). This is taken a step further to enhance the value of treatment for patients by acquiring an accountable integrated care system, termed an “Accountable Care Organisation (ACO)” (McClellan et al, 2010) in the United States over recent years. An example of a definition given to this term is:

“ACOs consist of providers who are jointly held accountable for achieving measured quality improvements and reductions in the rate of spending growth. Our definition emphasizes that these cost and quality improvements must achieve overall, per capita improvements in quality and cost, and that ACOs should have at least limited accountability for achieving these improvements while caring for a defined population of patients (McClellan et al, 2010).”

In conclusion, integration of healthcare has come a long way since the 1980s. It is evident that shared decision-making has taken up a central role, as more than one pathway can be taken to treat chronic illnesses, and more than one party is involved in the process.

2.4 Summary

This chapter discussed the influencing factors on current healthcare systems, such as technological advancement, age of the population, expectations of users, as well as costs, which were discussed along with the burden of non-communicable diseases. Milestones in healthcare delivery in the 21st century were brought into focus to show the development of factors that had an effect on healthcare delivery

over time. Quality care, the introduction of evidence-based medicine as well as the integration of care into healthcare have changed many processes and activities. All of these factors and many more affect the delivery of nutritional interventions. However, there are many levels for the delivery of these interventions, as will be shown in the following chapter.

Chapter 3: Nutrition interventions at different levels

3.1 Introduction

Management of nutrition interventions takes place at different levels. In international and national settings, policies and strategies are decided upon; while in hospital and primary healthcare settings, various activities are implemented and evaluated. This chapter provides examples of nutrition policies at the international and national levels, and highlights the role of government in nutrition interventions. Examples of various nutritional intervention types at the primary healthcare level and in hospitals are also presented.

3.2 Background

Various governments and health ministries have recently increased their attention on non-communicable diseases (NCDs) (Katz, 2013, Hospedales et al., 2011, Cohen et al., 2014). Countries worldwide understand the impact of diseases such as coronary heart diseases, diabetes and hypertension (Alshishtawy, 2012). Additionally, the link between the role of nutrition in the decrease of heart disease (He et al., 2011), diabetes (Ojo and Brooke, 2014, Mann, 2006) and hypertension (He et al., 2011, Houston, 2014) has been established.

The United Nation's (UN) Special Session in September 2011, focused on non-communicable diseases as being of utmost importance for ministries and governments worldwide. The session aimed to provide understanding of the factors affecting this rising epidemic (Brailon and Dubois, 2012). This delegation was the

second of its kind, in the history of the UN's General Assembly, to focus largely on a health topic, the first of which aimed to manage the HIV/AIDs issue on an international level (Chisholm et al., 2012). It is widely acknowledged that as a country develops epidemiological transitions occur, that is, the types of diseases that affect its population shift from primarily infectious diseases, such as diarrhoea and pneumonia, to primarily NCDs, such as cardiovascular diseases and cancers (Omran, 1971). Currently, NCDs are increasing and they have doubled in developed as well as under-developed countries. This has ultimately created a burden on the economic development of all countries. Many factors under the wider determinants of health are behind this increase in the occurrence of NCDs, including globalisation, supermarket growth, rapid urbanisation and an increasingly sedentary lifestyle (Wagner and Brath, 2012). Other 'social determinants' that may play a role here include the cultural environment, social support systems, and living and working conditions.

While some researchers consider NCDs to include four diseases (Alleyne et al., 2011), the WHO shows five major NCDs. The five most common NCDs are heart disease, stroke, cancer, diabetes and chronic respiratory disease. These diseases contribute significantly to morbidity and mortality rates worldwide (Reynales-Shigematsu, 2012).

Many overarching government sectors come together in order to address and fully understand this problem (Brangan, 2012). Cross-government campaigns are required to ensure that there is support for and from the different sectors. Co-delivery, between local governments and health departments, is also needed to

ensure that local communities, businesses and voluntary and community sectors work together (Puska, 2002).

Additionally, private philanthropy groups and organisations also play a major role in shaping the processes for tackling health issues on a global scale. In 2003, the Bill and Melinda Gates Foundation announced a donation of \$200 million worth of grants for research to identify the biggest problems in global health. The foundation believes that the major health challenges, in developing countries, can only be resolved through effective partnerships among many stakeholders. This resonates with what the WHO brought together in the National Assembly where they formed a dialogue platform. Continuous and active dialogue engagement helps to identify the best way to work together to have the greatest possible long-term impact on world health (Targett et al., 2009; Dabade and Puliyeel, 2009; Yamada, 2009).

3.3 Nutrition intervention policies and activities at the international level

The WHO in 2000, released “The First Action Plan for Food and Nutrition Policy: WHO European Region 2000-2005”. This policy focused on nutrition and physical activity as a means for preventing NCDs. This policy clearly indicates that nutrition plays a central role in the global strategies aiming to combat NCDs (Salud Publica Mexico, 1998; WHO, 2003). Evidence shows that with increased attention to nutrition, a decrease in NCDs would be possible. This is also illustrated in the policy of the WHO: “Reducing population-wide energy dense food, nutrient poor food and drinks, will make a big impact through society” (WHO, 2003).

The WHO is responsible for planning an international global framework, as listed in Table 3.1. In 2000, the WHO initiated a global response to address NCDs in “The Action Plan for the Global Strategy for the Prevention and Control of NCDs”. This policy aimed to:

“Map the emerging epidemics of non-communicable diseases and to analyse their social, economic, behavioural and political determinants with particular reference to poor and disadvantaged populations, in order to provide guidance for policy, legislative and financial measures related to the development of an environment supportive of control” (WHO, 2008a).

A second objective aimed to:

“... reduce the level of exposure of individuals and populations to the common risk factors for non-communicable diseases, namely tobacco consumption, unhealthy diet and physical inactivity, and their determinants” (WHO, 2008a).

While a third objective was to:

“... strengthen healthcare for people with non-communicable diseases by developing norms and guidelines for cost-effective interventions, with priority given to cardiovascular diseases, cancers, chronic respiratory diseases and diabetes” (WHO, 2008a).

However, the action plan appears to have been overambitious in its claims of proposing guidelines for more than one disease, in contrast to the 2001 summit where the UN focused exclusively on HIV/AIDs.

The planning of global strategies was set forth after extensive stakeholder consultations with UN agencies, international non-governmental organisations, international industry associations, director generals, CEOs and other senior executives of ministries of health, director generals from civil societies and expert-reference-group participation (WHO, 2003).

The global response to addressing non-communicable diseases	
2000	Global strategy for prevention and control of NCDs
2003	WHO framework convention on tobacco control
2004	Global strategy on diet, physical activity and health
2007	Resolution WHA60.23 on the prevention and control of non-communicable diseases: implementation of the global strategy
2008	WHO report on the global tobacco epidemic 2008 – The MPOWER package: resolution WHA61.4 on strategies to reduce the harmful use of alcohol
2008-2013	Mid-term strategic plan 2008-2013
2008-2013	Action plan for the global strategy for the prevention and control of NCDs
2011	UN General Assembly to address non-communicable diseases
2013	WHO Global Action Plan for the Prevention and Control of NCDs 2013-2020

Source: Research for International Tobacco Control, WHO (2008b)

Table 3.1: The global response to non-communicable disease

The 2011 UN Summit on Non-Communicable Diseases proposed the following five major initiatives: tobacco cessation, increased physical activity, promotion of healthy eating, salt reduction, as well as a reduction in hazardous alcohol consumption (Beaglehole et al., 2011). In 2013, the WHO came up with a global action plan that provides a road map and a menu of policy options for all Member States and other stakeholders, to take coordinated and coherent action, at all levels, local to global, to attain nine voluntary global targets by 2025. Out of these nine targets, three (Targets 2, 4, and 7) are only achievable through nutritional interventions (WHO, 2014e).

Therefore, it is vital that nutrition plays a major role in public health strategies, in order to play a prominent and significant part in prevention activities for decreasing NCDs (WHO, 2003; Indian Journal of Pediatrics, 1991; Darnton-Hill et al., 2004).

By the terms of a wide-ranging draft resolution — the meeting’s outcome document — Governments committed to addressing non-communicable diseases as a matter of priority in national development plans, for which they agreed to consider setting national targets for 2025, by 2015, and by 2016, to reduce risk factors and underlying social determinants for those diseases. They aimed, by 2016, to strengthen and orient health systems to address prevention and control issues through people-centred primary health care and universal health coverage (UN, 2014).

3.4 Nutrition intervention policies and activities at the national level

Since the 1970s, there have been various discussions into the best tools and means of intervention for tackling certain concerns within various populations (Dymsza et al., 1974). Early intervention, nutritional education and nutrition supplementation are the types of interventions that different countries can employ.

An example of a nutrition strategy is Spain’s focus on the NAOS project, a “Strategy for Nutrition, Physical Activity and Prevention of Obesity” (Neira and de Onis, 2006). The project aims to improve diet and encourage the regular practice of physical activity by all citizens, with a special emphasis on children.

In the UK, a number of White Papers with similar aims have been published. One of the follow-up documents on delivery is entitled: “Delivering choosing health: making healthier choices and action plans”. Two action plans proposed in this White Paper have been disseminated throughout the country for implementation and monitoring. The first action plan focuses on “Choosing a better diet: a food and health action plan” which is complementary to the second action plan “Choosing

activity: a physical activity action plan". To improve nutritional health in England, the objectives presented in the White Papers include:

"... increasing the average consumption of a variety of fruits and vegetables, increasing the average intake of fibre, reducing the average intake of salt, reducing the average intake of saturated fat, maintaining the average total intake of fat and reducing the average intake of added sugar" (DoH, 2005).

Population-wide programmes in the UK, such as, "Sure Start" and "5-A-Day", are just some of the initiatives that aim to tackle the objectives set forth by this White Paper (Camps and Long, 2012; Birmingham et al., 2004).

The previous interventions are examples of "guiding choice by changing the default policy" (see Table 3.2). This is an approach, among many others, that can be used by governments to intervene and improve population health.

Due to the controversies in intervention and the ethical duty of medical boards, a ladder has been adopted which shows the different levels of influence a government could have on a given medical condition. An intervention ladder (see Table 3.2) explains the amount of intervention and the type of jurisdiction a government might have. The higher up the ladder, the more justification a government will need in order to intervene. An example of intervention at the top level of the ladder would be that of a compulsory quarantine or isolation in the event of an outbreak of a serious infectious disease. Governmental intervention would be required at this level, as this decision would clearly involve a significant violation of freedom.

The intervention ladder
Eliminate choice
Restrict choice
Guide choice by disincentives
Guide choice by incentives
Guide choice by changing the default policy
Enable choice
Provide information
Do nothing

Source: Nuffield (2007)

Table 3.2: The intervention ladder

In addition, governments can influence and intervene in healthcare systems and policies through several tools and mediums. Examples of those are taxation, advertising bans and regulations, which showed success in the United States in controlling alcohol use and smoking. These types of interventions within a public health framework can help to shape individual choices towards healthier and safer behaviours (Mossialos, 2002).

Another example of government intervention involves governmental participation in health promotion. According to Table 3.2, this form of intervention is considered to provide the information to ‘enable choice’. The UK’s “Healthy People, Healthy Lives” is an example that emphasises the importance of health promotion through the use of different channels (Middleton, 2011).

One example of a nutrition policy with healthcare delivery outcomes is that which has been implemented in Ethiopia through a national programme. One of the

strategic objects is to improve the delivery of nutrition services for communicable and non-communicable diseases. This is through a number of initiatives that have been conducted on a community level. Another strategic objective of the policy is to strengthen implementation of nutrition initiatives across all sectors, through increasing production and access to fruits and vegetables, and promoting consumption of diversified food through community level initiatives (Government of Federal Democratic Republic of Ethiopia 2013-2015).

In implementing the WHO's strategies, it is very important to understand the vital role of the government and other sectors within the country, such as academia, non-profit organisations and the private sector (Fernstrom et al., 2012). Health promotion in particular is not limited to the mentioned entities. The first point of contact between patients and the healthcare system is at the primary healthcare level, where health promotion and nutrition intervention activities take place.

3.5 Nutrition intervention at the primary healthcare level

In 1978, the WHO adopted the primary healthcare approach (PHC) as the basis for effective delivery of health services, as outlined in the Declaration of Alma-Ata (WHO, 1978). PHC is both a philosophy of healthcare and a model for providing services that support health. Effective PHC is community-based, promotes healthy lifestyles as a pathway to disease and injury prevention, provides continuing care of chronic conditions and recognises the importance of the broad determinants of health (Health Council of Canada, 2005). In a more recent document from the WHO, entitled "Primary health care (now more than ever)" (WHO, 2008). PHC has been revisited with emphasis on four PHC reforms, including: universal coverage, service

delivery, leadership and public policy. The reforms aim to recognise health equity, emphasize delivery towards being more people-centric, attain a reliable leadership, and promote healthier societies and communities.

The role of primary healthcare is very important in managing and identifying modifiable health risk behaviours. However, these are often under-detected and undermanaged in the primary care setting (Carey et al., 2015). E-health interventions can overcome these barriers, for example by facilitating routine collection of patient-reported data on lifestyle risk factors, and improving clinical management of identified risk factors through provision of tailored feedback, point-of-care reminders, tailored educational materials, and referral to online self-management programmes.

A number of studies have shown that there are a number of nutrition interventions that can be undertaken at the level of primary healthcare settings. Many actions can be taken, such as therapeutic intervention (i.e. treatment), rehabilitation, disease prevention and health promotion, with an emphasis on the social determinants of nutritional health.

In a report on primary healthcare and the impact of nutrition interventions, Swartz et al. (2008) compiles and categorises a list of nutrition strategies to ensure adequate health promotion activities.

Categorisation of nutrition strategies within a primary healthcare framework to ensure adequate and health-promoting nutrition

Promote

Nutrition advocacy to policy makers (including technical support to other sectors)

Control of nutrition and food related advertising / promotions / communication such as television and printed media (e.g. paypoint promotions, advocacy against advertising of high fat and sugar

foods to children)

Growth monitoring and promotion (including community-based activities)

Community involvement in exploration of causes of food insecurity

Preventive

Breastfeeding promotion

Enforcement of the code on marketing of breastmilk substitutes

Advocacy for improved maternity benefits to facilitate breastfeeding

Quality control of food

Community-based monitoring of food prices / stock

Promotion of sustainable agricultural production (e.g. production of micronutrient rich foods, traditional foods, community gardens, farmers markets)

Advocacy against policies that reduce control of local farmers and increase power of transnational food corporations

Government regulation of food industry in terms of labelling and marketing

Advocacy and legislation for provision of safe water and sustainable sanitation

Advocacy for adequate income-support to buy food

Food pricing policies (subsidies on basic foods, zero rating of VAT on food, food price control, subsidisation of agricultural production)

Taxation of alcohol and tobacco products

Taxation that favours food

Insecure households

Lactation support and management

Nutrition education (including school curriculum), communication and promotion on healthy diets and health risks associated with poor nutrition

Food fortification

Prophylactic micronutrient supplementation of at risk groups (children, women, elderly)

Detection of growth faltering

Promote / referral to immunisation and parasite control

Food provision such as school feeding, feeding schemes, soup kitchens

Appropriate menus / diets in hospital pediatric wards

Therapeutic

Treating malnourished children (community- and hospital-based)

Management of nutrition (counselling and support) during illness (e.g. diarrhoea, diabetes)

Continued feeding (breastfeeding and soft nutrient dense food) during illness such as diarrhoea

Supplementation (micro-nutrients) of nutritional deficiencies

Dietary modification during illness (e.g. weight reduction, diabetics)

Rehabilitative

Management of nutrition during recovery from illness such as rehabilitation centres or community-based management of malnourished children, monitoring of illness-related dietary modification, continued (additional) feeding after illness such as diarrhoea to ensure catch-up growth.

Source: Swartz et al. (2008)

Table 3.3: Nutrition strategies to ensure adequate health promotion

Public health strategies at the population level are exemplified above as being food fortification, taxation and advocacy. Other interventions provided in the above list may relate to public health at a population level of which certain elements are implemented at the primary healthcare level, examples would include breastfeeding promotion, and promotion of immunization (Table 3.3). Another example is government regulation of the food industry in terms of labelling and marketing, as these are mostly national level policies. However, compliance and monitoring of this compliance is usually carried out at a lower level, involving communities and various healthcare authorities.

A systematic review published in 2006 presented solid evidence of the effectiveness of primary healthcare nutrition interventions in relation to a few specific conditions and outcomes, as listed below:

The review stated that,

“... interventions are more effective when they are more intense (i.e., more than two sessions) rather than brief; when the number of intervention components are increased (more than two); when spouses or families are involved; and when participants are at risk or diagnosed with a disease rather than in good health.” (Ciliska et al., 2006)

It is evident from the literature that nutrition interventions in primary healthcare settings can be used for prevention as well as for treatment of chronic conditions.

General practitioners are often the first healthcare providers to identify people who are overweight or obese. Treatment should be individualised with careful consideration given to the severity of the problem and associated complications using the 5As approach for weight management: Ask, Assess, Advise, Assist and Arrange.

ASK: ask all patients about smoking, nutrition, alcohol or physical activity
ASSESS: readiness to change, dependence
ADVISE: brief, non-judgmental advice with patient education materials and motivational interviewing
ASSIST: by providing motivational counselling and a prescription
ARRANGE: referral telephone support services, group lifestyle programs or individual provider (e.g. dietician or exercise physiologist) and a regular follow up visit

Source: Adapted from Grima and Dixon (2013)

Table 3.4: The 5As approach

3.6 Nutrition intervention at the hospital level

A nutrition support team at a hospital can improve the impact of nutrition intervention. A nutrition support team is a multidisciplinary team of a number of professionals, includes physicians, nurses, pharmacists and dietitians where each play important roles; it may also involve a speech/language therapist. Multidisciplinary teams deal with acute cases in hospitals such as cardiovascular diseases and diabetes. Current research suggests including pre-admission nutrition screening in order to potentially improve patient outcomes by increasing nutrient intake before their hospital admission, this could potentially reduce hospitalisation

length (Schwartz and Gudzin, 2003). By involving nutrition support teams early, hospital stays can be decreased and patients discharged earlier, all of which have a positive impact on cost savings.

Moreover, another type of nutrition intervention at the hospital level could be applied in the catering departments of hospitals. Voluntary initiatives in modifying food labels in catering have induced more health conscious choices; this indicates that food and catering modifications could theoretically prevent chronic diseases and obesity, if applied at a hospital level (Hankey, 2015). Patient satisfaction and patient education can be linked to the catering department. Patient satisfaction tools have been used to measure their satisfaction with catering and services of the hospital (Dall'Oglio et al., 2015). Collaboration with catering departments and improved communication between the registered dietitians can increase educational opportunities with the patient. This can be done through adding healthy items to the menus of caterers. Also through dietitians utilising caterers' menus in wellness and promotion programmes. This collaboration increases the opportunities for nutrition education (Friesen, 1998).

The argument in this chapter is that there are many levels of nutrition interventions. Policies and strategies addressing these interventions cascade from the international level to the level of healthcare professionals in different settings, as shown in the following section.

3.7 Summary

This chapter discussed the levels of nutritional interventions, focusing on the international policy agenda of the WHO and the UN with regard to NCDs and the

role of nutrition. As NCDs have become a priority in most countries, examples of national population-wide interventions were also presented. This was followed by a discussion of the role of primary healthcare and of hospitals as providers of healthcare within the context of nutrition interventions for NCDs. Several policies, strategies and activities at these different levels were mentioned. The factors playing a role in the implementation of nutrition interventions at these different levels will be explored in the following chapter.

Chapter 4: Common factors affecting healthcare and nutrition delivery

4.1 Introduction

This chapter explores the factors that influence nutrition delivery in healthcare systems. In order to do that, different approaches are used. Some of the factors have been briefly discussed earlier in this thesis. This chapter commences with a systematic literature review based on the research question. This is in order to derive a number of studies that discuss different strategies related to NCDs, nutrition interventions and the factors influencing them. This is followed by a section explaining different care models used in healthcare and showing a number of common factors that play a role in these models. Five strategy papers were also examined to confirm the previously identified factors. In conclusion, the taxonomy of the body of literature was used to identify the common critical factors affecting nutrition interventions strategies and activities.

4.2 Background

The UN political declaration in 2011 on non-communicable diseases called for population-based policies, multi-sectorial action, cross-agency working, monitoring and evaluation. Many research studies, models and strategies, before 2011 and since, have included common factors that play a role in management of non-communicable diseases through nutrition interventions.

4.3 Systematic review

The following systematic review aims to compile a list of important studies that tackle these issues.

4.3.1 Methods

A protocol for conducting the systematic review was developed and sent to an advisory academic in order to ensure that the methods and search strategies were exhaustive.

4.3.1.1 Literature search

A systematic search of PubMed, Crochane, Ebsco and ProQuest was conducted to identify all relevant peer-reviewed papers published from 2010 to 2015. The main search terms were combined key terms such as 'policy' and 'nutrition' or 'strategy' and 'nutrition' or 'nutrition' and 'non-communicable diseases'. Additional search terms related to policy or strategy were regulation, health policy, legislation, intervention, law, standards, guidelines, management, healthcare management, action plan, and implementation. These terms were used as keywords and in free text searches of titles and abstracts, depending on the database being searched. Moreover, reference lists in relevant publications were scrutinised to identify further articles (see Figure 4.1).

Search terms		
1. Set of entry terms: strategy, policy	2. Set of entry terms: nutrition, non-communicable diseases,	Free search phrases: Report, OR guidelines, OR case report, healthcare management.

Figure 4.1: Search terms utilised

4.3.1.2 Inclusion and exclusion criteria

To be included, studies had to be:

- Published in a peer-reviewed journal in English.
- Primary research articles or reviews categorising, describing or explaining different factors in relation to nutrition policy and strategy that address NCDs.
- Intervention studies were also included.

Studies of clinical decision-making for individual patients, or protocols for single clinical sites were excluded. Also, all letters, editorials, news and comments, unless highly relevant, were excluded.

The present study is based on a triangulated method; therefore, qualitative and quantitative research designs were included in the literature search.

4.3.1.3 Data extraction

The data from each study, as finally included in this review, were extracted by the researcher and tabulated. Extracted data included information about study topic

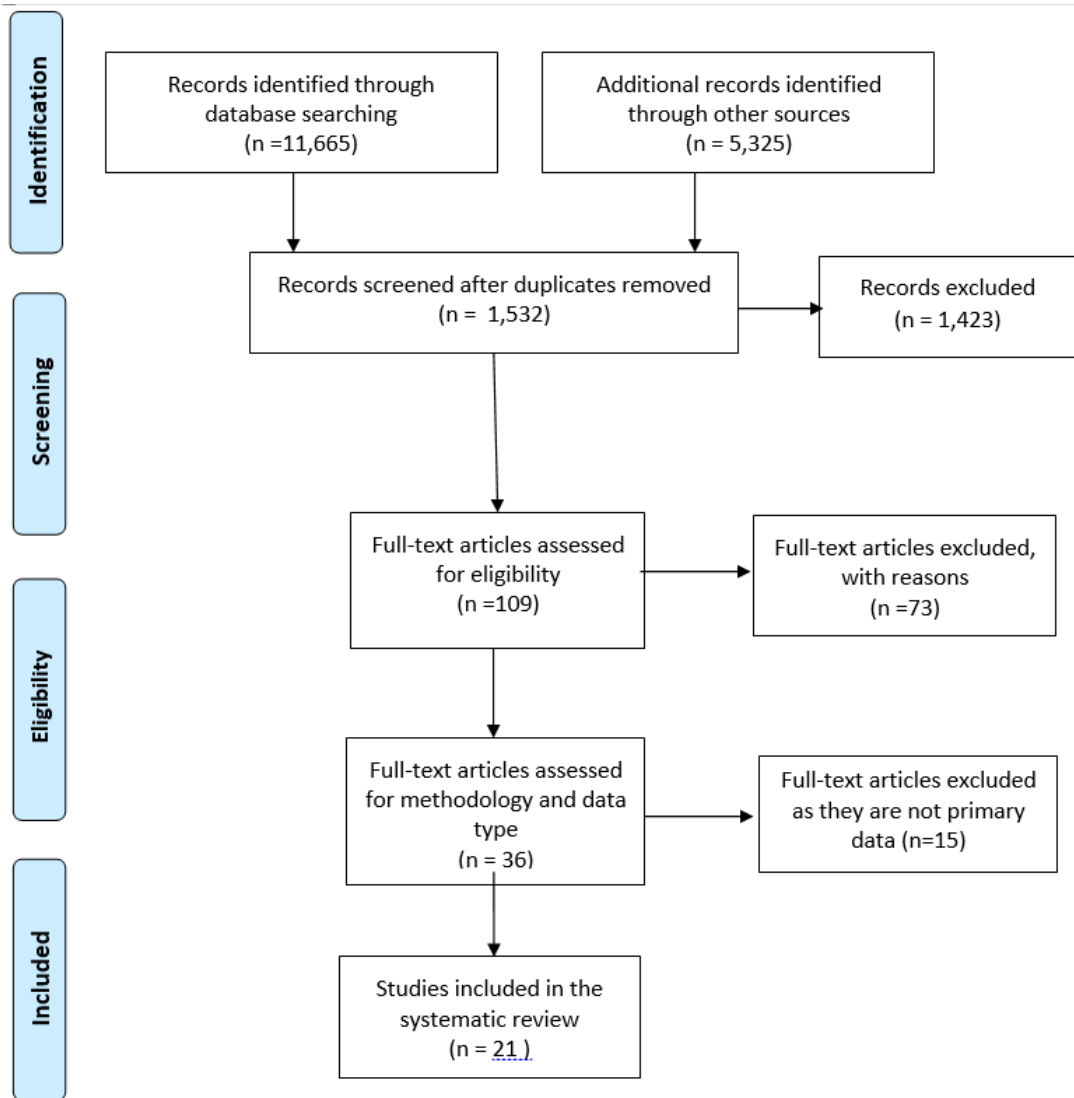
and focus, study design and methodology, study characteristics and results. Factors which were listed to form the basis of an extensive list of factors that was later iteratively updated as new factors were identified.

4.3.2 Search results

4.3.2.1 Selection of studies

In total, 16,990 potentially relevant publications were identified. (“Nutrition” and “strategy” totalled 5,325, while “Nutrition” and “Policy” totalled 11,665, where only 1,532 were free full-text articles which were included).

A PRISMA chart is included for better clarity and full understanding of the search strategy.



Adapted from Moher et al. 2009

Figure 4.2: PRISMA flow diagram

They were screened initially on their titles and year of publication, and 1,423 publications were excluded. The abstracts of the remaining 109 were screened, and 73 were excluded as irrelevant to the current study focus. The full texts of the remaining 36 studies were retrieved and screened, and again 15 were excluded, as they were not primary research or did not meet all inclusion criteria. Ultimately, 21 studies were included in this systematic review.

An overview of the literature in terms of policy and strategy in healthcare management is shown in Table 4.1.

Ref	Design	Background	Objective	Result	Potential factor that plays a role in nutrition delivery
Alleyne et al. (2011)	Conceptual paper	Three risk factors contribute to four major chronic diseases which are responsible for over 50% of deaths worldwide.	To understand the role of nurses in chronic care management.	Nurses across the world are well positioned to play a significant role and work with a wide range of people involved in the prevention and management of these chronic diseases.	Multidisciplinary teams
Bastian (2011)	Interpretive approach (Bacchi's method) to examine the strategies being offered within the policy	This paper critically analyses Eat Well Australia: An Agenda for Action for Public Health Nutrition 2000 – 2010.	To better understand how public health nutrition has been represented during the past decade in Australia.	The policy's proposed actions reflect the policy-making environment in which it was conceived. A manifestation of this was unclear division of roles and responsibilities, lack of dedicated resources and inadequate focus on the social determinants of health.	Resources Cross-department interaction Social determinants of health
Beaglehole et al. (2011)	Conceptual paper in health policy	The increasing global crisis in NCDs is a barrier to development goals including poverty reduction, health equity, economic stability and human security.	To propose five overarching priority actions for the response to the crisis--leadership, prevention, treatment, international cooperation, and monitoring and accountability--and the delivery of five priority interventions--tobacco control, salt reduction, improved diets and physical activity, reduction in hazardous alcohol intake, and essential drugs and technologies.	The most urgent and immediate priority is tobacco control. We propose as a goal for 2040, a world essentially free from tobacco where less than 5% of people use tobacco.	Leadership involvement Cross-government interaction

Joshi et al. (2014)	Review	One potential solution to limited healthcare access in low- and middle-income countries (LMIC) is task-shifting, the training of non-physician healthcare workers (NPHWs) to perform tasks traditionally undertaken by physicians.	The aim of this paper was to conduct a systematic review of studies involving task-shifting for the management of NCDs in LMIC.	Task-shifting from physicians to NPHWs, if accompanied by health system restructuring is a potentially effective and affordable strategy for improving access to healthcare for NCDs.	Multidisciplinary teams
Kontis et al. (2014)	Meta-analysis	Countries have agreed to reduce premature mortality (defined as the probability of dying between the ages of 30 years and 70 years) from four main NCDs-- cardiovascular diseases, chronic respiratory diseases, cancers, and diabetes--by 25% from 2010 levels by 2025 (referred to as 25x25 target).	The aim is to understand how to achieve the 25x25 (estimated as the contribution of achieving six risk factor targets towards meeting the 25x25 mortality target).	If risk factor targets are achieved, the probability of dying from the four main NCDs between the ages of 30 years and 70 years will decrease by 22% in men and by 19% in women between 2010 and 2025.	Leadership involvement Policy setting
Demaio et al. (2014)	Conceptual paper	In 2014, NCDs represented the leading causes of global mortality and disability. Government-level concern, and resulting policy changes, are manifesting.	Reflecting recent major global reports, declarations and events, this study proposes and critiques a PHC approach to NCDs, highlighting PHC, with its core themes, as a valuable guiding framework for health promotion and policy addressing this group of diseases.	There has recently been renewed interest in Primary Health Care (PHC) and its core principles. With this, has come strengthened support for revitalising this approach, which aims for equitable and cost-effective population-health attainment.	Collaboration through PHC

Choi et al. (2008)	Conceptual paper	With increasing human progress and technological advance, the pandemic of chronic diseases will become an even bigger threat to global health.	To contribute ideas and working examples that might help enhance global capacity in the surveillance of chronic diseases and their prevention and control. Innovative ideas and solutions were actively sought.	Ideas and working examples to help enhance global capacity were grouped under seven themes, concisely summarised by the acronym "SCIENCE": Strategy, Collaboration, Information, Education, Novelty, Communication and Evaluation.	Strategy, Collaboration, Information, Education, Novelty, Communication and Evaluation
Darnton-Hill et al. (2004)	Review; includes unpublished and published WHO reports	International and national public health and nutrition policy development in light of the global epidemic in chronic diseases, demographic and epidemiological transitions.	To briefly review the current understanding of the aetiology and prevention of chronic diseases using a life course approach, demonstrating the life-long influences on the development of disease.	There is a global epidemic of increasing obesity, diabetes and other chronic NCDs, especially in developing and transitional economies, and in the less affluent within these, and in the developed countries. At the same time, there has been an increase in communities and households that have coincident under- and over-nutrition.	Health promotion in specific age groups (e.g. antenatal period) Prevention most cost-effective
Geneau et al. (2010)	Conceptual paper: Adapted political process model	Chronic diseases, especially cardiovascular diseases, diabetes, cancer, and chronic obstructive respiratory diseases, are neglected globally despite growing awareness of the serious burden that they cause.	We seek to understand this failure and to position chronic disease centrally on the global health and development agendas. To identify strategies for generation of increased political priority for chronic diseases and to further the involvement of development agencies, we use an adapted political process model.	Recommend three strategies: reframe the debate to emphasise societal determinants of disease; mobilise resources through an inclusive approach to development and by equitably distributing resources; and build one merging strategic and political opportunity, such as the World Health Assembly 2008-13 Action Plan and the high level meeting of the UN General Assembly in 2011 on chronic disease.	Social determinants of health Mobilise resources to development and equitably distribute resources Leadership involvement and international cross-government relations

Hofman et al. (2006)	Bibliometric analysis of journals in LMIC	Cardiovascular disease and cancer led the list of the top ten most-indexed published topics by region.	The paper identifies the relative amount of research devoted to NCDs in low- and middle-income countries (LMIC).	Even in regions widespread with infectious diseases, some capability exists to conduct research on non-communicable diseases. Greater attention should be paid to the conduct and support of such research in LMICs, which will benefit these countries and may yield clues to lower-cost solutions to the burden of these diseases worldwide.	Multidisciplinary teams
Pelletier et al. (2011)	Interviews, written account, observation of policy process in five countries (thematic analysis)	Under nutrition is the single largest contributor to the global burden of disease and can be addressed through a number of highly efficacious interventions.	This paper reports on the findings from studies in Bangladesh, Bolivia, Guatemala, Peru and Vietnam which sought to identify the challenges in the policy process and ways to overcome them, notably with respect to commitment, agenda setting, policy formulation and implementation.	Several insights for future efforts: (a) high-level political attention to and political commitment and system commitment requires sustained efforts from policy entrepreneurs and champions; (b) mid-level actors from ministries and external partners had great difficulty translating political windows of opportunity for nutrition into concrete operational plans, due to capacity constraints, differing professional views of under nutrition and disagreements over interventions, ownership, roles and responsibilities; and (c) the pace and quality of implementation was severely constrained in most cases by weaknesses in human and organisational capacities from national to frontline levels.	Leadership involvement Policy setting Resources

Maher et al. (2012)	Review	The growing global burden of non-communicable diseases NCDs is now killing 36 million people each year and needs comprehensive action.	Overview of key critical issues that need to be resolved to ensure political commitments are translated into practical action.	Compares NCD current issues with HIV's prevention struggle last decade and suggests five action plans. This is to ensure practical actions take place.	Global action Resources Finance Research
Nyenwe et al. (2013)	Observation of an experiment	Example of e-health application. Non-communicable disease prevention method	Objective: Investigated the impact of tele-medicine on the quality of care in diabetic patients in five health professional shortage areas.	A telemedicine-based management programme that delivers diabetes education and consultative service through videoconference was effective in improving diabetes outcome measures.	Tele-health
Bonita et al., (2013)	Review	Keywords: strategy, recommendations, interventions, programs for non-communicable diseases		One outcome of the panels were recommendations for action by countries and international agencies for the UN High-Level Meeting on Non-Communicable Diseases	Global action
Peregrin (2004)	Qualitative interviews	Keywords: Nutrition, integration		Explains the process and activity of nutritionist and dietician health development plans.	Marketing
Qureshi et al (2010)	Technical review of a prototype	Key words: technology, healthcare, wireless networks	Evaluated the communication capabilities of the system in a number of realistic experiments.	This technical paper shows how to allow neonatal specialists to participate in the care of critically ill infants at remote sites and during transport using telemedicine.	Tele health

Tinghog et al (2010)	Conceptual paper	Tentative conceptual framework		This paper includes resources and finances for interventions in healthcare systems. Six attributes for exploring the suitability of private financing for specific healthcare commodities are identified, this framework is tentative for the use of policymakers.	Health finance
Riegelman (2010)	Review	Health framework	Health profession levels with the goal of producing a system of education for health by 2020 that fully incorporates an evidence-based public health perspective into the education of all health professionals and other citizens.	This framework can provide a coherent strategy for incorporating education into healthcare.	Education and health promotion Multidisciplinary team
Dykes et al. (2013)	Triangulated method using qualitative methods to test a prototype	Federal legislation provides incentives for hospitals to engage patients in their care and to use technology in a meaningful way		Prototype in this study displays information at the bedside in a way that can be understood and used by hospitalized patients. While some patients may choose to avoid technology while hospitalized, other patients or family caregivers may appreciate the opportunity to use tools, to become a full partner on their health care team.	Patient Centric
Abiola et al. (2014)	Quantitative questionnaire using the patient		Attitude and orientation of doctors to the doctor-patient relationship has a direct influence on delivery of high quality healthcare. The aims of this study	Demonstrating why patient-centred medical interviewing should be given top priority in medical training, and particularly for federal health institutions saddled with production	Decision making process Multidisciplinary teams Training and resources

	-practitioner		were to determine the orientation of Kano doctors to the practice of doctor-patient relationship and physicians' related factors	of new doctors and further training for practicing doctors.	
Mutale et al. (2013)	Application of Balanced Scorecard: To assess the baseline status of the participating districts a modified balanced scorecard approach following the domains highlighted in the MOH 2011 Strategic Plan.		Randomised step-wedged community intervention that aims to strengthen the health system in three districts in the Republic of Zambia.	This paper applies the concept of balanced scorecard to describe the baseline status of three intervention districts in Zambia. This tool could be valuable in monitoring and evaluation of health systems.	Assessment
Wright et al. (2005)	Conceptual paper	Participation in HIA generates a sense that health and decision-making is community-owned, and the personal experiences of citizens become integral to the formulation of policy.	This review of the participation strategies adopted in key applications of HIA in the United Kingdom was examined	Coupling HIA with SEA potential solutions to problems with screening, theoretical framework casual pathways.	Assessment

Davison et al. (2013)	Qualitative and quantitative methods were used to examine the ecologies of parents' cognitions and behaviours specific to children's diet in five Head Start centres.	Obesity prevention models	According to the Family Ecological Model (FEM), parenting behaviours are shaped by the contexts in which families are embedded.	The family ecological model was refined to create an evidence based, temporally structured logic model to support and guide family-centred research in childhood obesity prevention.	Global action Cross-department
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Table 4.1: Review of policy and nutrition strategies

4.3.3 Results of the systematic review

The systematic review ultimately produced 25 studies that met all inclusion criteria. The potential factors extracted from these studies amounted to 19. These are: multidisciplinary teams; resources; cross-department interaction; social determinants of health; leadership involvement; collaboration through Primary Health Care (PHC); strategy; collaboration; education; information; communication; evaluation; cost-effective prevention; policy setting; finance; tele-health; marketing; decision-making process; assessment.

It is obvious from the above list, that many factors were similar or very much interrelated. This meant that the list needed further refining and summarisation in order to be able to use it in the design of the methodological tool in this study. On the other hand, a number of factors repeatedly appeared in several studies, as shown in the table, which may point to their importance. However, working with these factors on this assumption alone may be misleading, as some factors that only appeared once or twice in the previous studies may still be of great influence.

In order to support and modify the list of factors obtained from the systematic review, further scrutiny of the literature was undertaken by looking at a number of healthcare models and by conducting a literature taxonomy, as presented in the following sections.

4.4 Models for delivery of care for NCDs

There are a number of models adopted for delivery of care to citizens and patients with NCDs. Nearly all of those models incorporate nutrition interventions in some

form. Looking at these models is very useful as they may shed light on common factors that influence nutrition delivery care.

4.4.1 Chronic care model (CCM) and ECCM

One of the prominent models in the literature is the chronic care model (Austin et al., 2000, Glasgow et al., 2001). The chronic care model (CCM) identifies the essential elements of a healthcare system that encourages high-quality chronic disease care. The model can be applied to a variety of chronic illnesses, healthcare settings and target populations. Based on several studies, the results of such a model are healthier patients, more satisfied providers and cost savings (Adams et al., 2007, Barr et al., 2003, Coleman et al., 2009, Jackson and Weinberger, 2009). The use of the CCM has assisted healthcare teams to demonstrate effective, relevant solutions to this growing challenge. The 2014 paper by Nolte et al. entitled "Assessing chronic disease management in European health systems", focuses on 12 different countries comparing four components that have been established to have an effect on chronic care. These components are derived from the CCM model. The four components are: self-management support, delivery system design, decision support, and clinic information systems.

The study concludes that the majority of approaches tend to focus on populations with defined conditions, as well as on strengthening nurse-led clinics. It also concludes that approaches that seek to reduce barriers between sectors remain less common. Additionally, the implementation of approaches frequently involves financial incentives. Finally, levels of patient and clinical support vary between countries.

However, Barr et al. (2003) argues that the present CCM is geared to clinically oriented systems, and is hard to use for prevention and promotion. Therefore, to integrate prevention and promotion into the CCM, the expanded chronic care model (ECCM) was introduced. The ECCM adds two further factors for consideration. The first is social determinants of health, and the second is enhanced community participation as part of the CCM (Smith, 2012). Defining health by addressing individual, social and environmental determinants shows new opportunities for healthcare and public health (Bircher and Kuruvilla, 2014, Klein et al., 2014).

This explanation shows the number of factors included in this model to enhance chronic care. This model, therefore, can be used as a basis to understand the practice level of nutrition intervention in the UAE as a means of chronic care. The six components of the ECCM are included Table 4.2) (Barr et al., 2003). This will then be merged with other factors seen at the end of the chapter, (Table 4.3) which forms the basis for the tools used in this study.

4.4.2 Different models of centrality

Customer centrality is a point that is emerging in various countries regarding making sure that patients and the public at large are involved as key partners in creating value-oriented healthcare systems that affect everyday life. This can be in terms of prevention or in terms of dealing with communicable diseases. In the following section, patient-centric, family-centric and community-centric models will be elaborated upon.

A patient-centric model can be defined as a non-rigid method of healthcare which ensures each patient receives the best medical diagnosis and treatment possible (Brown et al., 2013, LaCroix, 2013). Many disciplines within the healthcare sector strive to work towards a patient-centred model (al-Shaqha and Zairi, 2000). A greater accountability and responsibility will be on the patient, which will inversely give the patient more expectations to improve their healthcare. This will be through educating themselves about health maintenance and wellness practices. This would be different from the medical system, where the responsibility solely lies on the medical team. An example of a patient-centric model in nutrition delivery is seen in a recent study, where tailored messages were given to diabetes patients based on their preferences (Ellis et al., 2014).

The family-centred care model, on the other hand, is a widely used model of care that is believed to help meet the emotional, psychological and developmental needs of the hospitalised patient. Davison et al. (2011) suggested a new model drawn from the research and intervention design, mixed-method approach to come up with a new model called the Family-centred Action Model of Intervention Layout and Implementation, or FAMILI, which was developed to address these needs. This model positions family members as active participants in the development, implementation and evaluation of family-centred obesity prevention programmes (Davison et al., 2011).

Looking at family approaches through community communications clearly indicates the need for a community-centred model. Community-centred models include models that have different stakeholders as participants. An example is the DIRECT

model (Diabetes Intervention Reaching and Educating Communities Together); this model has been used to tackle diabetes using the participatory approach of the community (Engelgau et al., 1998).

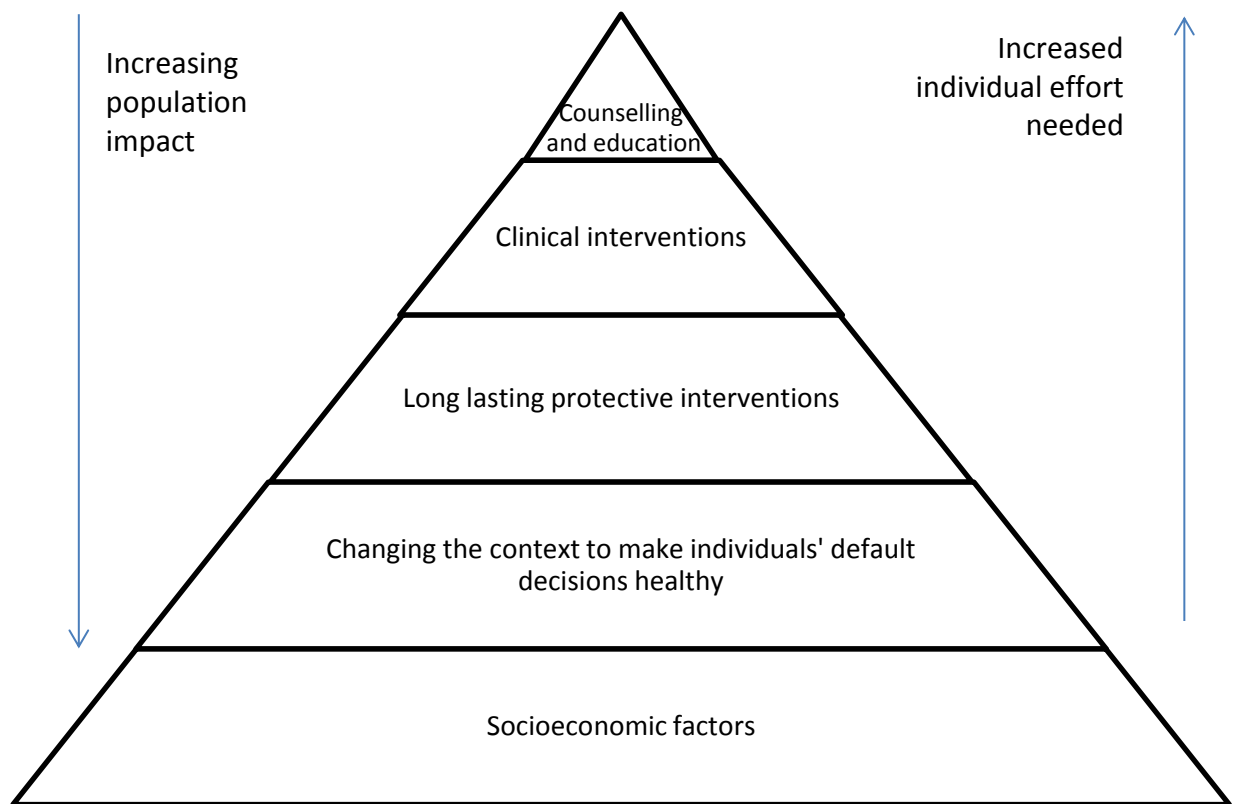
The aims of DIRECT could be adapted to reaching populations with other chronic diseases, through self-management, health education through nutrition/physical activity education, and health outreach. To apply any of the models, a health needs assessment and impact assessment would need to be performed primarily (Engelgau et al., 1998). Vanderboom et al. (2014) indicates that the integrated community care team is a promising strategy to support patient-centred chronic illness care. Customer centricity comes through as important due to the limited effectiveness of the reactive traditional approaches towards chronic diseases. The importance and the need to involve the patient and the public as key partners in creating value-oriented healthcare systems is the focus of section 4.2.5.

4.4.3 Public health frameworks

Nurse and Edmondson-Jones (2007) presented a framework for public health which included “health needs assessment” and “health impact assessment” as important elements. These steps come directly after collecting public health information. It is argued that to improve healthcare there is a need to embrace the constant change between all factors and the health needs assessments and health impact assessments enable a review of effectiveness and allow for the planning of a strategy and force of action. Other factors are public health information, review effectiveness, strategy and planning, evaluation, promotion protection, screening, improve services, effectiveness research and design, as well as education and

training (Bayliss et al., 2014, Fears et al., 2014, Harwell et al., 2005). A further assessment model is shown in Figure 4.3. Frieden (2010) argues that previous impact models lack the focus on health. Therefore, he came up with a five-tiered framework for impact on public health.

Figure 4.3 shows the framework for impact on public health as designed in five tiers. The highest impact interventions are at the bottom of the pyramid and focus on socioeconomic factors. Changing the context to make individuals' default decisions healthy is next on the scale, followed by long-lasting protective interventions, which comes before clinical intervention. The greatest effort needed from individuals involves counselling and education and, to Frieden (2010), is considered the least impactful from the five suggested interventions.



Source: Frieden (2010)

Figure 4.3: Five-tiered framework for impact on public health

4.4.4 Common factors in the models

The models described above such as the CCM, ECCM, public health frameworks and community-centred care depicted a number of factors that play a role in the delivery of care. The common factors within the models discussed above are summarised in Table 4.2.

Factors such as novelty, communication, socioeconomic factors, as well as family expertise were shown to be the least common between all models together. While proactive practice teams, community policy and resources, community participation and programme evaluation, as well as impact assessment are common in at least three of the seven models mentioned.

Table 4.2 shows that education plays an important role in all models discussed. These factors will then be distilled into the taxonomy at the end of the chapter in Table 4.6. To understand healthcare strategy, provision and delivery, the evolution of healthcare systems needs to be understood, as explained earlier in the chapter.

	Community policy /resources	Self-management support	Clinical information system	Proactive practice team	Socioeconomic factors	Decision support	Protective interventions	Clinical interventions	Education (informed patients)	Social determinants of health	Community participation	Expertise in family	Programme evaluation	Impact assessment	Strategy and planning	Novelty	Communication
Chronic care model (Bodenheimer et al., 2002)	✓	✓	✓	✓		✓			✓								
Expanded chronic care model (Smith, 2012) (Barr, 2003)	✓	✓	✓	✓		✓			✓	✓	✓						
Patient-centred care (JCI, 2014)						✓	✓	✓									✓
Family-centred care (Scottish Government, 2006)				✓					✓		✓						
Community-centred care (Engelgau et al., 1998)							✓	✓		✓		✓					
Public health framework (Frieden, 2010)									✓			✓	✓	✓			
Public health framework (Nurse and Edmondson Jones, 2007)					✓	✓	✓	✓	✓				✓				

Table 4.2: Common areas in different care models

4.5 Identification of the key themes in the complied list

The literature review in Chapters 2 and 3 and the previous sections (4.1 and 4.2) yielded a number of aspects that affect nutrition interventions in healthcare

systems. Policy agenda, strategy formulation and factors that influence healthcare systems were discussed. A compilation of the factors are listed below (Table 4.3).

1. Quality
2. Evidence-based medicine
3. Shared decision-making
4. Integration of care
5. E-health
6. Policy resources
7. Self-management support
8. Proactive practice team
9. Socioeconomic factors
10. Decision support
11. Preventative interventions
12. Clinical interventions
13. Education
14. Community participation
15. Social determinants of health
16. Expertise in the family
17. Programme evaluation
18. Impact assessment
19. Strategy and planning
20. Novelty
21. Communication
22. Demographics
23. User expectation
24. Financial and economic changes
25. Pace of technology innovation

Table 4.3: Factors that influence nutrition interventions

The previous factors can be further distilled into key areas and common themes. Table 4.4 notes these key areas and common themes, and lists the literature that denote them as interconnecting factors that influence nutrition delivery care.

Key area	Reference
Involvement of communities	(Suarez-Herrera et al., 2009)
Cross-government co-delivery of promotional programmes	(Bales et al., 2011, Dabade and Puliyeel, 2009, Targett et al., 2009, Srihari et al., 2009)
Strategy	(Vamvakas, 2013, Riphagen-Dalhuisen et al., 2013, Ramos et al., 2013, Porter and Coles, 2011, Porter, 2009, Torgovicky et al., 2005, Cordova Villalobos, 2010, Journal of Nutrition, 2003, Inquiry, 2004, WHO, 2003, Beaglehole et al., 2011, Choi et al., 2008, Patel et al., 2011, Puska, 2002)
Resources and enablement	(Tinghog et al., 2010)
Process and activity	(Riegelman, 2010, Riegelman and Garr, 2011, Peregrin, 2010, Peregrin, 2004, Walshe and Smith, 2011)
Patient orientation	(Abiola et al., 2014, Gountas et al., 2014, Weng et al., 2014)
Patient centric	(Shabo Shvo, 2007, Shabo Shvo, 2013, Dykes et al., 2013, Bakalar, 2008, Ferguson et al., 2006, Reiner, 2011, Tan et al., 2010, Vamvakas, 2013, Hong et al., 2013, al-Shaqha and Zairi, 2001)
Quality	(Halbesleben and Whitman, 2012, Tetteh, 2012, Acharya et al., 2011, Goldapp et al., 2011, Anderson, 1995, Anderson and Zwelling, 1996, Hughes, 2008)
People and competencies	(Oni et al., 2011)
Value and care design (services)	(Arifeen et al., 2009, Barr et al., 2003, Davison et al., 2011, Fehrenbach and Grahovac, 2008)
Measurement and impact / measurement and surveillance	(Mutale et al., 2013, de Andrade et al., 2012, Carrigan and Kujawa, 2006, Bastian, 2011, Andaleeb et al., 2007, Wright et al., 2005, Bentley et al., 2009, Bohaty et al., 2008, Buckley and Hillner, 2003, Chow et al., 2010, Hu et al., 2010, Dora and Racioppi, 2003, Frieden, 2010, Fujino et al., 2009)
Innovation and best practices (technology-e-health)	(Garde et al., 2007, Tinghog et al., 2010, Anderson, 2004, Lane et al., 2007, North et al., 2011, Nyenwe et al., 2011, Qureshi et al., 2010, Chu and Thom, 1994, Fitzgerald and Davison, 2008)

Table 4.4: Summary of factors that influence healthcare systems and nutrition strategy

Five prominent healthcare strategy papers were examined in depth in order to confirm the use of the previously identified factors in the development of nutrition interventions, policies and strategies. The five healthcare strategy papers (Choi,

PAHO, Eat Well Australia, UK White paper Healthy Lives Healthy Living and Puska) establish the importance of the identified themes and key areas (Table 4.5).

The UK white paper Healthy Lives Healthy living includes: strategy and education as well as value care design (HM Government, 2010).

Area	Factor	Key findings	References
Strategy	Development	Strategy: Develop a strategy to promote and market global public health	Choi (2008)
		Empower local leadership and encourage wide responsibility across society to improve everyone's health and well-being, and tackle the wider factors that influence it	Salud Publica Mexico, 1998
		Develop nutrition policy	
		Address the root causes of poor health and well-being, reach out to the individuals and families who need the most support	National Health and Medical Research Council, 2013
		Integration of NCDs and risk factors into national and regional development and economic agendas	UK White Paper Healthy Lives Healthy Living
		Address underlying structural factors which influence vegetables and fruit consumption	
	Implementation	Use a 'ladder' of interventions to determine the least intrusive approach necessary to achieve the desired effect and aim to make voluntary approaches work before resorting to regulation.	UK White Paper Healthy Lives Healthy Living
Resources and enablement	Life course approach vs risk factor approach	Take a coherent approach to different stages of life and key transitions instead of tackling individual risk factors in isolation	UK
		Consideration of a life course approach in NCD policies and programmes	PAHO
	Cross-government and cross	Cross-government campaigns are required to ensure that there is support for and from the different sectors (health services; mass	Puska 2002

	department involvement	media; school curricula; voluntary associations; and food producers, supermarkets and restaurants)	PAHO
		An all-of-society approach for NCDs that promotes strategic alliances both within the health sector and with sectors outside of health, involving governments, civil society, academia, the private sector and international organisations.	Australia Eat Well
		Managing partnerships	
		Shifting power to local communities, enabling them to improve health throughout people's lives	
Process and activity	Education	Education: Inform scientists, policy makers and the public	UK White Paper
		Information: Improve accuracy, timeliness, accessibility, and global comparability of public health information	Baker et al. 2005
		As chronic illnesses are multifactorial, nutrition education and health education through multi-channels are necessary	
Patient orientation	Patient empowerment		
Quality	Quality of care through evidence-based medicine	Dissemination of research evidence	Eat Well Australia
People and competencies		Communication: Develop effective ways to convey public health	Choi (2008)
Value and care design (services)		Designing communities for active ageing and sustainability	UK White Paper
		Reorientation of health systems based on chronic care, including providing training and capacity-building and paying special attention to integrating NCD prevention and control into primary healthcare	PAHO
Measurement and impact		Evaluation: Assess the design, implementation and effectiveness of public	Puska 2002

		health initiatives Monitoring and research	Choi 2008
		A national food and nutrition monitoring system	Eat well Australia
Innovation and best practices		Novelty: Develop novel ways of thinking about traditional and emerging problems	Choi 2008
		Application of the best available evidence, based on public health relevance and impact, using data from surveillance and research, in developing and formulating programmes and policies and in defining further research	PAHO
		Promote innovation	
		Promote private sector investment in research	Eat Well Australia
Culture and teamwork	Multi-disciplinary teams	Multidisciplinary teams and shared decision-making is essential in dealing with chronic diseases in recent literature on an organisation level	Mamudu et al 2011
		Build HR requirements	Eat Well Australia
		Expand tertiary education	
		Train primary HC professionals and non-health workers	

Table 4.5: Summary of factors addressed in five nutrition strategy papers

Although quality was only mentioned in one healthcare strategy, it was obviously implied in the other four papers. While resources and enablement, on the other hand, were explicitly explored in all five papers. The next section summarises the finalised distilled list of factors.

4.6 Taxonomy and development of the factors

The previous sections have led to the development of a list of vital factors shown to be important to the delivery of nutrition interventions. These factors were discussed with an international team of experts and then finally, a list of factors was developed to be used in both quantitative and qualitative phases of the research. Table 4.6 shows the taxonomy of the factors.

		Choi (2008)	H.M. GOV (2010) Healthy Lives Healthy Living	Puska (2002)	Mamudu et al., (2011)	Baker et al. 2005	PAHO (Pan America Health Organization)	Eat Well Australia	Neira and de Onis, 2006	USDA, 2014
1 Strategy	Area	Critical factor								
	Leadership			√						√
	Development	√	√				√	√		
2 Resources and enablement	Implementation		√					√		
		√	√	√			√	√		
	Life course approach vs risk factor approach		√				√			√
	Involvement of cross sectors and cross government		√		√					√
3 Process and activity		√					√	√		
	Education	√				√				
4 Patient orientation										

		Patient empowerment				
5	Quality			√		
		Quality of care through evidence-based medicine			√	
6	People and competencies		√			√
		Autonomy and responsibility				
7	Value and care design (services)		√		√	
		Shared decision-making				
		Integrated care				
8	Measurement and impact		√	√		√
9	Innovation and best practices		√		√	√
10	Culture and teamwork	Multidisciplinary teams		√		√

Table 4.6: Taxonomy of factors

Appendices B and E include the interview pro forma and the questionnaire utilised in the study, which were both primarily based on the taxonomy shown in Table 4.6.

4.7 Summary

The chapter was divided into three main sections. The chapter started with a systematic review that yielded common factors which were listed in the taxonomy section. Additionally, different care models and the different frameworks were used to deduce common factors that deal with NCDs in healthcare, as well as potential factors that play a role in nutrition delivery. Therefore, the third section of the

chapter compiled the factors and formulated the taxonomy upon which the research is built. The research tools used in the methodology utilise this taxonomy.

Chapter 5: The UAE healthcare context

5.1 Introduction

The United Arab Emirates (UAE) has seen drastic changes over the past 50 years. In this chapter, a brief history of the United Arab Emirates will be provided along with an explanation of its demographics and health profile. The chapter will present the transformations occurring from the 1970s up to recent years. The population breakdown and the integration of health promotion and health education will be described along with the healthcare strategy of the UAE. Each authority has several initiatives to raise health awareness and follow health promotion programmes. These programmes are either targeted towards risk factors of lifestyle diseases or targeted towards a certain age, gender or ethnic background.

A brief analysis of the healthcare system is undertaken and a tabulated international cross-comparison of non-communicable profiles shows where the United Arab Emirates stands internationally. The nine global targets to reduce NCDs are shown as one target emphasising the need to understand the availability of a strategy or policies to reduce unhealthy diets. This in turn shows the importance of the role of nutrition in a healthcare system. The chapter compares the different stakeholders in the healthcare delivery of each Emirate, showing the vision, the mission and the main objective, in order to demonstrate the importance of nutrition interventions in order to combat NCDs for each. The chapter also includes healthcare expenditure showing the burden that NCDs pose to the system.

5.2 United Arab Emirates

The United Arab Emirates shown in (Figure 5.1), is part of the Gulf Cooperation Council (GCC), which comprises UAE, Oman, the Kingdom of Saudi Arabia, Bahrain, Qatar and Kuwait. According to a report by the Library of Congress:

“The United Kingdom announced in 1968 and reaffirmed in 1971 that it would end its treaty relationships with the seven Trucial Coast states, which had been under British protection since 1892. Following the termination of all existing treaties with Britain, on December 2, 1971, six of the seven sheikhdoms formed the United Arab Emirates (UAE). The seventh sheikhdom, Ras al Khaymah, joined the UAE in 1972” (LCWEB, 2007).

In this chapter, sheikhdoms will be referred to as Emirates. Figure 5.1 shows the seven Emirates.



Figure 5.1: UAE on the Arabian Gulf - highlighting the seven Emirates

Two decades prior to this formation there was no electricity, no plumbing, no modern schools and no bridges (WHO, 2005). Today, the UAE is the fourth largest oil producer and 30% of the country's gross domestic product is directly based on

oil (OPEC, 2011). The UAE's per capita GDP is on par with leading developed countries of the world; this therefore gives it the power to play an important role in the affairs of the region (CIA, 2009). International collaboration over the past few years, has created advantages for the UAE in terms of managing the problems relating to global public health (Aw, 2010). Figure 5.2 shows the geographical location of the UAE in the Middle East.



Source: CIA (2009)

Figure 5.2: UAE in the Middle East

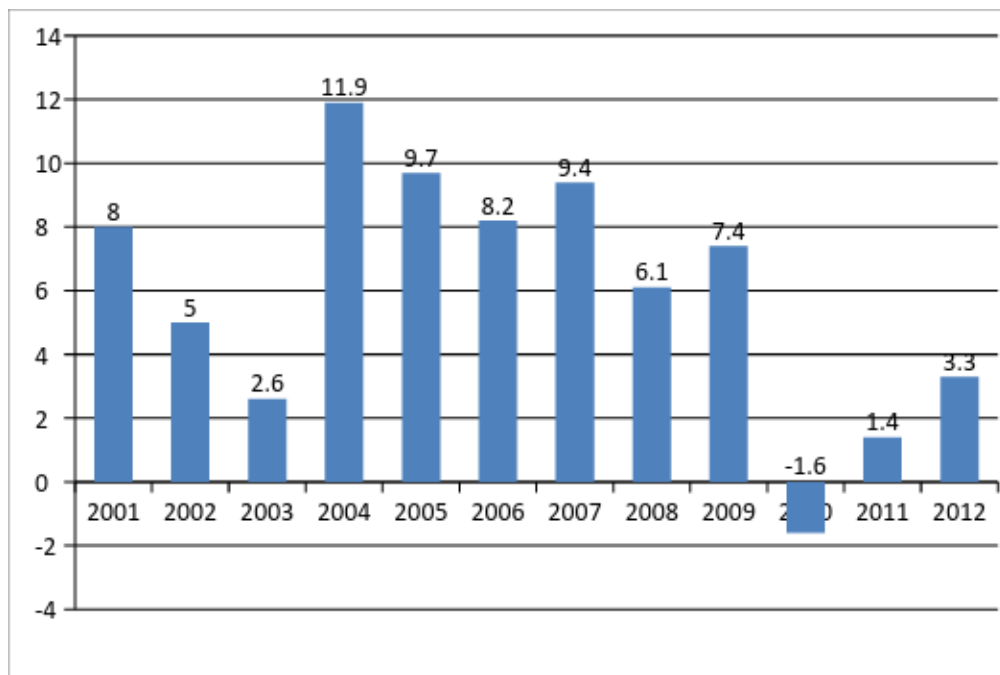
Table 5.1 shows the transformation of the gross national income of the UAE from the 1970s to the 2000s.

	1972	2002
Gross national income	4.7 billion AED	229 billion AED
Gross domestic product/capita	69 000 AED	6.5 billion AED
Non-oil sectors	188 billion AED	2.4 billion AED
Investments	1.7 billion AED	60 billion AED

Source: WHO (2005)

Table 5.1: Transformations from the 1970s to the 2000s

From 1970 to 1990 the GDP per capita average annual growth rate was -4.9%, while from 1990 to 2010 it increased to 0.5% (UNICEF, 2010). Figure 5.3 shows the GDP growth in the past decade.



Source: economictrading.com

Figure 5.3: GDP growth rate from 2000 – 2012

Although the change is within the national population, as shown in Figure 5.3 which demonstrates GDP change over the last few years, it has affected many industries in

the UAE, one of which is healthcare. The next section (5.2.1) explains more about healthcare expenditure in the United Arab Emirates.

5.2.1 Healthcare expenditure and finance

The strategy of the United Arab Emirates, as will be demonstrated in Section 5.4, clearly states the importance of better health for its nation. However, the information relating to the UAE with regard to health expenditure and the nutrition component is scarce on the WHO tables. There is no data on UNDAF (United Nations Development Assistance Framework), PRSP (Poverty Reduction Strategy Paper) or nutrition governance, as shown in Table 4.2 below. The Ministry of Health works in coordination with the EMRO office (East Mediterranean Regional Office) Table 5.2 shows the health expenditure indicators of the UAE.

Indicator	Year	
General government expenditure on health as % of total government expenditure	2010	8.8%
Total expenditure on health as % of gross domestic product	2010	3.7%
Per capita total expenditure on health (US\$)	2010	1,544.0
Nutrition component of the United Nations Development Assistance Framework (UNDAF)		No data
Nutrition component of Poverty Reduction Strategy Paper (PRSP)		No data
Nutrition governance		No data
Monitoring and enforcement of international code of marketing of breast milk substitutes	2007	No
Maternity leave	2009	3 months

Source: WHO (2011d)

Table 5.2: Health expenditure indicators

Public health expenditure is explained by the World Bank as follows:

“Public health expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds. Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation (The World Bank, 2014).”

Table 5.3 shows the financial breakdown of the public health expenditure in the United Arab Emirates.

UAE 2010	
Total expenditure on health as a percentage of GDP	3.7%
Private expenditure on health as a percentage of total expenditure on health	25.6%
External resources for health as a percentage of total expenditure on health	0%
Social security expenditure on health as a percentage of general government expenditure on health	0%
Out of pocket expenditure as a percentage of private expenditure on health	73.3%
Private pre-paid plans as a percentage of private expenditure on health	15.7%

Source: WHO (2011d)

Table 5.3: Health financing, health expenditure ratios

It is evident from the table above that the government plays a role in the health financing of the general public. Information obtained from the WHO has a number of limitations, one of which being that different countries produce financial and accounting reports at different times of the year. Therefore countries that produce July reports may be indicated in the table as 2008, where in reality it is a combination of information from 2007 to 2008. Another limitation is that this information is obtained from national health accounts. Not all countries have a national health account. These reports are therefore generated from a number of sources publicly available and in-country ad hoc surveys to be harmonised into the

national health accounts framework. This in turn is sent to the ministries to be validated and approved (WHO, GHD).

5.2.2 *Population structure of the UAE*

The next section will explain the demographics of the United Arab Emirates, comparing the different emirates, and the difference in population structure between nationals and non-nationals, also showing the need for understanding those different populations for health promotion.

The rapid development of the UAE poses a challenge to the healthcare system as it is composed of a cosmopolitan population. It is important to note that the UAE witnessed a rapid development in its infrastructure and economy which also led to a high influx in the number of skilled and unskilled migrant workers. The populations vary in their background (educational level, religious beliefs and culture practices). The differences in background present a challenge for population-based public health strategies (Loney et al., 2013). Health promotion towards special targets is explained in Section 5.5. The estimated population as of 2010 was 8.2 million, where approximately fewer than 20% of the population were considered to be Emirati (i.e. citizens of the United Arab Emirates) and the remaining population was non-Emirati (Table 5.4).

Nationality	Total
National	947,997
Non-national	7,316,073
Total	8,264,070

Source: National Bureau of Statistics UAE 2010

Table 5.4: Population by nationality (nationals - non-nationals)

Abu Dhabi and Dubai have the highest national population by Emirate. The concentration of nationals in Abu Dhabi is the largest; it is also the largest Emirate according to area. Table 5.5 shows the distribution of nationals in the UAE.

Emirate	Total population
Abu Dhabi	404, 546
Dubai	168,029
Sharjah	153,365
Ajman	42,186
Um Al Quwain	17,482
Ras Al Khayma	97,529
Fujairah	64,860
Total	947,997

Source: National Bureau of Statistics UAE, 2010

Table 5.5: National population by emirate (2010 mid-year estimate)

Based on Table 5.5, it is evident that non-nationals make up more than 75% of the population, which triggers an important aspect for the healthcare industry.

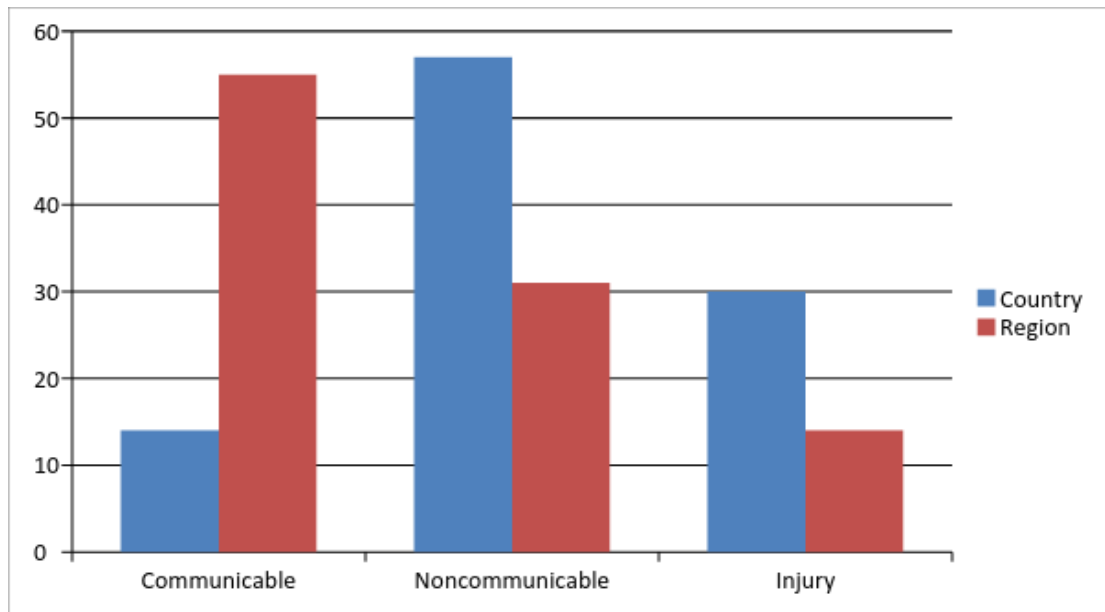
The population comprises of different ethnic groups such as: South Asians, Iranians, Other Arabs, Emirati as well as other expatriates (includes Westerners and East Asians). The languages are Arabic (official), Persian, English, Hindi and Urdu.

The need for customised and targeted health services and promotion programmes are vital to ensure equality of healthcare (Reeder et al., 1996). Evaluation of the baseline knowledge of NCDs is essential before designing and implementing health promotion programmes. This would therefore need planning, as 75% of the population of the United Arab Emirates are from different ethnic backgrounds and socio-demographic characteristics. An understanding of the major health related factors influencing each sector and ethnicity is important. Some of the health promotional programmes would need to be matched to the culture and the linguistic needs of the population (Kreuter et al., 2003). More importantly, programmes may also require cultural sensitivity and a committed social support group is required in order for behavioural changes to be maintained, and for the interventions to continue to be effective (Heo and Braun, 2014). This will be emphasised in the promotion section (see Section 5.5).

5.2.3 Health profile UAE: non-communicable diseases

As of 2008, mortality rates from NCDs were 3,197 males to 1,430 females, according to the WHO. The main limitation of this data is that this data is only a combination of regional causes of death patterns. UAE data is not available on the WHO and does not include chronic diseases in mortality rates (WHO, 2014d). Non-communicable diseases include a number of diseases associated with risk factors. The diseases include cancers, diabetes, cardiovascular diseases and chronic respiratory diseases according to the UN General Assembly Summit in 2011 (UN, 2011). The risk factors for diabetes are commonly known to be poor diet and insufficient activity, which caused 63% of all deaths globally in 2008 (Fernstrom et al., 2012). In 2030, such diseases are projected to claim the lives of 52 million

people, many of whom will die young (WHO, 2010). Figure 5.4 shows the distribution of year's life lost due to different causes in the UAE and the region.



Source: WHO (2011)

Figure 5.4: Distribution of years of life lost by causes: UAE and the region (2008)

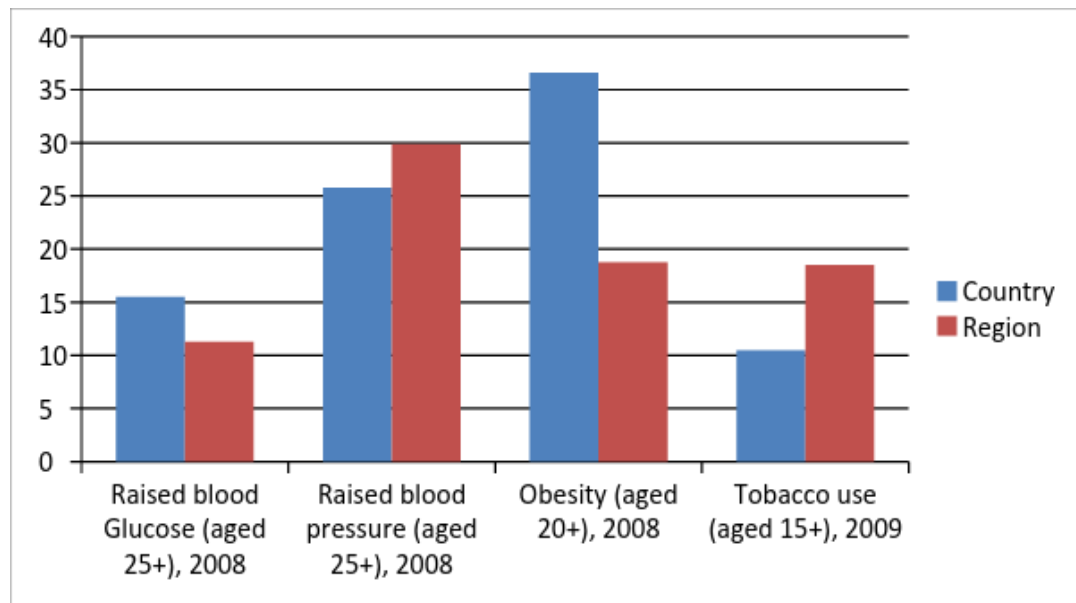
This figure shows that communicable diseases are much lower in comparison to the region's statistics; region refers to WHO Eastern Mediterranean Region (EMRO). Non-communicable diseases are higher; this trend is global and may be due to a number of factors. Changes in lifestyle over the past 50 years of nationals and residents have promoted a sedentary way of life, leading to a change in food consumption patterns, globalisation, and levels of physical activity, which has decreased drastically (Vineis et al., 2014, Maiyaki and Garbati, 2014, Kuartei, 2005, Hawkes, 2006). This is also similar to other GCC countries with the same socioeconomic characteristics (Memish et al., 2014).

Prevention of NCDs was emphasised in the UN General Assembly Summit in New York, September 2011. In the history of the assembly, NCDs was only the second

health topic discussed after HIV in the 1990s (Lamprey et al., 2011). This assembly included many stakeholders, including ministers of health, academicians and politicians, who came together to ensure a plan was set and there was a framework for countries to follow to decrease the incidence of NCDs. Below is a definition of non-communicable disease from the UN:

“NCDs are generally referred to as “lifestyle” diseases, because the majority of these diseases are preventable illnesses, the most common causes for non-communicable diseases (NCD) include tobacco use (smoking), alcohol abuse, poor diets (high consumption of sugar, salt, saturated fats, and trans fatty acids) and physical inactivity. Currently, NCDs kill 36 million people a year, a number that by some estimates is expected to rise by 17-24% within the next decade” (UN, 2011).

Figure 5.5 shows the average percentage of adult risk factors, when comparing the UAE to the Eastern Mediterranean Regional Office. The increased prevalence of NCDs in the targeted population in the UAE increases the burden of disease. The risk factors that are included are tobacco use, high blood pressure, obesity and raised glucose levels (Anderson and Nishtar, 2011, Alwan, 2013, Bryla, 2014, Katz, 2013, Kontis et al., 2014, Marrero et al., 2012). This shows the importance of understanding the role of nutrition, in order to decrease the underlying risk factors for NCDs, as shown previously in the literature review chapters.



Source: WHO (2011)

Figure 5.5: Average percentage of adult risk factors: comparing UAE to the EMRO region

It is evident from the figure above that obesity and raised blood glucose are higher in the UAE than in the EMRO region. Analysis of these figures, however, might be different if the comparison was conducted according to GDP and economic background of countries, as countries in the EMRO region have different demographic, social and health indicators. Despite the fact that hypertension and tobacco use are lower than the region’s average, special attention needs to be set for them so as not to increase in years to come – as will be shown in the cross-comparison (Section 5.3).

In the emirate of Abu Dhabi, reports suggest that cardiovascular disease is the most common leading cause of death in Abu Dhabi (HAAD, 2009). The prevalence rate of diabetes is the second highest in the world (Preliminary Analysis of National Health Screening Programme; Weqaya). While, cancer is the third leading cause of death in the emirate of Abu Dhabi (HAAD, 2009). Such reports and statistics from authorities

show the involvement of the country in surveillance and working towards the goals and vision 2021 (Appendix F), as will be explained later in the chapter (Section 5.4).

In the CIA fact book, according to obesity statistics, the UAE ranks 7th worldwide as shown in Table 5.6.

Rank	Country	(%)	Date of information
1	American Samoa	74.6	2007
2	Tokelau	63.4	2007
3	Tonga	56.0	2000
4	Kiribati	50.6	2006
5	Saudi Arabia	35.6	2000
6	United States	33.9	2006
7	United Arab Emirates	33.7	2000

Source: CIA (2013)

Table 5.6: Obesity statistics, ranking UAE worldwide

This data, however, has not been updated since the year 2000, although the fact book is updated on a weekly basis. Therefore comparing data of different decades may give a distorted conclusion of the ranking. With this high level of obesity, and the increased prevalence observed, intervention programmes are needed. Promotion programmes that target lifestyle changes, food habits and physical activity are needed in order to prevent NCDs (Cipriano et al., 2014, Musaiger et al., 2014).

5.3 Cross-comparison of the UAE with the profile of other countries on NCDs

A cross-comparison of the United Arab Emirates with other countries regarding nutrition strategy to combat NCDs is shown in Table 5.7. This comparison considers the number of units/branches of departments in the Ministry of Health, operational multi-sectoral policies across departments, as well as operational policies to reduce use of alcohol, promote physical activity, reduce tobacco use and promote healthy diets. Evidence-based national guidelines are the only factors reported to the WHO, which shows that standards for management of major NCDs through primary healthcare are available. Surveillance and monitoring systems are yet to be set in place, as well as a national cancer registry.

	UK	GERMANY	CANADA	UAE
Has an operational NCD unit/branch or department within the Ministry of Health, or equivalent	YES	YES	YES	NO
Has an operational multi-sectoral national policy, strategy or action plan that integrates several NCDs and shared risk factors	YES	NO?	YES	NO
Has an operational policy, strategy or action plan to reduce the harmful use of alcohol	YES	YES	YES	NO
Has an operational policy, strategy or action plan to reduce physical inactivity and/or promote physical activity	YES	YES	YES	NO
Has an operational policy, strategy or action plan to reduce the burden of tobacco use	YES	YES	YES	NO
Has an operational policy, strategy or action plan to reduce unhealthy diet and/or promote healthy diets	YES	YES	YES	NO
Has evidence-based national guidelines/protocols/standards for the management of major NCDs through a	YES	YES	YES	YES

primary care approach				
Has an NCD surveillance and monitoring system in place to enable reporting against the nine global NCD targets	NO	YES	NO	NO
Has a national, population-based cancer registry	YES	YES	YES	NO

Table 5.7: Comparing the UAE NCD strategy and policies to other countries

Table 5.7 shows that internationally little has been done with regards to putting surveillance and monitoring systems in place to enable reporting against the nine global NCD targets. On a regional level, a cross-comparison of the UAE with the profiles of other countries in the Gulf region is shown in Table 5.8. It also shows that no surveillance or monitoring system for NCD is in place. NCD strategy development, formation and implementation vary between the six Gulf countries.

	SAUDI ARABIA	QATAR	KUWAIT	OMAN	BAHRAIN	UAE
Has an operational NCD unit/branch or department within the Ministry of Health, or equivalent	YES	YES	YES	YES	YES	NO
Has an operational multi-sectoral national policy, strategy or action plan that integrates several NCDs and shared risk factors	NO	YES	NO	NO	YES	NO
Has an operational policy, strategy or action plan to reduce the harmful use of alcohol	NO	YES	NO	NO	YES	NO
Has an operational policy, strategy or action plan to reduce physical inactivity and/or promote physical activity	YES	YES	NO	YES	YES	NO
Has an operational policy,	YES	YES	NO	YES	YES	NO

strategy or action plan to reduce the burden of tobacco use						
Has an operational policy, strategy or action plan to reduce unhealthy diet and/or promote healthy diets	YES	YES	NO	YES	YES	NO
Has evidence-based national guidelines/protocols/standards for the management of major NCDs through a primary care approach	DK	YES	DK	NO	YES	YES
Has an NCD surveillance and monitoring system in place to enable reporting against the nine global NCD targets	NO	NO	NO	NO	NO	NO
Has a national, population-based cancer registry	YES	YES	YES	YES	NO	NO

Table 5.8: Cross-comparison of the UAE with the profiles of the Gulf Cooperation Council (GCC) member states

Table 5.8 shows that the UAE lacks an operational NCD unit/branch or department within the Ministry of Health, or its equivalent. It also has no operational multi-sectoral national policy, strategy or action plan that integrates several NCDs and shared risk factors. The United Arab Emirates also demonstrate no operational policy, strategy or action plan to reduce physical inactivity and/or promote physical activity. The nine global targets are shown in Table 5.9. Investing in surveillance systems is important in order to cross-compare between countries, as well as compare the data of the country across a number of years (Strong and Bonita, 2004).

Target 1
A 25% relative reduction in risk of premature mortality from CVDs, cancer, diabetes, chronic respiratory diseases
Target 2
At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context
Target 3
A 10% relative reduction in prevalence of insufficient physical activity
Target 4
A 30% relative reduction in mean population intake of salt/sodium
Target 5
A 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years
Target 6
A 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances
Target 7
Halt the rise in diabetes and obesity
Target 8
At least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes
Target 9
An 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major NCDs in both public and private facilities

Source: WHO (2014e)

Table 5.9: The nine global targets to reduce NCDs

All countries have an operational NCD unit/branch or department within the Ministry of Health or its equivalent, except for the United Arab Emirates. Table 5.8 shows the UAE to have evidence-based national guidelines for the management of

major NCDs through a primary care approach. There are currently, in most of the Gulf Cooperation Council (GCC) member states, intervention frameworks in place to reduce the use of tobacco among populations. Research has shown that tobacco control in the GCC countries has witnessed progress over the past decades (Hassounah et al., 2014). However, an operational policy, strategy or action plan to reduce the burden of tobacco is still needed in the United Arab Emirates, as shown in Table 5.8. A number of studies on the GCC states indicate that obesity is common among women in the Gulf states; the prevalence of obesity in Kuwait, Qatar, Saudi Arabia and Bahrain concerns between two-thirds and three-quarters of adults, while 25 to 40% of children and adolescents are overweight or obese (Ng et al., 2011). A number of articles advocate monitoring of the prevalence of nutrition-related NCDs (Ng et al., 2011, Barbosa da Silva, 2014). This is in order to improve the knowledge concerning the epidemiological profile of the population and will provide background knowledge in order to plan health promotion actions.

The UAE strategy in the next section shows the role of nutrition as a preventative measure to decrease NCDs, in its vision. Also, a number of authority's objectives reveal their focus on promoting a healthy way of life in order to reduce the prevalence of those diseases.

5.4 Strategy and policies for NCDs

The health sector is administered by different authorities. At the federal level, there are two entities: the Ministry of Health (MoH) (responsible for regulating the public health sector) and the Emirates Health Authority (responsible for service delivery). At the emirate level, there are also two entities: Health Authority Abu Dhabi (HAAD)

and the Dubai Health Authority (DHA). The Ministry of Health and the health authorities have developed policies and strategies for health development with the aim of further improving the quality of care and access to required primary, secondary and tertiary care. Even with multiple entities involved in healthcare delivery and planning, there are set committees at a national level with representatives of the major entities. These committees are involved in the designing of strategies, the setting of policies, and planning for a more cohesive delivery of healthcare.

In the next section, a number of authorities (including the MoH, HAAD, SEHA, DHA and DHCC) will be listed, along with their related objectives towards NCDs. Evidence of their current policies and promotion programmes will clarify the importance of the subject area to the authorities.

In the following section, the vision of the UAE, the government strategy and the vision and mission of each healthcare authority will be elaborated on.

5.4.1 UAE vision

Vision 2021 of the United Arab Emirates (see Appendix F), under the section “United in Prosperity” states:

“Emiratis will enjoy the highest living standards, long and healthy lives, first-rate education and well-rounded lifestyles guaranteed by excellent public services and recreational activities, within a safe and rich natural and social environment.

All Emiratis are entitled to a comprehensive range of high-quality basic medical services. We want the UAE to invest continually to build world-class healthcare infrastructure, expertise and services in order to fulfil citizens’ growing needs and expectations. A nationwide commitment to quality will provide every Emirati with access to excellent health and personal care services. The UAE will take a proactive stance in developing new, more effective ways to combat locally prevalent and genetic illnesses through support for cutting-edge medical research.

While healing the sick is a clear priority, it is also true that **prevention is better than cure**. The UAE will intensify its fight against lifestyle diseases, where early intervention to change habits can dramatically improve citizens' prospects for quality of life. The government will also act tirelessly to eliminate diseases spread by inadequate public health and sanitation." (MOCA, 2014)

The Ministry of Cabinet Affairs (MOCA) shares Vision 2021 of the United Arab Emirates (this was composed in 2010); and calls for progress in four main areas. In this research, only one area will be quoted and that is "United in Prosperity" as it focuses on the aims of the healthcare system towards the citizens of the country.

5.4.2 Highlights of the UAE government strategies 2011-2013

The UAE government strategies aim to achieve:

"WORLD-CLASS HEALTHCARE: The UAE Government aims to ensure access of all citizens and residents to primary healthcare, and to improve the quality of healthcare services provided in the country to global standards. It also seeks to reduce lifestyle diseases and increase the readiness of the health system to deal with epidemics and health risks.

The UAE Government's strategic directions to build a world-class healthcare system include the following:

- "Ensure universal access to healthcare services by ensuring availability of healthcare services in all regions, and developing health insurance and implementing scheme
- Provide world-class healthcare services by improving governance in the healthcare system, enhancing healthcare services, medical diagnosis and operations while leveraging partnerships, pursuing the accreditation of hospitals and other healthcare providers in the UAE, and upgrading the standards for healthcare professionals
- Reduce epidemic and health risks by promoting a healthy way of life that reduces the prevalence of diseases, strengthening preventive medicine, and developing readiness to deal with health epidemics (UAE, 2011)."

It is evident that there is a slight difference between the 2021 vision and the UAE 2011-2013 strategy. The 2011-2013 strategy states that its goal is to provide an improved healthcare standard to both citizens and residents, while the 2021 vision only specifies targeting citizens who form 20% of the general population. In the next sections, the Ministry of Health, the Health Authority Abu Dhabi, the Dubai Health

Authority and Dubai Healthcare City will be introduced, demonstrating the vision, mission and relevant objective to nutrition.

5.4.3 Ministry of Health

The Ministry of Health is the legislative authority in the UAE, and is the only provider of healthcare services to the northern emirates, with the exception of two hospitals in Dubai.

Prior to 2011, the vision of the Ministry of Health was to attain the lowest preventable morbidity and mortality rates in the world among women and children, and they had a mission to provide preventive healthcare services (for women and for children less than five years of age) that are integrated with the existing health system. They also aimed to continuously explore newer opportunities and means to enhance the quality of care for the health of women and children (MOH, 2005). However, the current vision and mission are shown below and demonstrate the transition of government strategy from communicable to non-communicable diseases. This is also reflected in key informant interview results shown in Chapter 7 (Section 7.4.1).

“Responding to Emirates Vision 2021, and the UAE Government Strategy 2011 – 2013 and in line with the Cabinet executive office directives as per the SWOT analysis and with view to the new role of the MOH under the umbrella of the UAE Health Authority, the MOH has drafted its Strategic Plan (2011 – 2013) with a new vision as follows (MOH, 2014)”:

Vision: "A comprehensive and effective health system for high communal health."

Mission: To enhance and develop the health system in compliance with international standards through effective legislation and strategic partnerships with national and international participants.

One of the objectives states: promote public healthcare standards and raise public healthcare awareness among the community up to international standards (MOH, 2014). The structure of the MOH is presented in Appendix C.

5.4.4 Health Authority Abu Dhabi

The Health Authority Abu Dhabi is responsible for the regulation of the healthcare sector in Abu Dhabi. It defines the strategy, monitors and analyses the population and performance of the system, and emphasises awareness programmes and healthy living standards among residents of the Emirate.

Vision: “The Health System of the Emirate of Abu Dhabi is comprehensive; encompassing the full spectrum of health services and is accessible to all residents of Abu Dhabi. The system is driven towards excellence through continuous improvement, and monitored for achievement of targets. Providers of health services are independent, predominately private and follow highest international quality standards. The system is financed through mandatory health insurance.”

MISSION: “To ensure reliable excellence for the community through driving programmes to improve societal health.”

One of their main objectives is to “drive programmes to improve societal health” (HAAD, 2014).

5.4.5 SEHA

In 2007, the Abu Dhabi Health Service Company (SEHA, 2012), a public joint stock company was formed. The name SEHA translates to “health” in Arabic, which is the official language of the United Arab Emirates. The company’s main objective is to assume the role of the hospitals and clinical operators, and to deliver world-class medicine to the emirate of Abu Dhabi. SEHA was one of the initiatives formed when healthcare reform took place in the emirate of Abu Dhabi. One of the main changes executed by SEHA is contracting international healthcare providers such as John

Hopkins Medicine, Cleveland Clinic, Bumrungrad International, Vamed and Vienna Medical University in order to introduce best practices into public hospitals.

Vision: “To improve patient and communities with world-class healthcare.”

Mission: “To continuously improve patients care to recognised international standards.” (SEHA, 2012)

5.4.6 Dubai Health Authority

Dubai Health Authority was formerly known as the Department of Hospitals and Medical Services (DOHMS). This change, which happened in 2007, led to a newly formulated structure with a vision that states (DHA, 2014):

Vision: “A world-class integrated health system that ensures excellence in health and healthcare for the Emirate of Dubai and promotes Dubai as a globally recognized destination for medical care.”

Mission: “To develop a world-class integrated health system in the Emirate of Dubai by developing and implementing plans, policies and legislations that promote excellence and support the achievement of global standards in preventive, curative, and rehabilitative healthcare.”

The DHA’s main objectives and areas of strategic focus are the following.

Strategic Goal 1 – Better health

The central objective of all health systems is to make people healthier. This requires not only access to world-class healthcare services but also specific measures to prevent diseases and injuries from occurring in the first place – and a focus on prevention as well as cure.

Objective 1.1. Reduce the burden of non-communicable “lifestyle” diseases

Reducing the incidence of diseases such as diabetes, cardiovascular disease and cancer – and underlying risk factors such as tobacco consumption, unhealthy diet and inadequate physical activity – is a high strategic priority. Progress in this area requires a mix of intervention strategies including risk factor prevention, early case detection and effective treatment as well as the development of advanced systems for disease surveillance and monitoring (DHA, 2014).

This shows the importance of NCDs in the strategic planning of the Dubai Health Authority.

5.4.7 Dubai Healthcare City

Dubai Healthcare City is a free zone and offers 100% ownership in a tax-free environment, attracting international high standards in healthcare. DHCC hosts hospitals and many other healthcare related services (DHCC, 2012), including the post-graduate residency programmes and fellowships established by the Harvard Medical School, 350 independent operators, 17 hospitals and medical centres, spa residences and retirement centres, and a number of commercial businesses that are healthcare related.

Vision: “Dubai Healthcare City will become an internationally recognized location of choice for quality healthcare and an integrated centre of excellence for clinical and wellness services, medical education and research.”

Mission: “To enable high quality integrated healthcare, education, research and wellness by forming strategic partnerships. This will deliver exceptional customer experiences, ultimately impacting every member of our society.”

“Mohammed Bin Rashid Academic Medical Center (MBR-AMC) is the education and research arm of Dubai Healthcare City and aims to establish an integrated academic and clinical environment for excellent healthcare, education and research, all aligned to advance the healthcare industry in the Middle East” (DHCC, 2014).

The vision and mission of the different authorities show the importance of quality in improving patient experiences and benchmarking internationally. The Dubai Health Authority objective is directly aligned with the global targets to reduce NCDs.

5.5 Health promotion programmes in the UAE

Health promotion in the UAE targets different sectors of society. Each authority has several initiatives to raise health awareness and follow health promotion programmes. This section will highlight a number of these promotion programmes. Promotion programmes in the UAE are either targeted towards risk factors of lifestyle diseases or targeted towards a certain age, gender or ethnic background.

Health Authority Abu Dhabi (HAAD) has a programme called “Al Weqaya”, a population-level prevention programme. This programme has recruited more than 94% of adult UAE nationals living in Abu Dhabi into a disease management programme to identify and to screen for risks, this will in turn be the identification tool used for targeted intervention (Hajat et al., 2012).

Diabetes imposes an increasing economic burden on national healthcare systems worldwide. More prevention efforts are needed to reduce this burden (Zhang et al., 2010). In the United Arab Emirates, promotion programmes targeting diabetes have been escalating; a number of cohort studies have been performed to better understand its correlation to other diseases, as well as better understand drug effects on the population (Gronbaek et al., 1998, Al-Hassani et al., 2014, Alhyas et al., 2012, Arifulla et al., 2014, Hawamdeh et al., 2013). A need to update data sets for better planning to combat diabetes is also emphasised in a number of articles (Brownie et al., 2014, Blair and Sharif, 2012).

Furthermore, other seasonal promotional and health campaigns are catering to the needs of the country, such as during the season of Hajj (a pilgrimage of Islam at a specific time of the lunar year). Hajj comes with a number of risk factors which are tackled by different authorities via various promotional and prevention programmes, such as pre-Hajj vaccinations, educational materials, as well as distribution of free materials to be used during the Hajj period.

A new study has showed that primary healthcare providers are in need of a targeted health promotion programme for their own benefit and to be a role model for their patients (Alateeq and Alarawi, 2014). These examples illustrate a selection

of the health promotion programmes across the United Arab Emirates that target lifespan and different ethnicity groups. Different authorities may have a number of parallel campaigns. Therefore, communication between authorities is vital and cross-department and multi-sectorial authorities are urged to work together in order to decrease NCDs.

5.6 Summary

The United Arab Emirates has a comprehensive healthcare system, with promotional programmes for targeted groups. Substantial investments have been made in the UAE to make major progress in the healthcare sector. The government's focus on school health, centres and hospitals, and enhancing maternal and child health is increasing. The transition from a focus on endemic communicable diseases to epidemic non-communicable diseases is shown in the vision and mission of authorities. Reducing the incidence of diseases such as diabetes, cardiovascular disease and cancer and underlying risk factors such as tobacco consumption, unhealthy diet and inadequate physical activity, is a high strategic priority. The need for a multi-sectorial national strategy, the need for NCD surveillance and monitoring systems to be in place, as well as the need for an operational policy, strategy or action plan to reduce harmful use of alcohol, promote physical activity, and reduce the burden of tobacco use are vital. It is also vital to differentiate when and whether strategies look at the UAE population holistically, or study and target specific divisions within the population: e.g. citizens, residents, or temporary labour / workforce. The changes seen over the past 50 years have been drastic, as shown in this chapter. The historical transformations

that have occurred since the 1970s demonstrate how the different authorities have improved the quality of care in the United Arab Emirates and aligned it with international standards.

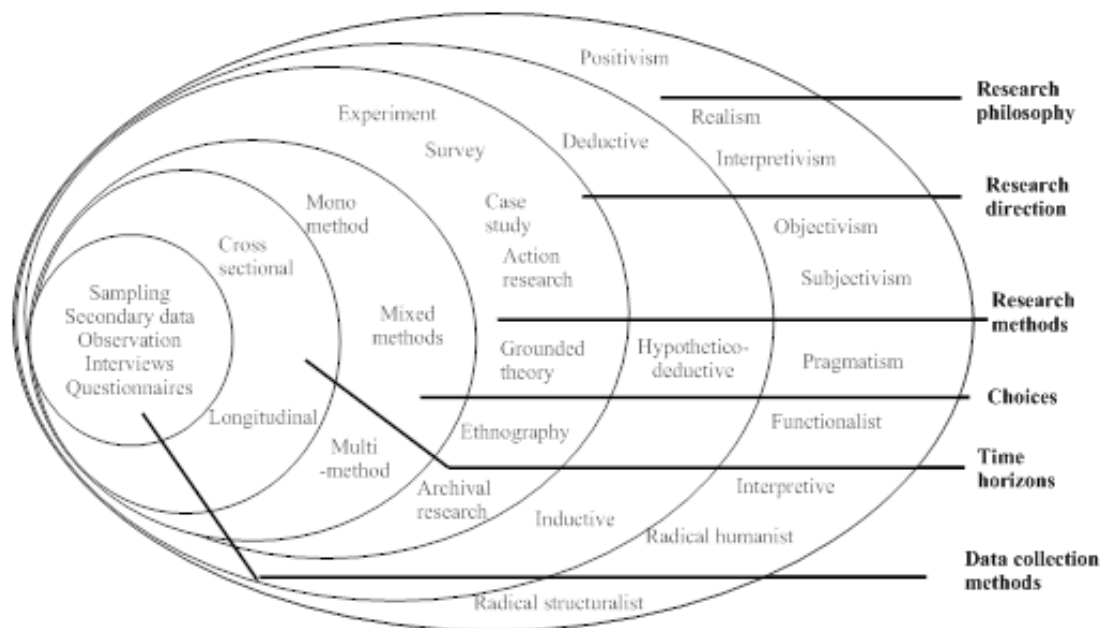
Chapter 6: Methodology

6.1 Introduction

This chapter will explore different research approaches and strategies. The research strategy will show the difference between qualitative and quantitative research methods and mixed methods. This chapter discusses the research methodologies available in general and then, more specifically, those justified as suitable for this research. The use of a triangulated method in the discipline of healthcare management is also shown. The chosen methods demonstrated are the most appropriate to address the aims and objectives of the research in comparison to other methods. This is followed by the rationale for the research design. The details of the methods will be outlined, followed by unit of analysis, tool used and data analysis. A variety of methods are used to explore nutrition interventions in the healthcare delivery system in the United Arab Emirates and as will be seen, each has its advantages and drawbacks. The chapter concludes by summarising the three phases used in this research and their sequence.

6.1.1 *Research philosophies*

In research, there are a number of research philosophies, approaches, strategies, choices, methods, time horizons, techniques and procedures. Saunders et al. (2007) illustrated “the research onion” as below in Figure 6.1.



Source: Saunders et al. (2007)

Figure 6.1: The research onion

The research philosophy chosen by the researcher for this study is the pragmatic approach. Pragmatists claim “a rule for clarifying the contents of hypotheses by tracing their practical consequences” (Johnson and Duberley, 2000).

Moreover, pragmatism in the management paradigm has been seen in recent literature, where its implications on business studies and its applications in economics have been evident (Buchholz, 2012). This approach is adopted because pragmatists argue that the most important aspect of the research is the research question and that will result in data that can be implemented – the focus is on applied research and integration of different perspectives to help interpret the data (Saunders et al., 2009). Pragmatism enables the researcher to use more than one method of data collection to understand the research question; therefore, the

mixed-method approach is acceptable in answering the research question. The mixed-method approach is also named the triangulation method in this research; a detailed explanation of methods will follow later in the chapter.

This philosophy will aid the researcher in coming up with practical contributions and a road map for the UAE. Therefore, there will be a contribution to practice – the road map – and also a contribution to knowledge – the factors that influence nutrition intervention in the healthcare system. The following sections will elaborate on the different types of research approaches, purposes, strategies and methods, as detailed in the research onion in Figure 6.1.

6.1.2 Research approach

Research approaches differ according to the researcher's view on how to obtain knowledge and how the researcher views the world (Babbie, 2008). There are two main types of research approaches: deductive and inductive.

There is no rigid division between deductive and inductive research and Saunders et al. (2009) suggests that it is perfectly possible to combine the two, and that it would lead to more advantaged research as a fallacy in one approach may be explained by the other (Saunders et al., 2009).

6.1.3 Data collection methods

The criteria for choosing the approach depends on the problem being investigated. Quantitative research is experimental and measures in numbers, it would also help in understanding best predictors of outcomes. While qualitative research is exploratory and is useful to understand the variables in examining a problem. A

mixed-method approach, on the other hand, captures the best of both approaches (Babbie, 2008).

In this section the differences between qualitative, quantitative and mixed-method approaches will be explained, also types of methods in each approach will be elaborated upon. The differences between qualitative and quantitative research are summarised in Table 6.1.

	Quantitative	Qualitative
Contact between researcher and informants	Non-existent contact	Close contact with participants
Relationship between researcher and field	Outsider looking into field by applying pre-defined framework to investigate subject	Researcher has to get close and be an insider to the field being investigated
Theory	Should be clear prior to initialisation of research	Emerges as research develops
Approach	Structured Researcher-driven	Open and unstructured Subject-driven
Findings	Numeric, hard rigorous and reliable Time and place-independent	Relate to specific time periods and locales Rich and deep
Focus	No influence of change on social life	Links between social life and behaviour are viewed People's interpretations are studied

Source: Adapted from Bryman (2008)

Table 6.1: Differences between quantitative and qualitative research

The use of one type of research would likely result in more errors linked to the discipline used. Therefore, the use of mixed methods ensures removing bias associated with single technique methods. As always, there are advantages and

disadvantages and so these and the types of mixed-method approaches will be explained below, thereby providing the rationale behind the choice made for this research.

6.1.3.1 Mixed-method approaches: the triangulation method

In the mixed-method approach, recognition of all types of research and the limitation(s) of each method is important. The types of mixed methods depend on the research question and research design. The three types of mixed methods are sequential, concurrent or transformative. Mixed methods in this study will also be called the triangulation method, where more than one type of research tool is used to assess a problem (Banik, 1993, Babbie, 2008). The work that has been done in mixed methods is a compilation of what has descended from the pragmatic movement in the 19th century, where the first generation American pragmatists emerged, such as John Dewey and William James, among others (Bergman, 2011, Buchholz, 2012).

Increasing the research design increases the depth of understanding of the phenomena. Each of the types of triangulation, concurrent, sequential and transformative have subtypes (Plano Clark and Creswell, 2008). The difference is in the time of collecting data through the phases of research. In concurrent, one phase is conducted prior to the next – the themes are deduced and used as a guide for the next phase, while in sequential the phases are conducted simultaneously. The weakness in simultaneous data collection is that each type of data collection will be difficult to compare, and discrepancies between methods need to be resolved. The

strength lies in the cross validation of the research question. The third type is transformative triangulation which can be either sequential or concurrent.

This indicates that if different methods to cross-validate and corroborate the findings are used, the main integration of results will happen in the interpretation and analysis phase of the research. Mixed methods compared to mono methods use shorter data collection periods (Plano Clark and Creswell, 2008), therefore, this will be used to ensure data collection and data analyses are done within the time frame of the PhD research. The limitation of this method is that it will use more than one collection method. This and other challenges will be explored in the next section.

6.1.3.2 Limitations of the triangulation method

The main challenges in the use of triangulation will be shown in this section. First, this method creates a challenge in terms of the discrepancies that arise in the results, and the subsequent difficulty in comparing and analysing different results from the different forms of data (Plano Clark and Creswell, 2008). Secondly, the results may also require high-level efficiency in a number of methodological tools, as opposed to being an expert in one type of data collection method. When researchers combine methods at the design level, a level of consideration is paid to the purpose of the research, and a logical flow is needed (Bryman, 2008).

In the implementation phase, Creswell's concern relates to the sequence and which method precedes the other. In terms of priority, it is important to investigate which method is to be considered most important in influencing decisions if the findings are found to be different from different methods. In the integration stage of the

research, the question posed by Creswell is, “At what stage of the research design are the data from the different methods put into relation with each other?” Finally, from the theoretical perspective, “Is the theory informing the analysis explicitly from the beginning or emerging during the research process?” (Creswell, 2003). This will be justified in the analysis section of the research.

6.1.3.3 Triangulation in healthcare management research

Triangulation has been used recently in many research areas. Ivankova and Kawamura (2010) found a consistent growth in mixed methods research since 2000. “Numbers rose increasingly sharply from the year 2000 (N = 10) to 2008 (N = 243).” This clearly suggests that the use of mixed research methods has risen in the past decade and is being used in multiple disciplines.

Studies aiming to derive guidelines for interpreting change scores on health outcome measures by using the triangulation method are numerous, as the acceptance of mixed-method research has grown in the health sciences discipline (Evans et al., 2011). It is especially essential when holistic and specific information is not readily available about a policy or promotion programme (Condon, 2011, Minke et al., 2007, Anderson et al., 2007).

6.2 Justification for the research question and proposed research design

The principal aim of the research is to explore the factors that influence nutrition interventions in healthcare strategies in the United Arab Emirates. The relevance and appropriate timing of this investigation is enhanced by the meeting of the United Nations (General Assembly meeting in New York, September 2011) in which

all countries participating were encouraged to have a nutrition strategy that aims to reduce the risk factors that result in non-communicable diseases (NCDs). Strategies focusing on NCDs are currently growing in number (Fernstrom et al., 2012).

Due to the prevalence of NCDs in the UAE, and the increasing number of deaths due to those diseases, as well as the financial burden they cause (El-Shahat et al., 1999, Saadi et al., 2006), it is important to address key factors that could decrease those numbers.

Research question:

What are the factors that influence nutrition intervention in the United Arab Emirates' healthcare system?

Sub questions are:

- 1) What are the nutrition policies and/or strategies in place in the UAE?
- 2) How are nutrition interventions implemented in hospitals?
- 3) What factors affect nutrition interventions according to healthcare professionals in the UAE?

Therefore, the research is investigating the availability of a nutrition policy and/or strategy for nutrition. In light of these investigations, the aim of the study is to explore the factors that influence nutrition interventions in driving healthcare strategies for better outcomes through the following objectives:

- 1) To understand the nutrition policies and/or strategies in the UAE.

- 2) To observe the implementation of hospitals' day-to-day nutrition activities.
- 3) To evaluate the importance of factors affecting nutrition interventions according to healthcare professionals.

The research design has been selected based on the methodologies explained, so as to better answer the research question, and serve the objectives and aims of the research.

6.2.1 Research design

In this research, a mixed-method approach that follows pragmatic assumption, and uses a mixed-method design model is to be used. The research follows a sequential exploratory triangulated research design where an inductive, deductive, inductive approach will be followed. The qualitative data from the interviews will be analysed in order to come up with themes to be understood in the case studies, and verified through the questionnaires to professionals.

As the research is sequential, interviews with policy makers will precede other methods used. The logical explanation to this order is that it is essential to extract the general themes from the interviews. Questionnaires will follow the interviews and case studies with professionals, exploring the themes generated. This research will take a cross-sectional view as it takes a snapshot of the current situation for healthcare strategies, and explains the factors that influence the role of nutrition in the current healthcare system. The main general limitations of this type of research include subject bias, geographical differences and validity of each type of method.

Each method's aims, strengths and limitations will be elaborated on in the next sections.

6.2.2 Data collection and data analysis

The data collection will take place in three phases. These phases follow the mixed-method approach in that general themes are deduced from the participants, followed by open-ended observations and concluding with close-ended questions (Creswell, 2003). The first phase entails semi-structured interviews with policy makers in healthcare authorities in the UAE. Themes will be deduced from the interviews and will also bring closer focus to the secondary data and will be followed by open-ended observations in the case studies. The objective of the key informant interviews is to investigate the preventative approaches and role of nutrition in the United Arab Emirates from a policy level. The key informant interviewees were chosen from the main contributors to the UAE healthcare systems.

The second phase includes case studies of different hospitals in the UAE. Hospitals will be carefully selected to ensure all requirements are met. Requirements and selection criteria will be explained later in the chapter. This research is exploratory in nature; therefore, a non-random sample is suitable to understand the phenomena (Bryman, 2008).

Case studies serve the objective of the research by deliberately uncovering contextual conditions of the role of nutrition in UAE by investigating first hand and observing service providers, and exploring the factors from a qualitative point. As

the aim of the study is to understand and explore, therefore this method will uncover much of the needed information.

The last stage of data collection will be derived from the questionnaires which will deal with the close-ended questions. This phase will administer a questionnaire using a large sample of health professionals including doctors, nurses, nutritionists other professionals associated with the plan, delivery, improvement and evaluation of nutrition-based health strategies.

6.2.3 Exclusion of patients

Exclusion of patients from this study was decided early in the process, as the ethical approval form for such a study would delay the outcomes and would not increase knowledge relating to what the government is geared towards. Other studies in the future can look at patient satisfaction with the healthcare strategy, but this is currently outside the scope of this study. Therefore, patients are excluded from data collection and the process will be confined to 'policy makers' and 'healthcare professionals'; definitions can be found in the glossary.

6.2.4 Confidentiality, anonymity and ethical considerations

An information sheet will be distributed among the different populations (interviewees, questionnaire respondents) to ensure that all information is disclosed. The sheet can stay with the interviewee for further questions or concerns. The direct contact details of the researcher will be available in case any respondents want to withdraw from the research.

Different types of consent can be taken from participants, such as implied verbal consent or expressed consent through signature of a short form and/or information

sheet (Bryman, 2008). A standard format information sheet and consent form has been developed for the study.

Due to the sensitivity of the information, a verbal consent will suffice in this type of research in the interviewing phase. The information sheet and consent form will be given to interviewees in any case. The consent form will state how the information will be used and stored. No names will be mentioned in the research itself, but names will be written on the interview slips to understand which interviewee gave what type of information.

Confidentiality will be maintained through ensuring no documentation of names in the data. The only copies of signed consent forms with signatures and names will be stored in a secure cabinet in the School of Management. There will be no mention of names in any of the publications. The participant will have the option of agreeing to the use of an audio recorder as a means for recording documentation, in which the sound files will be stored in a secure location, which will only be accessible by the research team. The information will be destroyed five years after publication.

No ethical approval is required for this type of research, as this type of research is classified as simple uncontentious research with no in-depth interventions applied (Appendix: H).

6.2.5 The interrelationship between all three phases

The following points highlight the rationale for the three phases.

1. The policy level interviews will focus on vision, policy agenda and the healthcare strategy for the UAE articulated through Vision 2021 (see Appendix F).

Information obtained on the UAE healthcare strategy will prepare for the context of the study.

2. The case study analysis will allow a better understanding of the implementation process for nutrition-based strategies that take place and enable a focus on the critical factors that emerged from the literature review.
3. The survey questionnaire will allow the researcher to validate the relevance and criticality of all the factors identified in the literature and emerging from the interviews using empirical testing.

6.3 Phase I: Policy maker interviews

In this section, the structure of the interviews, the questions asked, as well as the sample selection will be discussed. This section will also highlight the strengths and weaknesses of using this type of interview to meet the objectives of the chapter.

6.3.1 Unit of analysis

Policy makers, high-ranking officials in the healthcare industry, as well as members of the national nutrition strategy committee were the target sample for this stage. The snowball technique was used, and involved utilising information and referrals chains among policy maker subjects. The snowball technique is used in the social sciences to study sensitive subjects, networks or rare traits (Kaplan et al., 1987, Singh et al., 2007).

The advantage of using the snowball technique in this context is that it is cheap, simple, cost-effective, and the sample can be easily drawn from the pool of professionals in the policy and planning field through chain referrals (Bryman, 2008). The advantage is in the fact that the target population would be difficult to

sample using other methods. The disadvantage of the snowball technique is in the control of the sample method, bias and the representativeness of the sample. As the aim of the research is to explore, and not generate theory or generalise concepts, and as the advantages outweigh the disadvantages, it was decided that this method should be used.

The sample of interviewees came from different entities such as the Ministry of Health in Dubai and Abu Dhabi, the Dubai Health Authority and Abu Dhabi Health Authority, and the private sector. At this stage of the research, where interviews aimed to explore the UAE healthcare system and better understand the role of nutrition at a policy level, the Ministry of Health – being the legislator of the UAE – was given first priority in the interviews. Selection criteria took into account the position of an interviewee in the healthcare industry: directors, former directors, CEOs of providers, director of sectors in both the Ministry and Authority, were met to discuss three main areas. The areas being: public health agenda in the UAE, healthcare strategies, and the role of nutrition in the healthcare strategy, e.g. what are the protocols and policies used for nutrition in the UAE? Three of the interviews turned into a panel discussion, where the policy maker called in either the head of the nutrition department or the head of the quality department to answer specific areas in the discussion.

6.3.2 Structure of the interviews

Key informant interviews have been recently used in many disciplines (2012). Therefore, a number of guides are available to make sure the questions are answered as intended. Tools outline that a script and a list of open ended-questions

relevant to the topic to be discussed are necessary. The sequence of questions is important – it is recommended to start with factual questions then follow with more in-depth questions (Huberman and Miles, 2002). Ending the interview with a general recommendation and a thank you is appropriate. It is important to have probing questions during the interview, as this channels the answers and makes sure the questions are answered. Probing questions also help to clarify some of the comments, and add details to information if necessary (Huberman and Miles, 2002). The main components of the interview encompass the introduction, followed by the key questions, the probing questions, the closing remarks and a summary.

The criteria for a successful interviewer are listed by Kvale in Bryman (2012) as follows: being knowledgeable, having structure, being clear, gentle, sensitive and open, and having an ability to steer, be critical, remember and interpret, where Bryman also adds being balanced as well as ethically sensitive (Bryman, 2012).

In qualitative interviews, the interaction of the respondent is part of the data collection process. Along with note-taking and digital-recording of the interviews, non-verbal gestures, as well as silences may be part of the data (Oishi, 2003). As this would affect the quality of the data collected, an interview tool, detailing pre-determined probes and prompts can clarify the situation if necessary. Appendix A shows the Interview Pro Forma.

The research design shows that the key informant interviews are part of the first phase of data collection. This is in order to understand the importance of the topic from top leaders in the industry, as well as to understand the nationwide nutrition strategy.

The three key questions in this study are as follows:

1. What are the strategies in place for preventative health?
2. What is the focus on nutrition?
3. How do nutrition programmes fit into the strategy?

The link from the three questions to the main question is as follows: The first question shows the importance of understanding strategies in place for preventative health? As there has been a worldwide shift in strategies of healthcare towards prevention, understanding the United Arab Emirates' preventative measures forms a baseline for the research.

The second question focuses on the role of nutrition. Global health strategies emphasise the importance of nutrition intervention. During the past 30 years, much more information has become available on the role of nutrition in healthcare systems. Nutrition strategies globally focus on different age groups, and include a number of action plans following the directives of the WHO (Pellett, 1994, Shekar, 2009). The NCD Action Plan from the WHO advocates an integrated approach. The action plan is based on a number of factors, such as evidence-based international experience, and prevention and control of NCDs with an emphasis on primary healthcare.

The third question aims to obtain an understanding of day-to-day activities for nutrition programmes. Understanding the programmes' interventions, the factors and the barriers to implementation of nutrition-based strategies is based on the recommendations of many scholars as discussed in the literature review chapters.

6.3.3 *Transcription and digitisation of data (recording)*

Bryman suggests that recording of interviews helps in correcting the natural limitations of our intuition in interviews, and also allows a more thorough examination of what has been said. Recording also helps in counter accusations that the analysis might have been influenced by the researcher's views, or biased by his/her values (Bryman, 2008).

Interviews were audio-recorded following written and/or verbal consent from the participants to use such a device. This creates ground to validate information obtained from key informant interviews. Recordings may be used in the case study section of the research, to ensure the researcher is able to respond more rapidly to different situations, as case studies encompass a number of methods to acquire information.

6.4 Phase II: Qualitative analysis through case studies

In the second phase of this research, a case study method was applied to hospitals in the UAE. Case studies utilised open ended-questions based on the taxonomy themes deduced from the literature. In this section, the structure of the sample selection, the tool, as well as data collection method will be discussed. This section also highlights the analysis types in order to show the basis of the qualitative aspect of the research.

6.4.1 *Unit of analysis*

The hospital was the unit of analysis. Four different hospitals in the UAE were studied. Confidentiality was discussed with the chief executives of each of the authorities, and while none showed concern for their names being mentioned in

the research, each hospital will be referred to by a number to maintain confidentiality. The hospitals will be numbered Hospital 1 (H1), Hospital 2 (H2), Hospital 3 (H3) and Hospital 4 (H4). Each of the hospitals was examined for the ten themes proposed by the literature review (this will be shown in Chapter 8). Any emerging theme from this case study analysis will be used in the next phase of the data collection tool, which is the questionnaire.

The four different types of hospitals comprised both public hospitals and private hospitals. One authority was chosen from the four available in the UAE. One Emirate was also chosen with the authority, as this authority oversees both private and government hospitals in Dubai (see Figure 6.2).

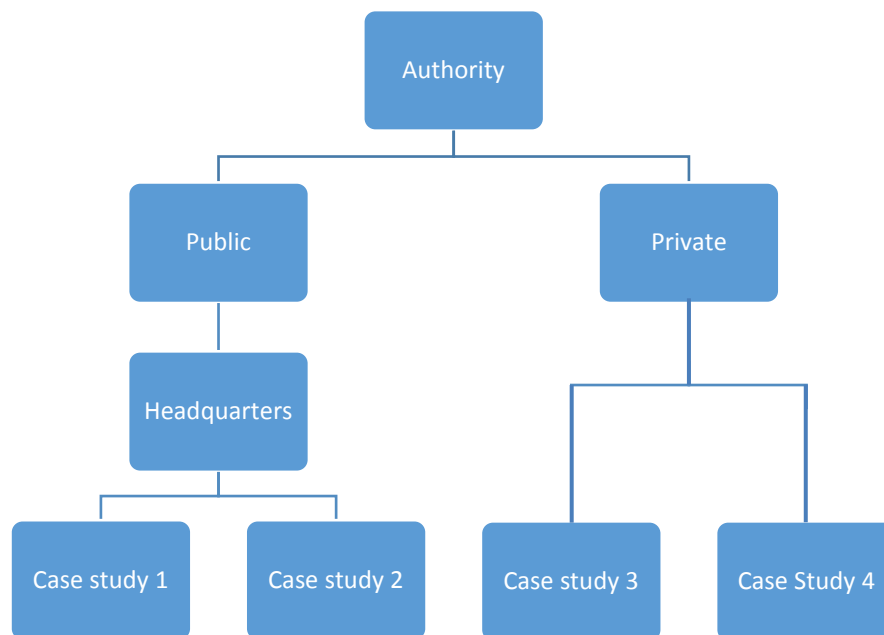


Figure 6.2: Hierarchical structure of case studies

6.4.2 Data collection

Data collection methods in this phase took the form of a few different means:

1. Reports of the authority, printed or online materials

2. Interviews with department members and heads
3. Fieldwork, through observation of different activities related to nutrition.

The information was collected from face-to-face interviews from the different departments in each hospital involved in nutrition activities at any phase. The departments included the chief executive officer of the hospital or their office, the nutrition department, the strategy department, the quality department, as well as the planning department if available.

“The case study design must have five components: the research question(s), its propositions, its unit(s) of analysis, a determination of how the data are linked to the propositions, and criteria to interpret the findings ... operationally defining the unit of analysis assists with replication and efforts at case comparison.” (Yin, 2003)

As this case study is part of a triangulated methodology used in this research, this phase of the data collection aimed to answer the following sub questions:

- How is nutrition implemented to combat non-communicable diseases?
- What are the factors that affect the nutrition strategy? (Ten factors were deduced from the literature and through understanding the hospitals’ positions.)
- Are there any other factors that have an effect on nutrition activities?

A list of factors deduced from the taxonomy of the literature review was used as a basis for the questions (see Appendix G: Taxonomy). The ten themes are shown in Table 6.2, overleaf.

Factors
Leadership
Resources
Process and activity
Patient orientation
Quality
People and competencies
Value and care design
Measurement and impact
Innovation and best practices
Culture and teamwork

Table 6.2: Taxonomy of the literature

6.4.3 Analysis: Multiple case study analysis

Multiple case study analysis can be conducted in a number of ways; the following paragraphs highlight Yin’s approach to analysis of case studies and the approach used by Huberman and Miles (2002). The quality of case study reports may be judged in a number of ways depending on the criteria an assessor uses. Huberman and Miles (2002) suggest that the following criteria may be used: resonance criteria, rhetorical criteria, empowerment criteria and applicability criteria (Huberman and Miles, 2002)

The case study analysis will allow for a better understanding of the implementation process for nutrition-based strategies taking place in the UAE, and will focus on the critical factors that emerged from the literature review.

One way of undertaking case study analysis is to undertake interviews and obtain documents, then write up individual case reports in order to match patterns. This will result in cross case analysis as a final document (Yin, 2003). Another way of looking at analysis of case studies, as suggested by Huberman and Miles (2002), involves analytical manipulations, these include:

1. Putting information into different arrays
2. Making a matrix of categories and placing the evidence within such categories
3. Creating data displays—flowcharts and other graphics—for examining the data
4. Tabulating the frequency of different events
5. Examining the complexity of such tabulations and their relationships by calculating second-order numbers such as means and variances
6. Putting information in chronological order or using some other temporal scheme. (Huberman and Miles, 2002)

The discussion of case study analysis will put information into different arrays, and use a matrix of categories to place the evidence from the four different cases within the ten themes deduced from the literature explaining the qualitative results (This will be seen in the qualitative chapter: 8). The quantitative results, however, are

from the final stage of data collection. The questionnaire to different healthcare professionals will be discussed in the next section.

6.5 Phase III: Quantitative analysis through questionnaire

In this research, in addition to key informant interviews and case studies, a questionnaire has been used on a cross section of the healthcare industry. The questionnaire was used in order to validate the themes deduced from the literature review as well as from the case studies. The objective of the questionnaire is to measure the importance of the factors to healthcare professionals.

6.5.1 Unit of analysis

The sample population for the questionnaire phase of this study is the healthcare professional. This included doctors, nurses, quality department professionals, dieticians and pharmacists.

6.5.1.1 Non-response

One of the major sources of error in any questionnaire is non-response. Non-response affects the quality of the research data. Non-response is the event of not all potential respondents completing the questionnaire, whether due to absence, illness, refusal, etc. and may create bias in the results (Oppenheim and Oppenheim, 1992). The higher the response rate, the better the questionnaire. The reduction in sample size results in a less precise data estimate. There are a number of ways to enhance response rates (Bowling, 2002). Errors in non-response can take two forms, unit and item non-response. Unit non-response is calculated by dividing the number of people who failed to respond over the total number of people invited to take the questionnaire. Item non-response, however, is calculated when piloting

the questionnaire, and the descriptive statistics associated with each question are to be analysed; should one question be skipped by most respondents, revisions are in order (Sue and Ritter, 2007).

6.5.1.2 Response rate

Response rate is calculated by quantifying the number of people who answered the questionnaires, divided by the number of people contacted. Response rate is vital to the questionnaire, as high response rates yield statistically significant results. A number of methods are available to increase response rate such as the cover letter, the advance letter, incentives, translations, appearance of the interviewer, as well as thank you notes (Bowling, 2002, Glidewell et al., 2012, Sue and Ritter, 2007, Thomas, 2004a).

In this study, several steps have been taken to maximise the response rate. Firstly, the cover letter explains objectives, outlining the purpose of the questionnaire, and why it is important for them to answer, as well as stating the confidentiality and anonymity of the respondent. The cover letter also mentions the sponsorship organisation, with which respondents will be familiar. Secondly, an advance letter in the form of an email was sent to the designated personnel from each hospital with the title: "Request for staff in your hospital to answer a questionnaire". Thirdly, the questionnaire has been translated into Arabic, as this is the official language of government hospitals. Fourthly, the appearance of the interviewer, where the interviewer will be available at certain points to pick up and discuss with the point of contact the response rates of the hospital.

Another step that was taken to ensure a high response rate was to test the questionnaire for readability. The questionnaire was tested using the Flesch reading ease score which resulted in a score of 30. This indicates that the questionnaire can be read by university graduates. As the target population involves healthcare professionals in hospitals this should not be a problem. The final step taken when designing the questionnaire was to adjust the length after face-validity and distribution to 30 healthcare professionals to ensure readability, wording and translation. These steps aimed to ensure a higher response rate, without bias from the interviewer interfering with the results.

6.5.2 Tool: Questionnaire design

Researchers use the term questionnaire in different ways, some for the self-administered and mailed questionnaires. While other researchers consider a scheduled interview, or a telephonic interview a questionnaires as well. This is considered a quantitative measure as long as the tool is rigid and close-ended questions are used with scales and measurements. In the following section, as well as demonstrated in Table 6.3 the advantages and disadvantages of each type of questionnaire are highlighted.

Personally administered questionnaires are questionnaires handed to the respondents in person, or to someone official at the organisation. An advantage of personally administered questionnaires is that someone is available to clarify any doubts or issues for respondents. Also, an option for follow up is a possibility, where there can be an option for respondents to indicate whether or not they are willing

to be contacted for follow-up interviews to discuss the matter further (Bryman, 2012).

Criteria	Postal	Telephone	Electronic	Personally administered
Low cost	√		√	
High speed		√	√	
Detailed questions		√		√
Anonymity	√		√	
Rapport with respondents		√		√
Little staff time required	√		√	
High response rate		√		√

Source: Dillman (2000)

Table 6.3: Advantages and disadvantages of different questionnaire types

Personally administering self-completed questionnaires enables numerous questionnaires to be completed at once – in contrast to personally administered interviews, which are time consuming and require much more skill and expense to complete.

The main advantage of self-administered questionnaires is that minimum interview bias is applied, as well as the potential reach a large number of respondents. This, however, does not ensure a high response rate; therefore, if a targeted volume of respondents is needed, a much higher number of questionnaires is to be distributed.

The main disadvantage of self-administration methods of surveys is the lack of control over response. Once the questionnaires have been dispatched to the

respondents, there are a limited number of tactics to ensure the return. Response rate and the need to ensure ways to increase it is a big issue with this type of survey (Thomas, 2004a).

Table 6.4 shows the methods of delivering a questionnaire, showing the difference in strengths and weaknesses between them (Thomas, 2004a).

	Interview/ personally administered	Mail	Telephone	Internet
Response rate	High	Medium/low	High	Medium/low
Response quality	High	Medium	High	Medium/high
Sample size	Small	Large	Medium	Medium/high
Dispersed groups	Poor	Good	Good	Good
Unit cost	High	Low	Medium	Medium/high

Table 6.4: Methods of delivering a questionnaire

For this particular research, according to Table 6.4, the best-fit method of delivery is the personally administered self-completed questionnaire, in order to get a high response rate, with high response quality.

6.5.2.1.1 Methods in scales

There are a number of quantitative measures of construct, two of which are indexing and scales. Index combines a number of items into one single score, while scale measures abstract terms such as collecting quantitative measures of attitude, behaviours or beliefs (Trochim, 2005). As this research aims to understand the importance of factors, a scale is more appropriate than an index. There are a number of scales available to measure attitude and level of importance. Examples

of scales are Thurstone scales, Likert scales, Guttman scaling as well as semantic differential. Thurstone (equal appearing scale), Likert scales (summative appearing scales) and Guttman (cumulative appearing scale measures) have different issues associated with each.

In this questionnaire, a 7-point scale has been chosen in order to reach the upper limits of reliability. When using a 7-point scale, it is always possible to collapse responses into condensed categories if necessary at the analysis stage.

6.5.3 Questionnaire content

Questionnaire content includes formatting, wording as well as types of questions. There are a number of types of questions that can be used, and the objective of the questionnaire drives the types of questions: checklists, ranking, rating, semantic and differential scales.

Ranking questions are different to rating questions. Ranking questions provide information on weighing each answer, while rating questions provide information about intensity, frequency, degree of interest, degree of importance, or degree of agreement (Thomas, 2004a).

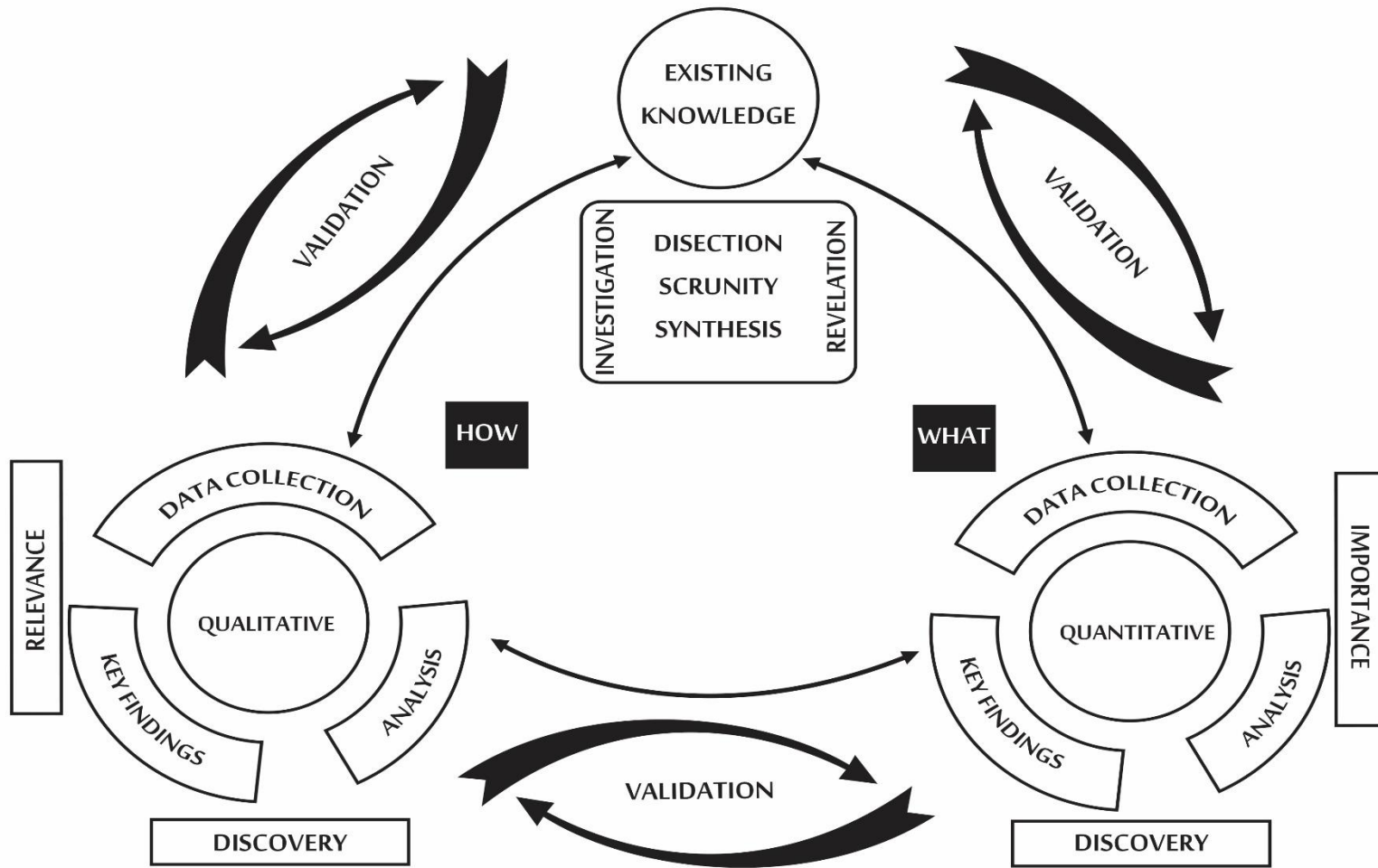
The appearance and design of a questionnaire needs to be clearly printed and professional, it also needs to be appealing and visually easy to read. Self-administered questionnaires need to be designed with extra caution, as lengthy or confusing layouts may confuse the responders which can result in answers being inaccurate or incomplete. The format, order, spacing, font used and grouping of the questions are vital. A space for verbatim allows all respondents to add additional comments (Bowling, 2002b).

In the primary questionnaire design, two types of questions were used, rating and ranking. The ranking question and the Likert-type rating scale is used to understand the level of agreement of professionals with regard to the importance of factors deduced from the literature and the case studies. The professionals will also rank the obstacles faced, and a space for verbatim is provided as suggested by the literature, should they want to explain experiences related to the subject. A thank you note, and contact details of the researcher complete the concluding section of the questionnaire, to increase response rate. This design has gone through a number of reiterations and reviews; section 6.5.4 discusses the validation and review of the questionnaire.

6.5.4 Questionnaire validation

Validity of the questionnaire must be thought of at every step of the process. In this research, a number of steps have been taken to ensure validity of the research.

Figure 6.3 shows the validation area of each step of the research design, where the literature review is validated using the qualitative aspect and through understanding the relevance of the factors found in the literature that affect the implementation of nutrition programmes. This is then validated using a quantitative method. This quantitative method is used to understand the importance of the factors to healthcare professionals, which is then cross checked with the literature review.



Source: Author's own

Figure 6.3: Validity of the research design

Readability can be tested through utilising a number of different types of readability software, to measure the level of qualification or average age required to answer a set of questions. Reliability testing involves a number of methods including test-retest, inter-rater, internal consistency, multiple form, split half, item-item and item-total and Cronbach's alpha. Validity, on the other hand, is done through internal and external validity. Through different forms, face validity, content validity as well as criterion validity.

The questionnaire was constructed from the themes deduced from the taxonomy (Appendix G). The validation went through a number of steps, one of which involved obtaining the opinions of international experts. Five experts on questionnaire design and the Middle East were consulted on the questionnaire via email. Four of which responded with feedback, as shown in Table 6.5. They were asked to give their opinions on a number of aspects such as the design validity, the usability aspect for getting a good response rate, as well as the suitability of the design from the point of view of assessing the various variables and the planned analysis (factor analysis, T-test and ranking analysis). Reviewer 4 has not responded therefore is not included in the table below.

	Reviewer 1	Reviewer 2	Reviewer 3	Reviewer 5
Scale	Use the 5-point scale instead of the 7-point scale	With a 7-item Likert scale there should not be any problems conducting T-tests, F-test, factor analysis, etc. since there should be ample variance	Use a 7-item Likert scale as it increases reliability	-
Number of questions	It might be better again to measure every single variable using at least four questions (items)	Your construct on resources and enablement. The three questions do not adequately pick up on resources fully Section on culture and teamwork. You only have two items here and both measure teamwork, and none for culture		-
Add a dependent variable	Add a variable that measures the success of the programme (as a dependent variable)			
Rewriting questions	Add the questions to the scale, merging both section A and B.	Question 4.1 is double barreled - you should separate it out: one for patient orientation and another one for empowerment Section on culture diversity (title a bit unclear), needs some adjusting		Rewrite a number of questions, suggestions made in a table (11 suggestions on wording)

Analysis type suggested	Conducting T-tests, F-test, factor analysis wouldn't be a problem with 7-point Likert scale	With the current number of questions: principal component analysis for each factor (every 3 questions) MANCOVA or Ancova could be used to obtain the covariance	T-test is usually used when the response data is 'normally distributed'; in ordinal data and non-normal data, non-parametric tests are usually used such as Mann Whitney – Mood Median – Kruskal-Wallis test
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Table 6.5: Reviewer feedback on the questionnaire design and content

The following sub-sections aim to analyse, explain, justify and positively argue why certain options were chosen and provide legitimate reasons for excluding other suggestions.

6.5.4.1 A 5-point Likert scale or 7-point Likert scale

Reviewers 2, 3 and 5 agreed that a 7-point Likert scale would increase reliability and would also be a better option in the analysis of the questionnaire. Reviewer 1, on the other hand, suggested the use of a 5-point Likert scale in order to merge both questions from section B and A. The scale has been left as a 7-point scale as two of the reviewers agreed it would increase reliability, and another suggested it would not be a problem with the statistical measure suggested.

6.5.4.2 Number of questions per theme

The number of questions was shown to be of interest to reviewers. There are three questions per theme, but in some cases just two, most reviewers suggested one more question in every theme in order to get significant statistical measures. Having four questions in each construct would yield better conclusions. The number of

questions can be overcome by combining the ranking question, and merging it into the scale. This would therefore give four questions to each theme.

6.5.4.3 Rewriting questions

Some of the questions needed to be re-written as they were shown to be double-barrelled; other questions had to be reworded due to grammatical corrections, while others were rephrased in order to ensure their relevance to the objectives of the questionnaire.

6.5.4.4 Merging the ranking question into the rating questions

As suggested by reviewers 1 and 4, and as the literature suggests, the opinion of the respondent is required, therefore, it would be better to rate the importance of the factors. The former ranking question would see the respondent comparing the items to each other, and if two answers were of the same weight, respondents would still be asked to sort them into ranking. Changing the ranking question and merging it into the rating scale would therefore solve two issues, one of which is the number of questions in each theme, and the other being that it would give results to the level of importance of the success measure. The question entails a positive measure versus a negative measure on the importance of the factor. The question could take two forms, it could ask about the barriers that most affect effective programmes, or it could positively measure the importance of a factor in the success of a programme. The latter was chosen, as it fits the aims and the objectives of the questionnaire.

6.5.4.5 Good response rate

Reviewer 3 suggested that a good response rate is expected, as the length of the questionnaire is short. Reviewer 5, on the other hand, suggested that online responses are found to be poor in terms of reliability. Therefore, the length of the questionnaire did not change.

6.5.4.6 Suitability of the design for the analysis suggested (factor analysis, T-test and ranking analysis).

Reviewer 2 suggested that there wouldn't be a problem with a 7-item Likert scale for conducting T-tests, F-tests, factor analysis, etc. since there should be ample variance. Reviewer 3 was concerned with the number of questions in each theme and suggested that, with the current number of questions, principal component analysis (PCA) might work better for each factor (every three questions). MANCOVA or ANCOVA could be used to obtain the covariance at a later stage. Reviewer 4 suggested using indexing on the number of questions available (three questions per theme). Reviewer 5 suggested looking at the response rate, and if it is normally distributed then a T-test is usually used; in ordinal data and non-normal data, non-parametric tests are usually used such as Mann Whitney – Mood Median – Kruskal-Wallis test. This shows that a number of analysis measures could be done on the data collected from this questionnaire and there were no comments on the suggestions made. Therefore, the 7-point Likert scale will be used, and factor analysis will be performed followed by MANCOVA.

6.5.5 Piloting the questionnaire

Pre-testing of the questionnaire is essential to ensure the validity (Bryman, 2012). In this section, the purpose of piloting the questionnaire, the advantages and

disadvantages, as well as the number of participants will be discussed. This section will also include the types of pilot that can be conducted to validate a questionnaire, concluding with steps to be considered for piloting.

A pilot study, also referred to as a feasibility study, is a mini version of the full-scale data collection. The pilot phase is crucial to the success, and while it does not guarantee it, it increases the chances of success of the main study. A good study design includes a pilot in order to justify the methods, as well as increase the validity and reliability of the research. There are a range of functions that a pilot can provide, as well as provide an insight into the process of the research. This pre-testing phase of the research instrument shows the different pitfalls that can be avoided in the main study (van Teijlingen and Hundley, 2002). Stages in questionnaire design include piloting as shown below in Figure 6.4:

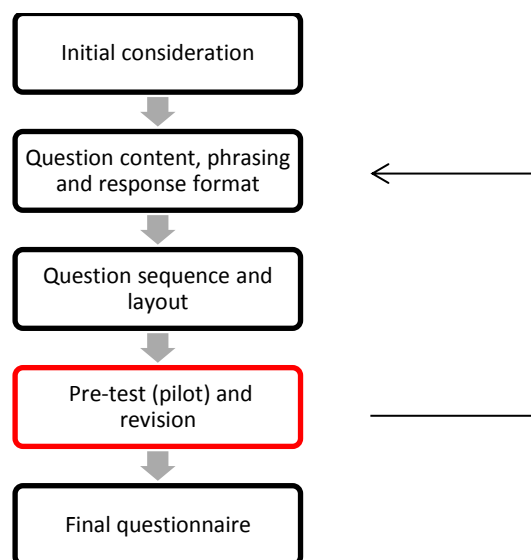


Figure 6.4: Stages in questionnaire design

Pre-testing and piloting can lead to suggestions that then feed into the content, phrasing and response format, as well as the sequence and layout of the questionnaire.

The benefit of conducting a pilot is that it enables the researcher to determine a range of points that can affect response rate. This can vary from whether the cover was inviting enough, whether there were any problems with the questions asked, whether the format is user friendly and whether the coding works as intended. In this research, a number of precautionary steps have been taken to minimise the types of bias associated with the technique chosen.

In this study, the piloting was conducted over three stages:

- The first stage looked at face validity, where the questionnaire was printed and distributed to nine students, they were observed to check for ambiguity, as well as asked about the format of the questionnaire. The format and the length were refined and a number of questions were reworded.
- As mentioned above, the second stage of validity entailed the questionnaire being sent to five senior academicians and practitioners with prior knowledge of the Middle East region and an interest in specific disciplines in healthcare management, and also individuals with knowledge in the use of quantitative methods.
- A pilot of the questionnaire was tested on 30 individuals where descriptive statistics were used to test for reliability by Cronbach's alpha.

Based on the responses, minor changes were made to the questionnaire. Respondents seemed to understand the content and relate to the questions.

6.5.6 Questions

The final questionnaire was made of two sections (Appendix E):

- Section A considered the level of agreement with 11 themes, each theme included three questions and a fourth question on the level of importance of the particular theme.
- Section B looked at demographics of the participant including gender, age, level of qualification, occupation, number of beds in the hospital and where the hospital was based.

6.6 Summary

This chapter demonstrated the different disciplines and methods utilised in this study. Saunders' research onion showed the different layers of methodology and methods, bearing in mind the philosophical background of the research. Qualitative research results in knowledge that is non-numerical, while quantitative research shows results that are numeric. Triangulation methods use both types of data and multi-method approaches and are utilised in this research to establish a case study for the factors that influence nutrition interventions in the healthcare system of the United Arab Emirates. The choice of methodology has come from understanding the types of methods available, and by carefully selecting the methods that would best answer the research question.

The proposed research design includes three stages that will be used for triangulation to lead to the broader framework to understand the current policy prevention plan of the UAE. The three stages are as follows:

- Phase I: key informant interviews to pilot and deduce the relevant questions for the second stage.
- Phase II: case studies of hospitals in the United Arab Emirates.

- Phase III: questionnaire with healthcare professionals from different departments on nutrition services provided and their perceptions of the importance of the themes discussed.

Chapters 7, 8 and 9 will discuss each phase separately. The sample population includes participants from the Ministry of Health, Department of Health, health authorities and different diet centres. Key points will be analysed and interpreted from this diverse group to suggest a plan for the UAE to ensure risk prevention.

Chapter 7: Phase I analysis: policy maker interviews

7.1 Introduction

In order to understand the UAE healthcare system, a number of policy makers were interviewed. Ten people were interviewed, comprising four CEOs of hospitals, one advisor to the health sector and five directors of departments. The directors were from different departments, such as those dealing with quality, health policy and public health.

In this chapter, analysis of the semi-structured interviews will be detailed, along with an explanation of the development of the interview guide, the portfolio of the interviewees, the data collection strategy and a discussion of the analysis of documents obtained from interviewees.

7.2 Portfolio of interviewees

The range of interviewees were undertaken with different entities in the United Arab Emirates. An advisor from the health sector, as well as a director of quality, director of health policy, director of public health from legislative authorities and four CEOs from different hospitals were met. Figure 7.1 shows the quantity and position of the respondents.

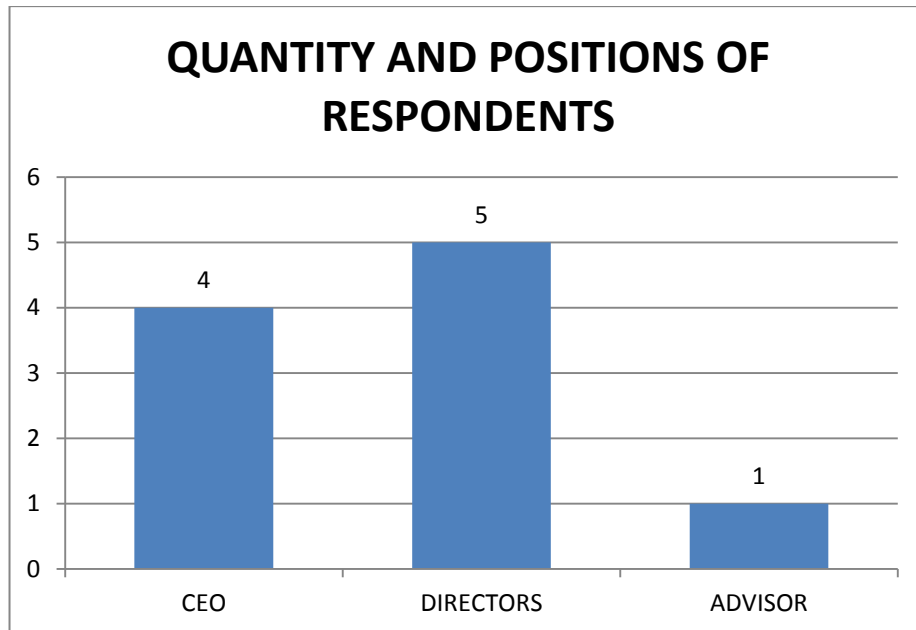


Figure 7.1: Quantity and position of respondents

The different policy makers shown in Figure 7.1 were met for interviews, each spanning between 30 minutes and 1 hour and 15 minutes.

Interviewees were from different authorities across the Emirates, mostly focused in Abu Dhabi and Dubai. Abu Dhabi and Dubai are the main regulators in the United Arab Emirates (Latham and Watkin, 2013). The six authorities were chosen due to being the main regulators for health.

The policy maker interviewees resulted from utilising the snowball technique, which provided access to other policy makers at the same level but in a different authority. Authorities of the UAE were explained in Chapter 5 (see Section 5.4).

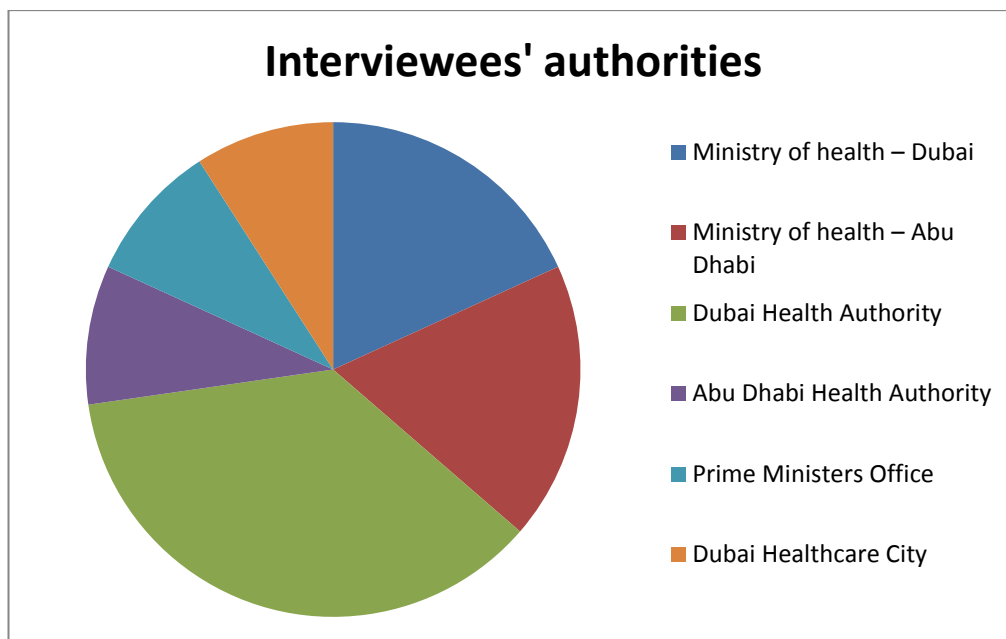


Figure 7.2: Interviewees' authorities

The interviewees also provided a number of external documents related to the subject. Table 7.1 shows the different secondary data documents also analysed in this chapter.

Secondary data
Annual Health Statistics Report 2008
MOH Policy on Feeding Infants and Young Children
MOH Protocol of Nutrition during Pregnancy
MOH (Draft) Nutrition Strategy
DHA Protocol for Nutrition inwards Protocols
MOH United Nations Meeting
2012-2021 Government Strategy to Combat NCD
Highlights of UAE Government Strategy
Main Framework of GCC NCD Prevention Plan
Gulf Committee for Control of NCDS

Table 7.1: Documents provided by the different authorities (secondary data)

Most of the interviewees provided documents about the authority or department working on the specific areas about which questions were asked. Secondary data analysis using existing data limits the types of analytical frameworks that can be used. In this chapter, the responses from the interviewees as well as the documents (secondary data) provided will be analysed using thematic analysis. The aim of the key informant interviews was to understand the role of nutrition in the UAE and the healthcare system.

7.3 Data analysis strategy

Thematic content analysis was used to identify and interpret issues arising from the interviews. Familiarisation with the patterns, coding of the information and identification of the themes are all presented in the next section.

The phase uses qualitative analysis in order to gain insights into the healthcare system. Along with the data collected in the interviews, unpublished reports, documents and relevant files of the United Arab Emirates were examined to assess nutrition programmes and their application in the healthcare system, in response to chronic NCDs.

Analysis of the interviews resulted in four themes. Figure 7.3 shows the results of the qualitative analysis of the key informant interviews.

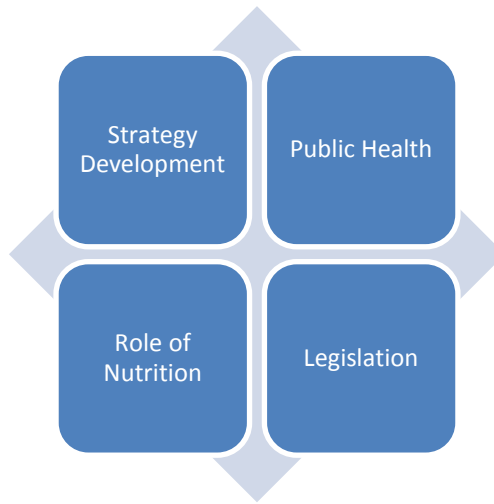


Figure 7.3: Results of qualitative analysis

The four themes are as follows: Theme 1: Strategy development discussion of the shift in strategy from communicable to non-communicable diseases. Theme 2: Public health discussion of the different legislators responsible for public health. Theme 3: Discussion of the factors that influence the role of nutrition in the UAE healthcare system. Theme 4: Explanation of the legislation process of the UAE healthcare system.

In this section, the ten interviewees will be quoted, and analysis of the secondary documents will be referred to, according to authority and not according to person.

7.3.1 Theme 1: Healthcare strategy development

Healthcare strategy was the first theme of the analysis as it had been referred to by a number of interviewees in their responses. The pattern of responses emphasised the shift of strategy toward a focus on NCDs in recent years.

The UAE healthcare strategy had focused in the past on communicable diseases. This was evident from certain articles published in the annual reports of preventative medicine, and the protocols and manuals set by the WHO and Ministry

of Health. These articles included “Manual of Tuberculosis Control in the UAE”, “Guidelines for Poliomyelitis Eradication in the UAE”, “Malaria Control Report”, and “An Update on HIV/AIDS Endemic in the UAE”. The documents mirrored the white papers published by the WHO worldwide (WHO Malaria Policy Advisory Committee, 2014, Ciaranello et al., 2014, Magdzik, 2000), but were customised towards the priorities of the United Arab Emirates’ population, as explained by interviewees from the Ministry of Health and the Department of Health.

Today, the UAE has observed a shift, where the focus now lies on non-communicable diseases. This is evident from the draft national nutrition strategy, as well as from numerous interviews. One of which is the response from an interviewee from the Ministry of Health, stating:

“Control of communicable diseases is given top priority in the national strategies of the UAE. Due to the success in former plans, such as eliminating malaria, and polio and reducing the occurrence of vaccine preventable childhood diseases, this has encouraged the UAE to adopt more ambitious plans.” (Interviewee from the Ministry of Health)

The central theme here is similar to the point discussed by a numerous studies, where a shift towards healthcare systems focusing on NCDs is evident.

The interviews demonstrated that the Ministry has reached its goals in eradicating communicable diseases (malaria, tuberculosis, etc.) and the healthcare strategy has changed over the years, shifting the focus to NCDs. While the need for an efficient monitoring and evaluation mechanism, as well as a functional surveillance system, is still a challenge, and was the focus of three of the interviews, it has been shown that surveillance systems and effective monitoring of nutrition programmes are important for a successful nutrition strategy.

At the time of interviews, the Ministry of Health was in the process of drafting a national nutrition strategy. The focus of the updated nutrition strategy was on nutrition and preventative measures in restricting risk factors and targeting populations through multi-sectorial approaches.

The strengths of the role of nutrition in the healthcare system is that at both a provider level and regulation level it has departmental policies. Nutrition also has input in how to deal with high-risk patients and promotion programmes to deal with the highest prevalence diseases, such as diabetes. The weakness of the role of nutrition in the healthcare system, however, is amplified due to the lack of institutional capacity, as highlighted in the draft strategy:

“Inadequate policy frameworks to plan, implement/monitor sustainable nutrition programmes that respond to the multi-sectorial dimensions of nutrition programmes” (Draft: UAE National Nutrition Strategy).

One representative emphasised a number of factors that pose a threat to nutrition strategy such as:

“A number of other factors increase the burden, such as the prevalence of obesity and non-communicable diseases, and the change in eating habits from that of a traditional lifestyle to a western lifestyle. Other major weaknesses are the lack of consumer protection law and inadequate technical capacity in nutrition, as well as inadequate health and nutrition training.” (Interviewee from the Dubai Healthcare City)

Therefore, the first theme discussed the factors as well as aspects of healthcare strategies on NCDs. When interviewees were asked about nutrition programmes, they referred to the healthcare system, the draft of national strategy focusing on the method of implementation. A main discussion point was the possible surveillance of the population in order to form a baseline from which to start the nutrition programmes, as well as a number of other programmes focused on NCDs.

The following theme looks at public health and its position in the United Arab Emirates' healthcare system.

7.3.2 Theme 2: Public health in the UAE

The second theme focuses on public health in the UAE in general. This emerged in response to the two questions asking about nutrition in the current healthcare system, and the strategies in place for preventative health.

A Ministry of Health (MoH) representative explained some of the history of the United Arab Emirates and the effect it has had on public health in the country. In the past, many diseases (such as measles, whooping cough, malaria and hepatitis) were prevalent. But in recent years, diseases have been more related to diabetes, cardiovascular diseases, as well as cancer and respiratory diseases. This has been due to the direction of the Ministry of Health after the Unity of the United Arab Emirates in 1971, where the main focus of the country was to prevent the widespread of diseases by establishing nationwide programmes, such as national immunisation programmes (1971) and national malaria control.

“Due to the success of implementing those measures to prevent communicable diseases we are seeing less of those diseases, in the meantime, at the same time, because the country is witnessing a rapid change in the industry and standard of living, most of the residents of the country are living a western lifestyle, more people are becoming obese, less mobile and don't move a lot, they don't eat healthy, they eat a lot of snacks, and they smoke a lot, this has led to an outbreak of non-communicable diseases. So the country has focused on a nationwide control strategy addressing the four major diseases and four major risk factors.” (Interviewee, from Abu Dhabi Health Authority)

This quote emphasised the effort of the Ministry of Health to take a preventative approach towards nutrition-related diseases or NCDs. Transition of disease type in the UAE has formulated a shift in the agenda of the authorities.

“Previously the UAE had high levels of communicable diseases, while today non-communicable diseases take a major role in attention. This is a global trend due to the increasing prevalence and the burden on the economy and budgets of national authorities” (Interviewee from Department of Health).

This public health concern was shared among several of the interviewees, and there was some discussion that the health authorities need a standalone department to deal with public health issues, which is currently not available. One interviewee stated that they were currently working on a unifying a strategy for public health initiatives, as the strategy is presently unclear. There is a small department called public health under the category of primary healthcare. The plan is to take this to the next level and have public health as a standalone department.

“They are currently working on a unified strategy. We have an office called public health under primary healthcare; this has been discussed to be changed into a standalone public health”. (Interviewee from the Ministry of Health)

Another interviewee explained that the municipality is the owner of public health services and the health authority is a stakeholder in public health. Clinical nutritionists are available in the health authority, but the community component is dealt with at a municipality level. The municipalities are responsible for public safety, ventilation regulation, water supply, air pollution and food handling. As the interviewee explained the role of the municipality in public health, another main point came up, which was the cascading strategy from the Gulf, as the UAE is part of a six-country union (see Chapter 5). The Gulf Cooperation Council also meets to discuss hot health topics.

The Gulf Strategy (2000-2013) emphasised the importance of understanding the prevalence rates of risk factors for cardiovascular diseases and diabetes, as well as enquiring into the level of burden these impose on the economic community.

Discussion on the role of effective interventions of primary prevention, in addition to cost effectiveness of secondary and tertiary prevention is discussed in the document titled “Global strategy followed by the executive plan for control of NCDs (2000-2013)” and the international plans based on “Framework convention for tobacco control” “International plan for diet and physical activity” and Implementation of global strategy for control of NCDs” have been of importance in past conferences at the Gulf-level strategy (Gulf Committee for NCD).

It was apparent from this question, especially with regard to interviewees from the Ministry of Health, that there is a hierarchy in the strategy. Figure 7.4 shows that the WHO strategy cascades into the Gulf strategy and then into an action framework strategy for the United Arab Emirates.

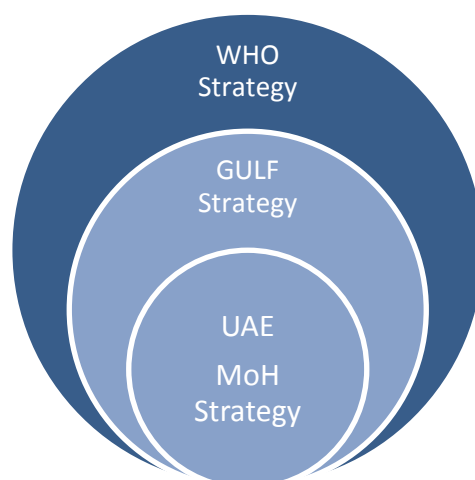


Figure 7.4: Dissemination of strategy

“To define the framework behind a National Nutrition Strategy and Plan of Action, the Ministry of Health has requested WHO – EMRO support to review and establish a National Nutrition Strategy and Action Plan for the period of 2010-2015.” (Draft Nutrition Strategy)

The level of interest that policy makers have in a national nutrition survey shows the importance of nutrition interventions in the current healthcare system. The different factors that affect it will be discussed in Theme 3.

7.3.3 Theme 3: Role of nutrition

It is evident that there is not one unified source for a strategy, but rather a segmented implementation of it. The majority of those who were interviewed cited that there was no one single strategy for nutrition in the United Arab Emirates. There are however, a number of different policies of nutrition under different departments. There are a number of factors that affect the implementation of the programmes and those will be highlighted in this section. The role of nutrition in the Ministry of Health, for example, is the responsibility of three departments that deal directly or indirectly with nutrition. The three departments are health schooling, the mother and infant department and the clinical dieticians in the hospitals.

The majority of those interviewed at a legislative level referred to the General Assembly meeting on non-communicable diseases in New York (September 2011) at the United Nations, and its power to change. This meeting was the second health topic ever discussed in the General Assembly, after the discussion of AIDS/HIV in the 1990s, which caused a sharp decrease in the incidence of AIDS/HIV in many countries. This led to the belief that this milestone would, therefore, decrease the prevalence of NCDs. This is to be done by reducing underlying risk factors, one of which being unhealthy diets.

The United Arab Emirates took part in the New York September 2011 Assembly; this shows the importance of the topic to the Ministry of Health. This was also emphasised in the response of a participant at the United Nations meeting:

“NCDs have a significant impact on the UAE; prevention and control is in our grasp. By adhering to the recommendations above and adopting “best buys” the UAE can substantially reduce the incidence, prevalence and impact of NCDs throughout the nation” (Interviewee from the Ministry of Health).

A number of actions are required to reduce the incidence and prevalence. Cross-department campaigns and cross-government interaction, increasing the communication between authorities, and availability of national statistics on all NCDs, is what an interviewee from the Department of Health emphasised.

This shows that there is no single overarching nutrition strategy as yet. However, as one MOH interviewee emphasised, a national nutrition strategy is currently in the draft phase, but for successful implementation a baseline is needed. They have therefore formulated a committee to undertake a national survey. The National Nutrition Survey committee members include academicians and policy makers from different authorities in the private and government sectors to ensure a proper follow up. The MOH representative explained that to implement the draft strategy set forth by the Ministry, it is important to understand the current health status of the population:

“We are trying to have a national nutrition survey. Since we are going to implement the national strategy we need a baseline, information for certain indicators, so that by the time we follow them, we can make sure we are heading to the objectives by measuring the indicators.” (Interviewee from the Ministry of Health)

From the clinical perspective, the healthcare providers that were interviewed emphasised the importance of nutrition through designated nutrition departments.

The roles and responsibilities of the nutrition department were explained thoroughly and can be seen in the list below, as per the discussion with an interviewee from the Department of Health:

1. Clinics that are attached to diabetes departments as well as cardiology departments.
2. Nutrition departments in hospitals provide services for all medical departments.
3. The nutrition department is responsible for the catering department.
4. Annual educational programmes for those with diabetes.
5. The health services sector in the authority oversees the educational programmes (internally in the hospital; externally as different).
6. Seasonal health programmes such as:
 - a. Ramadan health programmes available through different media (Radio/TV).
 - b. Summer nutrition programmes to enlighten the public about healthy summer habits.

This shows the multi-factorial approach taken by providers to ensure that education and promotion is done through different media methods. Based on a meeting with the head of the nutritionist department in a health authority, it became clear that there is an emphasis on TV and radio, while e-health is used, but to a lesser extent.

A number of interviewees highlighted the fact that the hospitals are accredited by the JCI (Joint Commission International). It is a requirement to have nutrition in a central role to obtain such an accreditation. There are many policies set forth by the

JCI; these are then adapted to fit into the culture and system of the hospital. This is explained by one of the interviewees as follows:

“We have taken the JCI [recommendations] and adapted a number of them in the department, we have nutrition assessment of patients and food provided in hospital. Difficulties arise when there is a need to manage food provided from outside. The quality, safety and quantity of the food needs new policies” (Interviewee from the Department of Health).

A small number of policy makers suggested that education at the prenatal stage plays a vital role in the overall health and nutrition of mother and child by stating:

“We have parental education (currently on mothers, to educate throughout the process of delivery from first trimester until you deliver) now there is breast feeding education, throughout the pregnancy from conception until delivery” (Interviewee from the Department of Health).

This is backed up with information obtained from the protocol used in the Ministry of Health for mother and child. There is a clear reactive approach that providers must take in response to high-risk patients, while the proactive preventative approach is taken by regulators in the country and is aimed at the population as a whole. As one of the interviewees mentions:

“Also all expecting mothers are referred to anti-natal clinic, people with higher risk they are referred to the nutritionist, (hypertension, diabetes...) and they are then seen by a medical clinic, once a week for the high-risk people.” (Interviewee from the Department of Health)

It is important to understand the layers through which the system works, to ensure proper lines of coordination for better implementation of preventative measures using optimum nutrition awareness. In the section below, the United Arab Emirates legislation and regulation will be explained briefly.

7.3.4 Theme 4: Legislation and regulation

Acknowledging which authorities and regulator roles exist in the UAE healthcare system helps to better understand the healthcare delivery system of the UAE. Abu Dhabi and Dubai have authorities with staff and strategies that are set by each authority, which ultimately fall under the country's legislative system: the Ministry of Health. Although both cities fall under the legislative system of the Ministry, the quality of services and the number of facilities are different.

With the recent reform in 2007, many of the authorities have been redefined. The following section will present an overview of the interviewees' explanations of the current healthcare system that are within the theme of legislation of healthcare delivery and centralisation of policy.

7.3.4.1 Legislation and healthcare delivery

Although the Ministry of Health acts as the federal legislator in the United Arab Emirates, it is only a provider to the northern Emirates. Abu Dhabi and Dubai have independent authorities that have healthcare providers for staff and services. Therefore, it can be said that the UAE healthcare has a centralised legislative system, represented in the MoH, but it shares a decentralised healthcare providing model, which can be seen in Figures 7.5 and 7.6, respectively.

7.3.4.2 Centralisation of policy and legislation

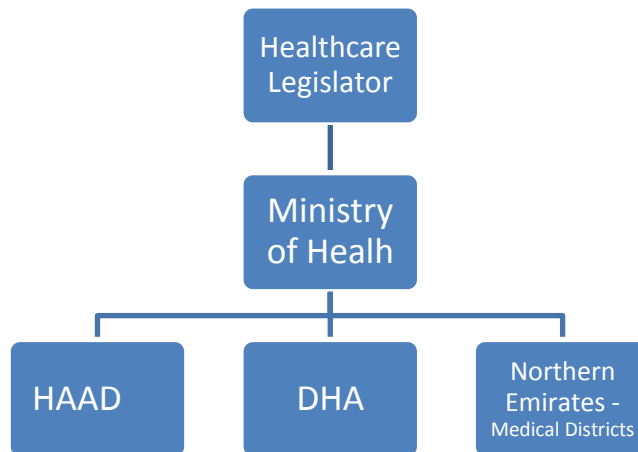


Figure 7.5: UAE centralised legislative system

Decentralisation of providers in the UAE:

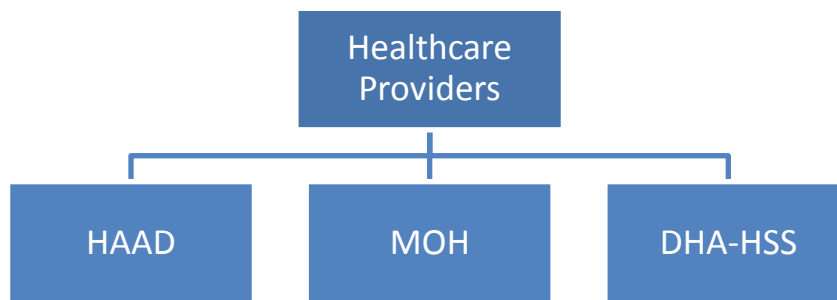


Figure 7.6: UAE decentralised healthcare providers' model

The healthcare sector consisted of the Ministry of Health as the sole legislator and provider of healthcare in 1972, upon the union of the seven Emirates. In recent years, a number of health authorities have been established to regulate each Emirate, with the Ministry of Health dealing with federal states. The Dubai Health Authority was established in 2007, as well as the Abu Dhabi Health Authority in 2007, and these are responsible for authorising nutrition-related programmes (DHA 2014, HAAD 2014). The health authorities' mandate is to ensure excellent quality healthcare for the community and to define the strategy and shape the regulatory

framework for the health system. As for the Ministry of Health, it administers the Northern Emirates healthcare system (the Northern Emirates include Ras Al Khaimah, Ajman, Umm al Quwain, Sharjah and Fujairah).

“Some of the Northern Emirates recently started establishing new healthcare institutions or reforming existing ones. Sharjah, for example, established the Sharjah Health Authority in 2010.” (Latham and Watkin, 2013).

The situation with regard to providers in the United Arab Emirates was explained by the interviewee from the Ministry of Health. In Dubai and Abu Dhabi, the Ministry of Health is a legislator while in the Northern Emirates the Ministry of Health acts as a legislator, regulator and a provider.

An interviewee from the Ministry of Health explained the three departments and the hierarchy of the Ministry of Health, in order to better understand the roles and responsibilities of the MoH, as can be seen in Figure 7.7.

7.3.4.3 Ministry of Health

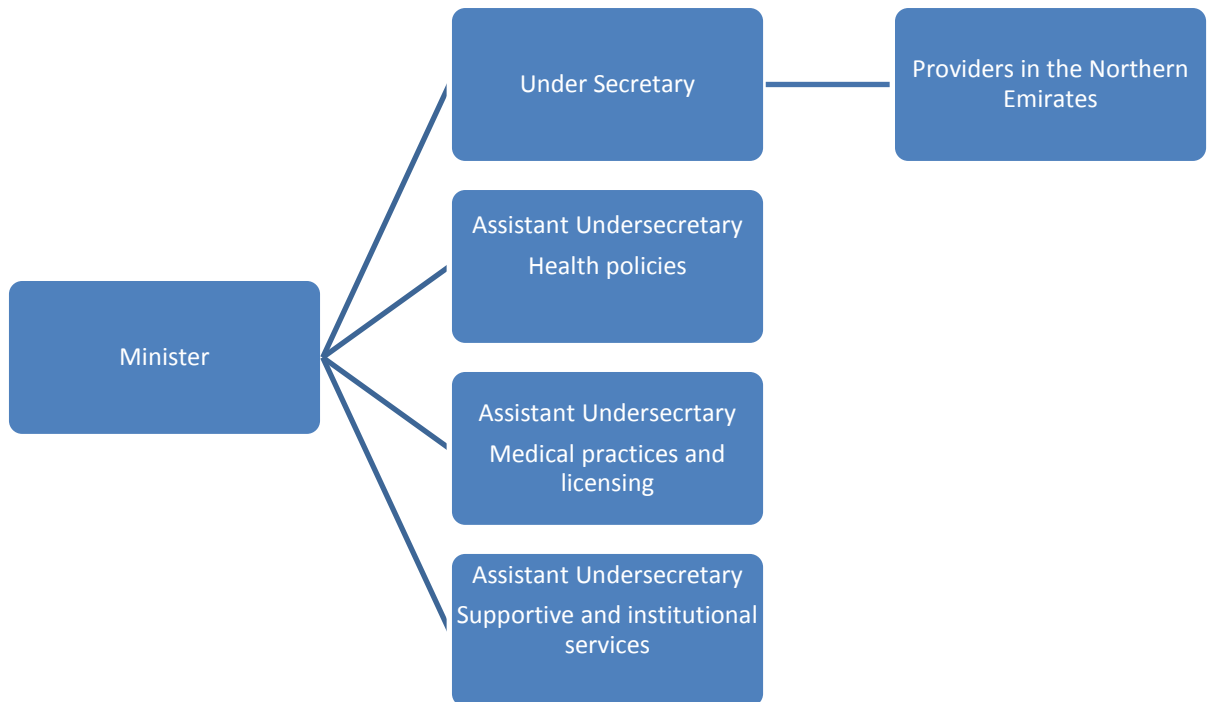


Figure 7.7: Ministry of Health (interviewee from the MOH)

One interviewee compared the UAE healthcare model to the Singaporean model, by explaining the levels of intervention and promotion in Singapore. Incentives are used in a multi-sectorial approach, for the whole community to be involved (Toh et al., 2002).

7.4 Summary

The outcomes from the interview analysis are four main themes; namely (1) healthcare strategy shift towards NCDs, (2) public health emphasis on nutrition intervention, (3) prominent role of nutrition at provider and regulator level, and (4) regulation and legislation of healthcare systems. These themes show that there are factors that affect the role of nutrition in the healthcare system. Interviewing policy

makers at this stage of the research demonstrated the urgency of nutrition interventions in the rise of NCDs. It also ensured the buy-in of professionals under their departments, in order to facilitate the use of the next tool in this research. The understanding of the healthcare system and the comprehension of the importance of the nutrition component strengthens the aim of this phase of the research. This will enable understanding of the day-to-day nutrition programmes and the factors that have influence on different case studies. The next chapter looks at four different hospitals and qualitatively analyses the influence of factors on nutrition programme implementation.

Chapter 8: Phase II analysis: qualitative case studies

8.1 Introduction

The different authorities represented in the key informant interviews phase of the research, as shown in Chapter 7, showed great interest in nutrition strategies. This chapter will explain how nutrition strategies are deployed ranging from the CEO to nutrition departments and everyday nutrition-based activities through a case study analysis. The analysis of the different case studies aims to validate the factors identified through the literature review, namely: (1) strategy through understanding leadership, strategy development and strategy implementation, (2) resources through understanding whether hospitals deploy a life course nutrition approach as well as involving nutrition programmes across sectors or across governments, (3) process and activity through understanding education, (4) patient orientation through understanding patient empowerment, (5) quality through evidence-based medicine, (6) understanding people and competencies as well as autonomy and responsibility of nutrition personnel, (7) value care design by understanding shared decision making, (8) measurement and impact of nutrition interventions, (9) innovation and best practices by understanding the implementation of technology in nutrition intervention, (10) culture and team work through understanding the level of involvement of nutrition personnel in multidisciplinary teams.

This chapter will explore four hospitals through the factors discussed above, and also stated in the table below, following a theoretical framework deduced from the taxonomy shown in Chapter 4.

Factors to be explored qualitatively
Leadership
Resources and enablement
Process and activity
Patient orientation
Quality
People and competencies
Value and care designs
Measurement and impact
Innovation and best practices
Culture and teamwork

Table 8.1: Theoretical themes analysed against four hospitals

Furthermore, it explores a new emerging factor that could be further investigated using the next tool – the questionnaire. The emerging factor is patient population diversity.

Four different hospitals were chosen from the United Arab Emirates; they included two public government hospitals and two privately owned hospitals. The hospitals were chosen as they each offered a different approach to nutrition, as well as a different level of maturity in driving the healthcare delivery process supported by nutrition. This chapter contributes to the qualitative aspect of the research.

8.2 Overview of the hospitals

Healthcare in the United Arab Emirates is regulated through a number of authorities. An authority is regulatory body with a number of services related to licensing, policy making, monitoring and control (Latham and Watkins, 2013).

This case study analysis includes four hospitals from one healthcare authority. This authority oversees both the licencing of both private and public hospitals. In the public hospitals, the authority reviews implementation of strategies. While in the private hospitals, each hospital is responsible for their own activities, where only their professionals are licensed under the authority.

The next sub-sections will provide overviews of the case studies, so as to understand their journey, services provided, their strategic initiatives, how they drive nutrition-based programmes, their future direction as well as an overview of the manifestation of the ten themes in each hospital.

8.2.1 Hospital 1

Hospital 1 is one of the oldest hospitals in the city; it was established soon after the union of the UAE in 1972. This hospital is a tertiary hospital, with 454 beds. The types of services provided by Hospital 1 are numerous. The main focus of the hospital is on trauma but also on surgical and general medicine. The nutrition services are provided by the hospital's nutrition department. Nutrition education, on the other hand, is provided by the clinical services department in the main headquarter of the health authority. The clinical services department oversees different hospitals, two of which are H1 and H2.

The first of the strategic goals of this hospital is “Better Health”. This indicates the importance of nutrition-based activities and programmes. The strategic goals states that:

“The central objective of all health systems is to make people healthier. This requires not only access to world-class healthcare services but also specific measures to prevent diseases and injuries from occurring in the first place – and a focus on prevention as well as cure.” (Hospital 1: website)

“Objective 1.1 Reduce the Burden of Non-Communicable ‘Lifestyle’ Diseases. Reducing the incidence of diseases such as diabetes, cardiovascular disease and cancer – and underlying risk factors such as tobacco consumption, unhealthy diet and inadequate physical activity – is a high strategic priority. Progress in this area requires a mix of intervention strategies including risk factor prevention, early case detection and effective treatment as well as the development of advanced systems for disease surveillance and monitoring.” (Hospital 1: website)

Both the central objective as well as objective 1.1 emphasise the role of prevention measures and highlight it as a high strategic priority. This is also exemplified in a number of examples in this hospital. One example is that nutritionists are part of the clinical multidisciplinary teams. Another example is the diabetes unit, a specialised NCDs unit. This unit was established in the year 2000, with a mission towards a better life with diabetes, which indicates the importance of patient family education, as it aims to raise community awareness and participate in clinical research that aims to find solutions to diabetes and its complications. A multidisciplinary team runs the unit – a team of doctors, diabetes educators and nutritionists, as well as a number of other members. This unit is situated in the heart of the hospital, with all other units surrounding it, which is in the best interest of the patient and their families (Hospital 1: website). Hospital 1 is also involved in screening programmes to detect early complications of diabetes, such as those affecting the eyes, the feet and the kidneys. Risk assessments are also done to

understand the lifespan of diseases and involvement of different professionals, such as psychiatry, nutrition and medical doctors where necessary. Hospital 1 is also involved heavily with community events that ensure community awareness, by participating in national level campaigns, for youth as well as for the underprivileged. They also have an aim to develop age-related programmes.

8.2.2 Hospital 2

Hospital 2 was built after Hospital 1, in 1987. Hospital 2 is a “baby friendly hospital”, which is part of the baby friendly hospital initiative launched by UNICEF in 1991. A baby friendly hospital supports breastfeeding and breastfeeding programmes (UNICEF, 2014). As Hospital 2 and Hospital 1 are under the same management, both have unified goals, strategies and objectives. They both share the objective of reducing the burden of lifestyle diseases. The nutritional departments in both hospitals (H1 & H2) share the same nutrition education services, strategy implementation and KPIs, which are reported to the central nutrition department at the health authority.

Hospital 2 provides services which concentrate on a very specific age range and gender. Furthermore, the services of the hospital include gynaecology, obstetrics, paediatrics and paediatric surgery. It is one of the largest maternity and children’s hospitals in the UAE. It is a 444-bed hospital, which is accredited by the JCI, and is recognised by UNICEF for the effective implementation of practices that protect, promote and support breastfeeding.

The six major strategic directions of the hospital are as follows: investing in people; being customer focused; improving quality development; ensuring financial

management and growth; promoting community involvement as well as efficiency and productivity. Figure 8.1 illustrates the strategic direction of the hospital, which focuses on six main aspects (1) Investors in people (2) Customer focused (3) Quality Development (4) Financial Management and Growth (5)Community involvement (6) Efficiency and productivity.



Source: Hospital 2's website

Figure 8.1: Strategic direction of Hospital 2

The nutrition department's mission and vision are driven from the hospital's strategic direction. The mission states that:

"The hospital is committed to provide high-quality food and nutrition services that meet the needs, and exceeds the expectations, of its clients. Nutrition intervention, counselling and education are evidence-based and thrive to achieve optimal nutrition status in inpatients and outpatients."

While the vision states:

“... to have a leading role in providing medical nutrition therapy. It strives to contribute to the welfare of the community by promoting awareness about the role of food and nutrition in disease management and prevention.” (Hospital 2: website)

Based on the vision, the policy and procedures of the services provided are within four main areas (Hospital 2: website).

1. Food and nutrition therapy for inpatients
2. Nutrition therapy for outpatients
3. Preparation, handling, storage and distribution of enteral nutrition therapy
4. Patient health education services.

The first three policies and procedures are clinically oriented. While the fourth deals with the educational aspect. Two policies deal with the educational aspect in Hospital 2, the Patient Health Education Policy as well as the Patient Family Education Policy. Both policies set out to provide nutrition education to the specific age groups.

The nutrition department's scope of services includes health promotion through health education and counselling for pregnant and breastfeeding women. The service of health promotion is done internally to patients and staff, as well as externally to schools, community groups, parents, as well as professionals.

Part of the department's role in emphasising the hospital's strategic direction is in investing in people. A two-month dietetic internship programme is given to students as part of the training programme. The standards of practice used are

evidence-based and consistent with international dietetic guidelines in the assessment, management and education of inpatients and outpatients.

The catering department is part of the services provided by the nutrition department.

“The hospital menu takes into consideration patients’ cultural preferences and so different types of cuisine are available such as local, European, vegetarian, Indian and Filipino meals. Monthly meal surveys provide the department with feedback on patient satisfaction and preferences.” (Hospital 2: website)

8.2.3 Hospital 3

Hospital 3 is part of a group hospitals setting, where the goal is to drive healthcare industry development. Hospital 3 is a 300-bed hospital comprising different departments with future plans to expand. This hospital aims to have a medical tower to accommodate 215 leased clinics, and six specialised medical centres with an education centre.

This hospital’s group started in 1988, by a family that had a unique spiritual vision derived from the Holy Quran “and if any one saved a life, it would be as if he saved the life of the whole people” (Quran Verse 5:32). That drive moved Hospital 3 into a new era of healthcare industry development, where the scope and goals have been elevated from local ambitions to regional ambitions and now the group’s vision is:

“To design, finance, construct and operate 30 world-class hospitals by 2015 and create 50,000 jobs in the healthcare industry.” (CEO of the group)

Leadership involvement and support for engaging and providing superior clinical services and business outcomes is the mission of the group. This hospital’s vision is

“... to become the premier hospital for the people of the Middle East and ... be a great place for talented and inspired people to work”.

Their values and beliefs:

- Compassion – we care for others with the highest degree of dignity, equality, honesty, empathy and trust.
- Creation of value – we seek channels for the productive growth of our people and organisation.
- Collaboration – we work with our customers, partners and colleagues in a spirit of cooperation and teamwork.

Hospital 3 was only recently built in this Emirate, but has been shown to have made an impact on the media, utilising a number of patient engagement events. This is done by keeping the communication channels open, for example following up with patients by inviting them to join health awareness clubs, dinners and different occasional events that are free of charge. This is to ensure that a relationship with patients is maintained during periods of sickness and health. This has also made their appearance in the media very common.

Hospital 3 is part of a large group of hospitals with the aim of expansion and new job opportunities. To achieve their mission, they have committed themselves to focusing on patient needs and expectations, employing and training committed and competent staff, bringing international expertise, using state-of-the-art technology, and applying dynamic and professional management techniques.

By using state-of-the-art technology, Hospital 3 has received awards for being a fully-fledged computerised hospital and being totally paperless. This ensures that the data records of patients are electronic, therefore with one single button, a

comprehensive record for each patient, detailing all patient visits to all departments; and any approved healthcare professional can have access. By obtaining data from all points of care, this helps to eliminate paper, as well as eliminates the need to redo tests, saving resources.

Hospital 3's dietary objectives are clearly catered towards the inpatient clinical aspect. The objective shows that patient education and the promotion of high quality catering and medical nutrition therapy are the most important. Nutritionists cooperate with the multidisciplinary teams, but are not directly part of them.

8.2.4 Hospital 4

Hospital 4 is a private hospital; it opened in 2008 to provide multidisciplinary services. This 229-bed hospital offers treatment in different areas, such as cardiology, radiology, gynaecology, trauma, nuclear medicine, endocrinology, obstetrics, neonatal care and many others. Being part of a hospital group, like Hospital 3, ensures that the hospital and patients are able to benefit from the bank of knowledge and expertise from sister hospitals.

Technological advancement and state-of-the-art facilities is one of the main goals of the hospital, therefore it recently upgraded the neonatal intensive care unit, as well as MRI and SPECT-CT gamma camera. The commitment of this hospital to enhance the quality of life of patients is done by providing high quality, cost efficient, multidisciplinary medical services, delivered with a personal touch.

Hospital 4's commitment to transparency regarding patient safety is demonstrated in the annual Clinical Governance Report, which is published as part of the annual report.

The hospital runs a number of departments that involve the nutritionist, but are not directly involved in the multidisciplinary teams. The nutrition department evaluates the patient's current diet and recommends a diet therapy and may be referred to by a number of doctors. The emphasis of the hospital is on multicultural clients, by educating the patients and their families and offering counselling to the patients to cope with their diet plans. Hospital 4 has a diabetes clinic, with a mission and objectives as follows:

"To improve the health of the diabetes-affected patients by providing the patient and the family with internationally accepted standards of medical care and supervision.

To supply efficient diabetes knowledge and support so as to enable optimal health outcomes such as proficient self-management and control of the condition.

To support the local government initiative of reducing the incidence of the disease by increasing public awareness of the disease condition and its complications.

To provide appropriate education to non-diabetics on prevention steps.

To extend personalised guidance on incorporating lifestyle changes and continued monitoring" (Website Hospital 4)

Education, public awareness and nutrition therapy are very important to the mission of the hospital. The direction of the hospital, on the other hand, aims to be performance driven, gain the respect of the patients, have a team approach and be client oriented; these are among the values of this hospital.

8.3 Analysis

The following analysis commences with an overview of the four hospitals, and is followed with an explanation of the manifestation of the factors derived from the literature in the four hospitals.

Table 8.2 explains the differences between the four hospitals, number of beds, number of nutritionists per department as well as types of services provided by each hospital. As Hospital 1 and Hospital 2 are public hospitals, they are tertiary specialised hospitals; the former specialises in trauma and the latter in maternal health. While Hospital 3 and Hospital 4 are private hospitals and have a wide scope of services. Hospital 3 and 4 have been recently established, while 1 and 2 were built in the 1970s and the 1980s.

	H1	H2	H3	H4
Public	√	√		
Private			√	√
# of beds	454	444	300	229
# of nutritionists per department	+10	+10	2	2
Year of establishment	1972	1987	2012	2008
Types of services	Cardiology Anaesthesiology Dermatology Diabetes Digestive unit Infectious unit ICU Neurology Plastic surgery Radiology Surgical ICU	Gynaecology Obstetrics Paediatrics and paediatric surgery	ICU NICU General ward Operating theatres Delivery rooms Sleep lab Cath lab Dialysis centre	Cardiology Radiology Gynaecology Trauma Nuclear medicine Endocrinology Obstetrics Neonatal care and many others

Table 8.2: Overview of the four hospitals

Four to six interviews were conducted at each hospital, with interviewees from different departments such as the strategy department, nutrition department, policy department, statistics departments and quality department.

Table 8.3, below, explains the profiles of the departments in the order that they were interviewed. Each hospital provided a number of documents related to the study, where they were analysed as part of this chapter. Examples of the documents are: “Core Competencies of Nutrition Department Staff” and “Clinical Nutrition Units’ Quality Indicators”; one of the hospitals was also able to give a hard copy of assessment, evaluation and documentation of patients and family health education needs.

H1	H2	H3	H4
CEO of hospital	CEO of hospital	Public relations	CEO of hospital
Nutrition department	Nutrition department	Nutrition department	Nutrition department
Strategy department	Statistics department	CEO of hospital	Marketing department
Quality department	Quality department	Quality department	Quality department

Table 8.3: Profiles of interviewees and their different departments

Table 8.3 shows that similar departments are responsible for the deployment of nutrition care strategies in hospitals and include the CEO office, the nutrition department, the statistics department, the marketing department as well as the quality department. The factors discussed in this chapter are based on the taxonomy presented in Chapter 4 (see Table 4.6), where they have been reflected upon in the questions of the interview pro-forma (Appendix B). The remainder of

the chapter will explain the extent to which each factor manifests in the case studies.

8.3.1 Theme 1: Leadership

The first theme to be analysed is leadership. Leadership focuses on the development and implementation of nutrition strategies. This theme brings to light some differences in the adoption of leadership involvement in nutrition strategies in the hospitals.

The first sub-theme addresses the direct involvement of leadership in the development of nutrition strategies. Here, the extent to which leadership is involved in the development of nutrition strategies is analysed and discussed from the perspective of staff from the four hospitals. Private hospitals were identified as having no nutrition strategies in place, while public hospitals had guidelines to follow.

The next sub-theme queries whether strategies are implemented which support the lower incidences of NCDs. Again, the accounts of staff members from both public and private hospitals provided direct discussions about the absence of such strategies.

The final sub-theme that fits into the category of leadership is the presentation of policies and KPIs of the hospitals. The quality departments were most familiar with the terminology presented here and were much more accessible and transparent than other departments within the same hospital. Meetings with the public hospital staff took place at the time of their JCI (Joint Commission International) accreditation renewal process. It is important to note that the private hospitals

have not yet received such accreditation, although they mentioned their intention to apply, as will be discussed in detail below.

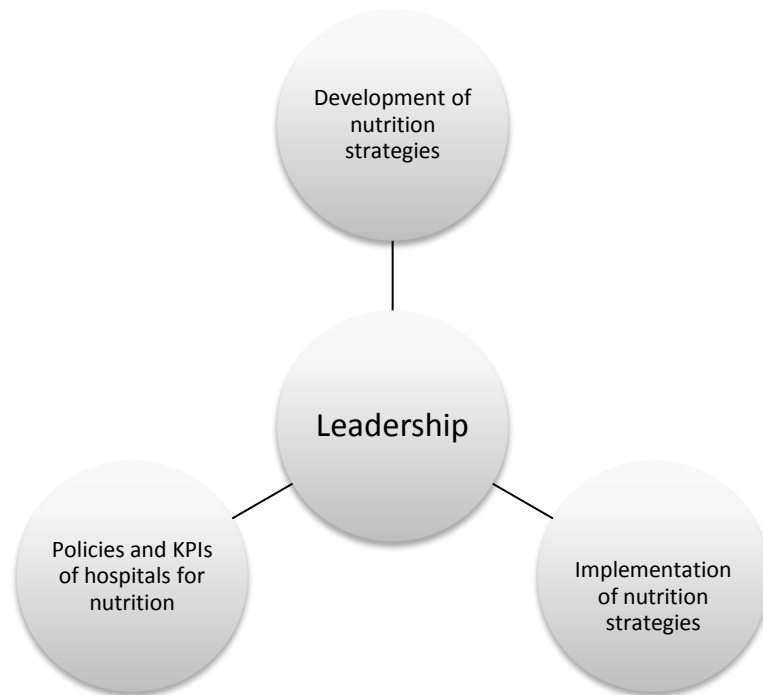


Figure 8.2: Leadership – Subthemes

Figure 8.2 shows the subthemes in the leadership category: development, implementation, and policies and KPIs of hospitals for nutrition. The analysis takes the accounts of various staff members as examples to support the findings.

8.3.1.1 Leadership involvement in implementing strategies

The first sub-theme identifies whether the implementation of nutrition strategies derive from leadership involvement. The findings from public hospitals indicate that there are nutrition departments with their own separate hierarchies, which have been created to support development within the hospitals and the community. This section will discuss how the staff members refer to this distinct structure when questioned about leadership.

An extract taken from one staff member at a private hospital highlights how they are attempting to increase their activities:

“The leadership is very keen to spread awareness especially against common diseases. Then we have an online presence on Facebook, Twitter and social media.”
(Interviewee 3a)

Here the interviewee identifies the part that social media can play in increasing activities, which will be explored further in another theme, innovation and technology, later in the chapter.

On the other hand, leadership can play a part in directing the nutrition department through active role of education, prevention and treatment is shown below:

“I had a meeting about the vision and mission, and how to increase the active role and how to make it a more active role and not only “how is the food and their food plan!”, but also to make the hospital an educational hub, and not only a passive place to treat patients, but also to educate the patients and relatives. Documents are with quality, I send emails and I talk.” (Interviewee 3b)

The line manager of a dietician in a private hospital was not a nutritionist for either hospital. The following is a view from a clinical nutritionist at a private hospital about the potential challenges from such a structure in the department:

“I’m sure there needs to be leadership; I haven't yet designed a programme, we have articles in a newspaper. It would be important to have a strategy for the hospital for nutrition. Also, the nutritionists are under the nursing department; and this allows you see that there needs to be a department for them to have a lead on the strategy of the department. In other larger hospitals ... with 10, 15, 20 dieticians, you would have a manager who is a dietician. Unfortunately, here I report to someone who is not a dietician, therefore, they wouldn't feel the need as much as we would do. A lot of dietetic departments where the leader is not experienced in dietetics would find it difficult to have a strategy.” (Interviewee 4b)

Although based on both of the nutritionists' interviews at both private hospitals there is a need for nutrition staff to support nutrition programmes, the marketing

team viewed the issue differently. Below is a comment from the marketing team when asked about the involvement of leadership in nutrition programmes:

“There are no straight guidelines; or policy, but they support any type of initiative. There is support and there is backing up of all programmes. Also for the community, the leadership is on board.” (Interviewee 4c)

Leadership involvement in the public hospitals was reflected very differently, as the hierarchy of the department of nutrition within the hospitals fell under the direction of the health authority.

“On an authority level, because the nutrition department is a central department, they do not report to the hospital, it is higher than the hospital itself, they are part of the committee of strategies.” (Interviewee 1c)

Although one member of staff mentions that there is not a single unified strategy for nutrition:

“Leadership are the team who put together the strategy for the hospital and according to that strategy, ideas are disseminated to all departments. That is how it is linked. (There is no strategy for nutrition).” (Interviewee 2c)

8.3.1.2 Non-communicable diseases (NCD) strategy implementation

Although hospitals were shown to have no specific strategy for implementing a plan to lower the incidence of NCDs, programmes were still made. The number of NCD programmes tailored at an authority level was reflected when an interviewee mentioned the number of programmes that run annually:

“NCD strategies, e.g. a CVD (cardio-vascular disease) programme called safe at heart.com, cardio emirates association, is available on the internet. Different initiatives are taken ... e.g. programmes for other NCDs such as obesity in school programmes, and as well, on a national level, the NCD committee with the Ministry of Health and the WHO (World Health Organisation). As well as the DHA strategy educational material booklets.” (Interviewee 1a)

There were an interestingly high number of programmes aimed at one particular NCD: diabetes. The latest awareness campaigns from both private hospitals targeted diabetes, as it is known to have a high occurrence within the United Arab Emirates. None of the campaigns were able to show the researcher ready statistics relating to recent prevalence of the disease, but international statistics on the topic are shared readily, for example from the (WHO). In addition, upon interviewing nutritionists, they agreed that a high percentage of their patients are diabetic, or pre-diabetic.

As interviewee 2d from the quality department explains, leadership involvement entails being involved in the formulation of overall processes and documentation of nutrition departments in public hospitals, i.e. without direct involvement in the strategies and direction of the clinical activities, as noted below:

“Clinically I wouldn’t know ... but there are campaigns and screenings done. But the exact [detail] would be better to be with the nutrition department. From a quality perspective it is about the diet for inpatients.” (Interviewee 2d)

Quality leadership does not appear to get involved or impose a strategy they simply oversee the process. While on a clinical level, one of the views regarding combating NCDs suggests that this is outside the control of tertiary hospitals and would be more associated with primary healthcare.

“No indicator to lower the incidence of NCDs, but this is outside the jurisdiction of the clinical aspect and is involved with the health services sector of the authority.” (Interviewee1b)

Chapter 10 (see Section 10.4.1) shows the importance of quality and processes in nutrition intervention success.

8.3.1.3 Policies and KPIs of nutrition departments

As the interviews with the hospitals were performed at the time of re-accreditation for both public hospitals, the paperwork required the policies and KPIs to be readily available by the quality department. Under direction from the authority, key performance indicators (KPIs) are clearly set out as follows:

“The key performance indicators of the clinical nutrition department fall under five themes, customers, staff, quality improvement, efficiency/productivity and enablers.” (Interviewee 1b)

These are then disseminated to all public hospitals’ nutrition departments. However, at the hospitals level, staff members had different views when primarily asked what the KPIs were. One view was:

“Patient referrals, education and quality of food services, also this service is for patients and it is measured. Diabetic food is measured, and indicators are to be measured, those findings are marked.” (Interviewee 1c)

Another healthcare professional viewed it differently:

“The referrals, so each patient is being seen by a dietician, the diet is based on patient status. E.g. the food is served as per the case of the patient. The referral and the assessments are done, as well as the documentation.” (Interviewee 1d)

Therefore, the KPIs were clearly demonstrated at an authority level, but not very clearly at a hospital level. In private hospitals, however, the quality department ensures that the nutrition assessment is done as part of the basic patient assessment, again indicating that it is not involved in nutrition strategies per se, but in ensuring that the nutrition services are provided for inpatients.

“A number of patients are seen by the nutritionist, also we have policies in which patients are to be referred and their criteria, there are two full-time clinical dieticians, as well as the leadership to make sure nutrition assessment intervention is a basic part of the patient experience. As well as a focus on catering.” (Interviewee 3d)

Catering KPIs were emphasised through Hospital 3, where all healthcare professionals interviewed linked them directly to the nutrition department's activities:

"Catering policy and catering KPIs (# of people served food, # of complaints # of food served cold)." (Interviewee3c)

"Catering is subcontracted to a catering service (trays and patients are cross-checked to ensure the right food is served to the right patient)." (Interviewee3b)

It has been noted that availability of KPIs and policies can be linked directly to the number of staff available. In the case studies examined, where the public hospital nutrition department consisted of 10 or more staff, there was a distinct hierarchy and the paperwork required was documented fully. While in private hospitals, it was evident that with only two nutritionists the focus was on inpatient care and catering. It must be noted, however, that both public hospitals were accredited by the JCI and that could have a positive effect on the availability of the required material.

Table 8.4 summarises the manifestation of Leadership in Hospitals 1, 2, 3 and 4. Where Hospital 1 and 2 show a direct link to the upper management, with strategies and policies deployed via a top-down approach. In Hospital 3 and 4, leadership is keen and supportive for involvement in nutrition-based programmes and policies in their corporate social responsibility scheme. None of the hospitals reported on one nutrition strategy. KPIs and policies, however, were readily available for both nutrition and catering services, but not directly for NCDs.

	H1	H2	H3	H4
Leadership involvement	Direct link to authority	Direct link to authority	Keen on involvement	Supportive of proposals
Non-communicable diseases strategies	Annual updated strategy from the authority	No unified strategy	N/A	N/A
KPIs and policies	KPIs and policies provided by leadership positions.	KPIs and policies are provided for both nutrition and catering	Catering policy	Catering policy

Table 8.4: Leadership

8.3.2 Theme 2: Resources and enablement

The second theme discussed the resources and the enablement mechanisms and approaches that hospitals take to ensure nutrition programmes run across the whole lifespan and across different departments.

The first sub-theme is lifespan approach, which discusses the difference between the risk factor approach (focusing solely on the risks and treating them), versus the lifespan approach (which views the population within different age groups and caters to each age group individually). As the hospitals interviewed were all tertiary hospitals, their primary aim was to focus on inpatients.

The second sub-theme discusses the interaction within government or across departments, between the hospital and other governments, or liaisons between departments, in order to deliver the best nutrition care possible.

The third sub-theme under resources and enablement considers financial resources, questioning interviewees about budgeting, financial resources and whether specific funding is allocated for nutrition programmes.

8.3.2.1 Lifespan approach

The risk factor approach was the predominant approach, as viewed by most of the healthcare professionals. The lifespan approach is seen to affect individuals at different parts of their lives. For example, a type of diabetes (as one of the NCDs) can be prevented at an early age through good nutrition, therefore, it is vital to ensure that the awareness campaigns emphasise preventative measures for the whole lifespan, from newborn to the elderly. In contrast, the risk factor approach focuses on the acute risks that cause diabetes and treats them. Healthcare professionals of all different roles agreed that their hospital does not yet follow a lifespan approach; rather it deals with patients and their risks as they occur, as the following examples suggest:

“We are dealing with the risk factors within the cases, there aren’t lifespan strategies currently. But, for example diabetes is a multifactorial disease; therefore we are dealing with the circumstances with everything around, but not with prevention. We don't have a strategy to deal with such kind of disease.” (Interviewee3b)

This is emphasised through another response by a CEO of one of the hospitals:

“We are a risk factor approach hospital, the assessment criteria for patients is done if they are referred for improving their nutritional diet. The risk of the patient to the disease. They are referred to the consultation in order to prevent the disease. Monitoring the patient and following up. Every time they visit then the files are revisited.” (Interviewee 3c)

The lifespan approach was evident in both Hospital 1 and Hospital 2, where activities were catered to risk factors, and they approached the lifespan of the disease across different age groups, socioeconomic backgrounds, jobs and

ethnicities concentrating on nutrition. This emphasised that activities are catered towards the preventative delivery of care. In the two private hospitals, on the other hand, the risk factor approach is predominant, to deal with the immediate acute delivery of care.

8.3.2.2 Partnerships between departments: government and departments

It has been brought to the attention of the researcher that nutrition departments are little involved in cross-government or cross-department activities. Interaction is achieved through the marketing teams in the private sector, or through the health services sector in the public hospitals. The quote below demonstrates some of the activities undertaken:

“Workshops and training have been done with different governments, semi-governments and private entities. Age oriented programmes are tailored to different age groups. Healthy breakfasts for schools are done for different age groups, education materials for one school and testing the knowledge of nutrition. Also testing the two different curriculums of schools; the life span approach is used on different age oriented and school visits. Cross government and cross department [communication] occurs by showing suppliers’ guides from a nutritional point of view. An internal memorandum between the Ministry of Education and different governments enables brochures and booklets to be done uniformly ...” (Interviewee1a)

As hospitals’ preventative plans are shared, it is evident that there is a difference between private and public hospitals. Marketing teams in private hospitals usually have interactions with external bodies in order to run events; this might be done as a promotional tool as well as part of the corporate social responsibility of the hospital. In government public hospitals, the authority deals with ongoing activities as part of the KPIs of the department. This hierarchy is explained in Figure 8.3, below.

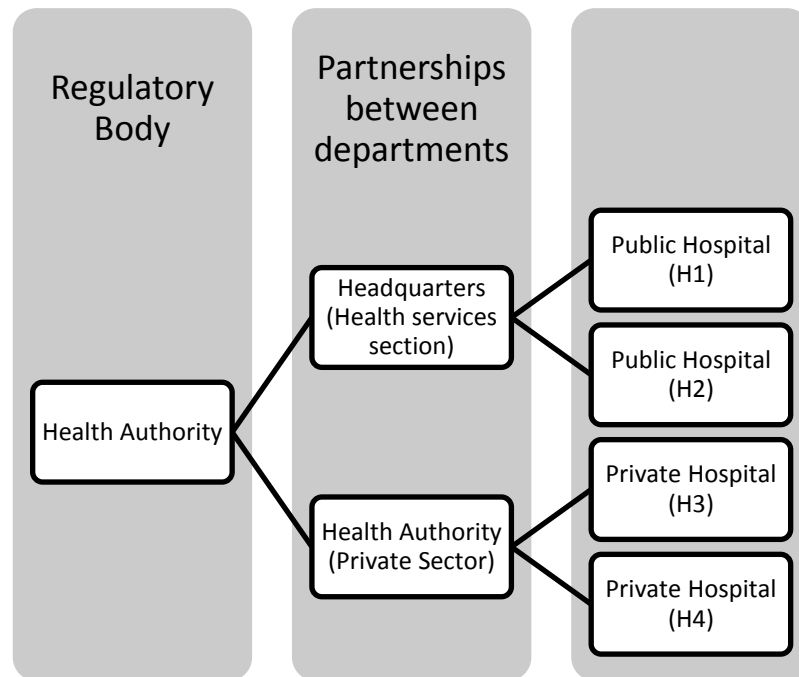


Figure 8.3: Partnerships across-governments

Figure 8.3 explains that the health services section deals with daily interactions and partnerships between government departments and departments of other entities. The public hospitals' nutrition staff and personnel are executors of the collaborations. In private hospitals, however, there is minimal interaction with other entities across government or across departments.

8.3.2.3 Financial resources

When budgeting was discussed, a number of healthcare professionals hesitated to respond immediately. When completing the questions with further probing questions, such as methods of financing awareness campaigns, responses were all unified. The most common method of financing programmes for nutrition or awareness campaigns dealing with NCDs is by sponsorship. All hospitals involved in the case study use sponsorship heavily in budgeting their nutrition-related events. The budget is allocated by the marketing department or by obtaining sponsorship.

Sponsorship involves contacting interested companies, and liaising with them in order to get materials and venues paid for and booked. An extract from one healthcare professional shows that there are different levels to sponsoring a programme:

“When events are done, sponsorship is the financial way to get it done. Dairy sponsors for new born, most of our events are under sponsorship. When done standalone it was found to be difficult. Local sources of funding are mostly international companies; the marketing team arranges and gives platinum sponsors, gold sponsors and so on. Statistics and targets are undertaken, as well as feasibility on a weekly and bi-yearly basis: whether the event pays money, how much does it bring in, does it increase patient flow or not. We have the statistics.” (Interviewee 3a)

Other hospitals depend on the marketing teams to run community awareness campaigns, therefore, it is seen as a means through which to increase the number of patients in the hospital:

“There are no programmes to have the funding, but from a marketing point of view our budget will go through to consumables, as well as the brochures and materials needed. No specifications on the budget. We go to the communities to raise awareness, to be engaged with the community. The number of patients may be the way to know if it was effective.” (Interviewee 4a)

The lack of financial resources was also evident from different responses when the printing of materials was discussed:

“No funding is specifically allocated; we are able to work on brochures and menu cards - that is part of the budgeting. But for a certain body analyser, or we need to build a department, then we ask for money. Marketing teams help with sponsorship. Difficulty explains cost effective interventions.” (Interviewee 3b)

Another probing question used in this theme considered the cost effectiveness of any proposed plan; none of the respondents seem to take it into consideration when the budgets are allocated, and the approaches to awareness campaigns reveal that these are sought on a per request basis:

“We have a zero budget approach; but cost is very important for the implementation of nutrition activities: when the anthropometric measurements are asked for, when new technologies are out, every six months when we need educational material. 120 activities are held, all of which require a budget to be allocated. Every location requires educational materials for 200+ patients/customers. Cost effectiveness is not taken into consideration; as this is per request. The budget is used in a way where it can be used and then can be re-used in other events.” (Interviewee1c)

Budgeting is done through the Director of Finance in public hospitals, as one healthcare professional said:

“The Director of Finance allocates the budget for each department, where the heads of departments are responsible for the distribution. Either that or sponsorship for the events...” (Interviewee2c)

Table 8.5 shows an overview of the four hospitals in regards to the three sub-themes. The lifespan approach is used in the first two case studies, where the planning and development of strategies to deal with NCDs runs across the lifespan. While in Hospital 3 it was clearly evident, the focus was on the risk factors. Involvement of hospitals with other departments and other government entities is more evident in Hospital 1 and 2, while Hospitals 3 and 4 do not appear to directly interact with other cross-government departments. Case study responses show that external sponsorship is the most common method used to finance nutrition programmes, in addition to budgets allocated by the hospital. Table 8.5 shows a summary of the three sub-themes in the four hospitals.

	H1	H2	H3	H4
Lifespan approach	Lifespan approach	Lifespan approach	Risk factor approach hospital	Not clear
Cross-government interaction	Cross-government and cross-departments	Cross-departments	N/A	N/A
Budgeting programmes	Budgeted and sponsorship	Budgeted and sponsorship	N/A	Budgeted and sponsorship

Table 8.5: Resources and enablement

8.3.3 Theme 3: Activity and processes

The third theme to be analysed is activity and processes. Processes focus on patient education processes, while activities focus on demographic profiling and age-related programmes that are used in nutrition strategy development. This analysis showed many similarities between both sectors.

The first sub-theme addresses the process in which nutrition education is tackled. It considers the extent to which patient education is involved. Forms and processes were found to be readily available in both public hospitals. This does not necessarily translate into a different form of activity in private hospitals, but it was difficult to quantify due to the lack of documentation.

Demographics of the UAE, i.e. the structure of the population, were the main focus of the second sub-theme. The aim was to understand whether demographics were considered or reflected prior to development of nutrition strategies. The final sub-theme relates to activities considered before developing the nutrition programmes, in this instance, age-related programmes.

Figure 8.4 shows the three sub-themes that are involved in activity and processes: the educational processes, the demographic profile, as well as the age-related programmes.

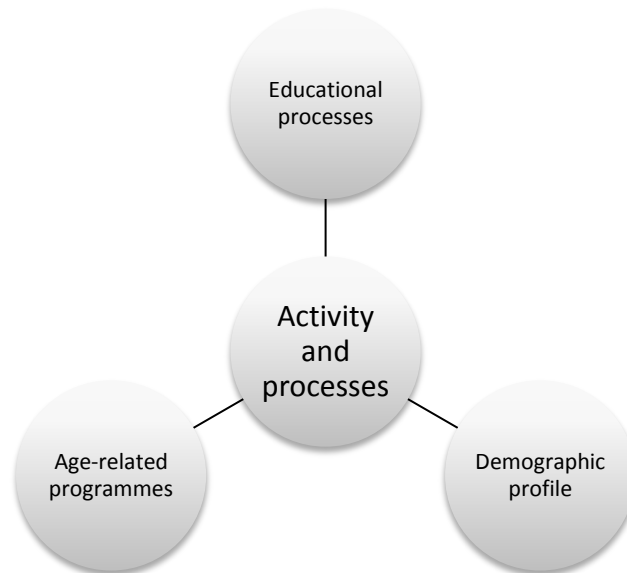


Figure 8.4: Activity and processes subthemes

8.3.3.1 Education processes

Nutrition care plans include a form for patient education. This was found for all four cases, which emphasises the importance of nutrition education in the nutrition therapy plan. The types of education processes, however, varied within public hospitals:

“By education: for lectures, workshops and group discussion the demographics are taken into consideration and this would be done in five different languages (Urdu, English, Arabic, Philippines, Hindi). Officially, the two languages are Arabic and English; but we have staff with different nationalities in order to cater for the different demographics of the patient populations.” (Interviewee 2a)

Here the interviewee identified an important aspect – language. Languages are taken into consideration, as patient populations are different; this leads to the emerging theme of population diversity. Population diversity is taken into consideration when planning education materials and nutrition programmes in

public hospitals. Patient population and language emerged again in another interview and case study while interviewing a marketing executive:

“The difference between government and private hospitals; you need to cater for the food, and the patient population habits. Food menus are catered to ethnicity; but for the nutrition department the languages need to be taken into consideration.” (Interviewee 4b)

In private hospitals, on the other hand, the concentration is upon brochures and printed out material, as is evident through the views of the staff:

“Yes, [we print] brochures and nutritional therapy plans of care, as well as assessment of patients. External documents are given for patient education (for inpatients as well as outpatients).” (Interviewee 3b)

“Nutritional patient education: assessment is done through the nutrition care process; education is paramount, for diabetes groups their own pamphlets needed to be branded. For going home: no set process is noted, but an hour is spent to educate on nutritional interventions. This is not about a Dr giving handouts, as the education needs to be tailored case by case, as does the language of pamphlets.” (Interviewee 4a)

This highlights the fact that there is no concrete process for the education process, but it also emphasises the importance of the role of the nutritionist in tailoring education materials and understanding the needs of the population. Understanding the cases and the population’s need is the main aim of the next sub-theme.

8.3.3.2 Demographic profile

At the hospital level, the demographic profile of the patient population is the focus of the nutrition interventions. The Health Services Sector at the authority, on the other hand, takes the demographic profile of the population into consideration while preparing interventions.

“Staff understand the demographics of the hospitals. There are no statistics shared for the UAE; there are the numbers of patients in house. In house it is tailored to the patient population of the hospital.” (Interviewee1a)

The lack of robust statistics on the prevalence of NCDs was encountered in a number of interviews. When asked about the UAE profile, the main answers revolved around the need to update international health organisations with recent statistics.

“We don't have statistics; we refer to World Health Organization statistics. We do not refer to statistics as it is very difficult to get hold of them, for marketing.” (Interviewee 4b)

“Statistics are not available; we understand we are at the high range of the NCD. Via the internet, we look at the demographics and the statistics. The next campaign originates as per demand and not due to demographics.” (Interviewee 3b)

The role of the in-hospital statistics department was explained. The role included calculating the number of patients in and out of the different departments in the hospital as well as other responsibilities. It was made clear that it is outside the scope of the services to calculate the prevalence of NCDs, or any other type of disease.

“The new statistics there aren't analysed for NCDs, the data entry is done, the statistics are taken on the patients, as in numbers of patients that entered each department so on and so forth. This might be available in the strategy department and the policy of strategies in the headquarters of the authority.” (Interviewee2b)

This is also emphasised by the response from the quality department:

“Demographics are not applicable from a quality perspective. The statistics department at the hospital is more driven towards data entry and level of inpatients as well as outpatients and ‘no-shows’. The statistics department does not target NCDs.” (Interviewee 2c)

When the list of activities provided by the hospitals is looked at, it shows that age groups and ethnicities are taken into consideration prior to setting activities, while in the interviewees' answers demographics were not highly emphasised. Most of the activities target school age groups, and ethnic groups such as labour camps,

which are usually made up of people from different ethnic backgrounds, therefore increasing the risk factors for certain NCDs.

8.3.3.3 Age-related programmes

The findings indicate that age-related programmes varied according to the hospitals' activities, some of the internal examples were:

“Antenatal group classes: these involve the maternity team, the midwives and the nutrition class programme in the evening, every Tuesday. Every cycle has a class; nutrition is part of it. They talk about everything from diet to post-natal issues. A lactation consultant is available, and it is a family education centre. There is a mother's support group. As well as support up to 6 to 12 months.” (Interviewee 4a)

“New born, paediatric, adults and the elderly. It is more a one-to-one patient education. If the management sees that a certain something is needed, then the management sees that it is important to find what matches the level of need.” (Interviewee 3a)

This shows the importance of the 'buy in' of the leadership, as most of the programmes are run as per demand, and this includes the demand of the leadership. In the public hospitals, however, activities were tailored for the population by the authority and include:

“On a population basis there are age-related nutrition programmes, initiatives in the form of age-related programmes/educational level programmes tailored to age and education level. The programmes are tailored, and the menu is different for the patients; the patient's ethnicity is also taken into consideration for the menus, the type or work, and the food is different for them. Hindi meal, Filipino meal - it is important to cater to the needs of the patient.” (Interviewee 1b)

It is evident from this theme that patient population or diversity of patients was raised on a number of occasions. This shows that the “target market”, the “patient population” and diversity in the culture is taken into consideration when employing nutritionists, as well as when tailoring events, menus and programmes. A summary of the four case studies is given in Table 8.6, explaining the three sub-themes of

activity and processes. With regard to the educational processes in both Hospital 1 and Hospital 2, nutrition education is carried out for a number of departments through lectures or workshops. Patient group discussions for specific diseases are also carried out, and educational material is disseminated. Educational materials are printed in a number of languages in Hospitals 1 and 2, and the demographic profile of the UAE is taken into consideration when planning educational material. Employment of different nutritionists with different ethnic backgrounds, as well as capabilities in languages, all highlight the aim to encompass the different patients. In Hospital 3 and Hospital 4, on the other hand, the educational process is fulfilled through the nutrition care plan of the patient, this is through a one-on-one session. In Hospital 3 and Hospital 4, the educational material and the printing of materials is in Arabic and English only, but has the same aims as Hospital 1 and 2. Table 8.6 summarises the four hospitals.

	H1	H2	H3	H4
Educational processes	Lectures, workshops; group discussions; educational materials	Lectures, workshops; group discussions; educational materials	Part of nutrition care plan	Part of nutrition care plan
Demographic profile	Material in Arabic, English, Urdu Staff in more than three languages	Material in Arabic, English, Urdu Staff in other languages	Material in English Staff Arabic and English	Material in English Staff in Arabic and English
Age-related programmes	√	√	N/A	In the neonatal unit only

Table 8.6: Activity and processes

8.3.4 Theme 4: Patient orientation

The fourth theme to be investigated relates to patients' views under patient orientation and user expectations. This was explored through asking a series of questions primarily about the process of empowering the patient, followed by questions relating to the expectations of the patient.

The first sub-theme encourages respondents to understand processes in patient orientation and patient empowerment. Findings have shown that educational and printed materials are the main forms of empowerment. Some cases revealed the need to increase the level of materials given – with the exception of leaflets – this could be in the form of models, exchange menus, and food journals.

The second and third sub-themes focus on user expectations, the measures that are used to understand user expectations, and the process in which it is used in the hospital. This sub-theme, led most of the interviewees to explain about their customer satisfaction surveys and their incident report forms, both of which are used to measure user expectation.

8.3.4.1 Patient empowerment

The patient's right to understand their condition and to be empowered with tools that allow them to be actively engaged with their plan of care is ensured through the Bill of Rights, as one interviewee stated:

“Mainly the patients and the Bill of Rights, ensure that the patient has the right to know the plan of care from the nurse, doctor and with regard to nutrition and what is expected of them.” (Interviewee 3d)

The Bill of Rights, however, does not specify nutritional needs or nutritional services, rather it is very general and is divided into three parts: rights to medical

care, rights to information and rights to confidentiality and privacy. Below is an excerpt from the Bill of Rights of one of the private hospitals:

“To receive complete and current information from the treating doctor ‘once final diagnosis is defined’, regarding treatment and potential benefits and drawbacks of the proposed treatment, likelihood of successful treatment and possible problems related to treatment, in terms that you can understand (interpreter is available if needed).”
(Bill of Rights, Hospital 3)

Engagement of patients in their action plan can be achieved through the rights to information. Information to patients can be achieved through patient education. The quality expert from one of the hospitals stated that Patient Family Education is applied in the hospital.

“Yes the orientation is done, the form has a section on information that is given. The education and documentation of education, as well as patient family education from the JCI is applied - sometimes on the form and sometimes on the patient record. The PFE (Patient Family Education) the care, nutrition needs must be explained to the patient, PFE is a standard in the JCI manual, as well as AOP, the nutrition section of it, will be printed for you.” (Interviewee2c)

Nutrition services in the patient orientation process are explained explicitly by one of the nutritionists at a private hospital. This includes patient orientation in their VIP package; this would result in all information being available for the nutritionists prior to the actual appointment:

“Verbal education and comparative information about food, the orientation of the patient, is done through one of the packages from the hospital in the full check-up and this is done through meeting a number of doctors as well as the nutritionist. So, they meet a number of doctors prior to seeing the nutritionist, but when the patient comes to see the nutritionist we have all the reports and a full record of the patient. The past history and the information, these form the patient results while patient orientation is the process.” (Interviewee 3c)

Here it is evident that the nutritionists welcome the idea of having all the data collected by the physicians and the lab results, in order to provide a full report, without the need to repeat lab work. From other perspectives, however, patient

orientation and empowerment are said to occur through giving out educational material.

“They are given brochures and awareness pamphlets, especially for diabetes and cardiac patients, and clinical practice guidelines where nutrition is part of the process, and they have their own role.” (Interviewee 2c)

Every case varied with regard to the form of patient empowerment, unlike the next sub-theme, patient expectation, which was measured in the same way across all four case studies.

8.3.4.2 Patient expectations

The findings have shown that the most common measure of user expectation is the patient satisfaction survey:

“Patient satisfaction in general and also satisfaction surveys with regard to food delivery.” (Interviewee 1c)

“Patient satisfaction survey is the main way; the second way is to know their expectations - according to the diet plan and the menu that is given to the patient ahead of time.” (Interviewee 3d)

“The patient satisfaction survey contains a section on food related to the catering department. This relates to the quality of food and services, but not to the nutrition department.” (Interviewee 4b)

The patient satisfaction survey focuses on the overall experience of the patient and the catering department. However, after analysing three of the four case studies’ patient satisfaction surveys, it was evident that the questions asked about the quality of food, and not the experience with the nutrition services.

The third sub-theme, however, explores how user expectations are used in the hospital. Language, menu improvements and dissemination of new technologies to

be used in the hospital were all seen in responses relating to user expectations, as one staff member explained:

“The improvements in the menu and the different languages show that they try their level best to have user expectations met. Also 3,000 tablets were distributed among all hospital beds that had nutrition education materials, as well as other nutrition materials.” (Interviewee 1a)

Incident report forms and quality measures forms are completed when a complaint is filed; these also measure user expectation. As it is only measured by the patient satisfaction survey, it is monitored within the quality department. Below, two healthcare professionals explain what is done when a complaint is filed:

“Meals are changed, complaints are taken down in the incident report and the catering departments, and the inpatient rounds ask about their opinion on the food.” (Interviewee 3c)

“The catering KPIs include an incident report form, and this would be part of their work to look at any problem while the quality department oversees the problem. Any case is investigated. Sometimes the patients complain and this is looked at individually.” (Interviewee 1c)

The main focus of user expectation feedback is the catering services, rather than the nutrition department services. This was also shown from previous responses, and is emphasised here as well:

“Internally looked at food and beverages; tried to improve the food choices for both patients and staff as well.” (Interviewee4b)

The catering department, which is overlooked by the nutrition department in all four hospitals, deals with incidence report systems to ensure all feedback from patients is investigated and logged. In Table 8.7, the manifestation of patient empowerment is shown in all four case studies. The explanation of the Bill of Rights is distributed throughout the hospitals, as well as on the website of each hospital.

Patient expectations are measured through customer satisfaction surveys in the four hospitals. Examples show how improvements are made, as well as the patient orientation manifestation in the four cases.

	H1	H2	H3	H4
Patient empowerment	√	√	√	√
Patient expectation	Through patient satisfaction surveys	Patient satisfaction surveys	Patient satisfaction surveys	Patient satisfaction surveys
How is user expectation used in the hospital	Improvement of menus; updated different languages	Catering and lower incident reports	Meals changed	Food choices

Table 8.7: Patient orientation

8.3.5 Theme 5: Quality

The fifth theme explores the quality measures where the first sub-theme aims to understand whether optimum care is being provided at all levels and through all channels consistently.

The second sub-theme aims to explore how evidence-based medicine is ensured in practice, in nutrition programmes and in interventions with patients.

The third sub-theme explores patient centric care. The findings have shown that the case study hospitals are JCI compliant. JCI stands for Joint Commission International and is an international body of hospital accreditation. The case studies in this research are either accredited or in the process of achieving accreditation. This, therefore, ensures patient centricity, as the JCI model places emphasis on the patient in the centre.

In this section, an interviewee pointed out that JCI policies and regulations are applied in the hospital, and nutrition has standard policies such as:

“(AOP 1.6 Nutrition and functional screening) which is one standard in the tool.”
(Interviewee 2c)

The types of quality measures in place for the nutrition department are summarised in the response below as belonging to catering services or patient complaints.

“The catering department has two quality measures, one of which entails the monitoring of food and food temperatures, and completing of a random food temperature checklist. The second involves the customer satisfaction survey, the number of unsatisfied customers over the total number of surveys done on a monthly basis. Quality customer satisfaction surveys and food temperature control surveys ... this is the document ... number of unsatisfied customers over the number of total patients surveyed.” (Interviewee 1b)

8.3.5.1 Evidence-based medicine in nutrition interventions

Evidence-based medicine, as shown in Chapter 2, Section 2.3.2, has shown great emphasis on evidence-based medicine in nutrition intervention. In this analysis however, one interviewee showed that evidence-based medicine is applied when leaflets are printed, through making sure references are up to date.

“When the education leaflets and policies are based on international standards, one of these being JCI standards, [it is important to] make sure all lists of research are updated and not more than 5 years old.” (Interviewee 4c)

Here, the interviewee referred to the fact that materials provided by the hospital are checked by the quality department, which has certain guidelines to follow. A more general overview of clinical practice was explained by a nutritionist when they said:

“Everything done follows clinical practice guidelines, and everything must follow level a or level b (level 1 or 2 standard), any process done in the guidelines is referenced and the level must follow a and b and be approved by the director. This is done for any department including nutrition, this is done for all the hospitals (cardiac, paediatric surgery) and this is done for the patients.” (Interviewee 1b)

This further emphasises the point that evidence-based medicine is done at a clinical level for all departments, not specifically for the nutrition department.

8.3.5.2 Patient centrality

The third sub-theme is patient centrality. The hospitals being interviewed are either Joint Commission International accredited or in the process of accreditation, therefore according to the JCI the patient is at the centre of all activities.

This was also demonstrated when different healthcare professionals were asked about patient centrality, where the primary answers showed they would centre on the patient:

“Assessment of the patient/education of the patient. Under JCI where their priority is patient-centred standards, the patient is the centre of concern. There are two types of standard 1) patient centred; under them is management assessment, education... All policies are under the JCI standard.” (Interviewee 1b)

However, other healthcare professionals were not in full agreement about whether cost was the driver of activities, or the patient:

“The patient is the centre of the nutrition care plan; it is inevitable that patients are in the middle of the system. This hidden centre is cost.” (Interviewee 2b)

“Not agreeing on what should be the centre - cost or patient.” (Interviewee 3b)

Another healthcare professional showed that patients are involved in their healthcare plans through different means, and used meal choices as an example:

“The involvement is created through choosing their type of meal. Assessment of each patient admitted would show it is patient centric, also counselling of nutrition with patients is a part where the patient and their family are involved in the education and the plan.” (Interviewee 3c)

Involving patients and other healthcare professionals to ensure patient centricity was also highlighted when a nutritionist at a private hospital was asked to give her opinion:

“Nutrition involves creating awareness; we are planning on having CMEs (continuing medical education) for the doctors and new ICU (intensive care unit) guidelines and diabetes guidelines in 2013.” (Interviewee 4c)

JCI standards and regulations are written with the patient in mind, and these are being followed by the accredited hospitals, as well as the yet to be accredited hospitals. The mission and vision of all four case studies show that their aim is to have patient-centric processes and services.

8.3.6 Theme 6: People and competencies

This theme aims to explore training programmes and the capabilities of healthcare professionals to ensure up-to-date nutrition care. The first sub-theme shows that the director of the nutrition department was more involved in setting up training programmes, while most of the healthcare professionals interviewed were not involved in setting up training programmes or hiring people.

The second sub-theme involves core competencies, and whether there are set skills and competencies in order to provide nutrition education and nutrition programmes to patients. A reason why the answers were limited might be because of the language barrier, and not translating the questionnaires into Arabic.

8.3.6.1 Nutrition training of healthcare professionals

Both public hospitals derive their training policies from the strategic direction: investing in people. Training of the nutrition department in public hospitals is publicised within an annual report done by the education and training department.

“We are part of staff development; there is an annual report of training programmes. What is required in the summary of education is a requirement for every healthcare professional, including CME hours, etc. The quality department oversees the file of the staff. The healthcare providers are necessary and also the basic life support course which is renewed.” (Interviewee 1c)

In private hospitals, on the other hand, it has been shown that there is a need for training for staff in the nutrition department and for its services. As well as the difference in training for staff in private hospitals, the numbers of staff are lower than in public hospitals, although the number of beds per hospital is similar. This is compensated by staff handing over shifts, and printing materials for the nursing department to deal with nutrition services:

“For the nursing staff who handle the patients, when we are not on duty lectures are given to the nursing team. A format is made and disseminated to the nurses. Two lectures, twice a month is given per demand. A booklet is made and given to all departments, then for example, for the diabetic patient, if a dietician is not there to see them then the booklet can be used as basic instructions.” (Interviewee 3b)

An example of a department educating healthcare professionals on their services is the quality department in public hospitals.

“Under the department there is a training programme and each month the quality department has an education day, there are questionnaires, evaluations and tests and it is certified (CDP are certified). It is mandatory for all departments to attend the quality educational tool.” (Interviewee 2b)

Educating staff on up-to-date nutrition services and interventions is done differently in public hospitals when compared to private hospitals. In private hospitals, the staff give a lecture on demand – when needed; while in public hospitals, the training of staff was greatly emphasised in the goals of the department.

8.3.6.2 Core competencies to ensure nutrition patient education

Skills and core competencies with regards to patient nutrition education are shown in a number of responses.

“Quality qualifications and education oversee the core competencies. Each department oversees the issue of staff qualification and education, and [compliance] with the competency list. Some courses are mandatory and others are optional.” (Interviewee 2a)

The head of the department is responsible for ensuring core competencies are fulfilled and for hiring new staff, and ensuring staff members have the paperwork necessary. In the private sector, however, none of the healthcare professionals were able to provide a list or a document and one of the healthcare professionals redirected the question to the HR department:

“Under the HR team. Some of the competencies may include proper communication with a patient, patience, educational terminology and counselling power, how fast can you persuade a patient.” (Interviewee 3b)

Core competencies for the nutrition department in a public hospital required 44 skills to be met. The most relevant to nutrition education were “provide dietetic education in supervised practice session” and “supervise education and training for target groups”. Another core competency required the following: “develop and review educational material for target population” and “practice the use of mass media to promote food and nutrition” (core competencies and skills list for dietitians and non-dietitians in the nutrition department).

Table 8.8 demonstrates that the staff development plan is part of the annual training programme in both Hospital 1 and Hospital 2, while nutrition training for healthcare professionals did not become clear when interviewing Hospitals 3 and 4. Core competencies are documented for nutritionists in Hospitals 1 and 2, while no documentation was available from H3 and H4.

	H1	H2	H3	H4
Nutrition training of healthcare professionals	Staff development part of annual training programme	Staff development part of annual training programme	Not clear	Under HR
Core competencies	30 core competencies provided by authority	30 core competencies provided by authority	Not clear	Not clear

Table 8.8: People and competencies

8.3.7 Theme 7: Value and care design

The seventh theme revolves around the services of the hospital. Services involve a number of sub-themes. The first sub-theme includes understanding whether shared decision-making is needed and how it is involved in interventions. To most healthcare professionals, the food choices given to patients reflect a form of shared decision-making. To nutritionists on the other hand, it involves planning and implementing interventions and the process of meeting with the head of the department.

The second sub-theme explores the different routes of communication to ensure all patients know the different services provided by nutrition departments. Some of the heads of departments shared their plans for communication, while other healthcare professionals claimed that, being a tertiary hospital, the services are mainly confined to patients.

An integrated healthcare system is the third sub-theme under value and care design, where questions aim to understand the extent to which nutrition

intervention is considered part of it. The most prominent answer to this question explained the internal integration of the department with other departments

8.3.7.1 Shared decision-making

The head of department for the nutrition section of a government hospital believed that shared decision-making has two parts: an internal element relating to the hospital patients and an external element relating to the population:

“... decisions used in our programmes are shared and designed with all heads of sections, and discussed with staff in general. Specifically, the smart objectives are discussed with heads of sections, in a process for shared decision-making. If implementation needs to be done, it has to be easy to implement and follow up and that happens through constant communication.” (Interviewee 1a)

With regard to the general public, some of the healthcare professionals mentioned marketing tools in shared decision-making, such as:

“Roll-up and pop-ups and tabs are used ...” (Interviewee 1b)

Other types of communication will be discussed in the next section. Most of the healthcare professionals had the same view regarding shared decision-making with patients inside the hospital:

“They can choose their food...” (Interviewee 1c)

“[The] patient has the right to choose snacks and food items.” (Interviewee 2b)

“Choice of food.” (Interviewee 3d)

Patients get the chance to choose between menus and food choices on the menu. Some of the healthcare professionals claimed that shared decision-making is left to the nutrition department:

“Between them and the head of department and quality department.” (Interviewee 3c)

“Nutrition department is responsible for shared decision-making. Not quality” (Interviewee 2C)

Shared decision-making is a sub-theme that led interviewees to reply within the boundaries of the patients’ rights to food choice. Interviewees noted the use of marketing materials and tools to ensure patients are aware of the services. In the literature, shared decision-making as shown in Chapter 3 (see Figure 3.2), showed patients and healthcare professionals sharing information to decide the treatment plan. In the interviews, the focus was mainly on food choices.

8.3.7.2 Communication

This involves communication of services, tools and methods through which to ensure internal and external patients understand the services of the department. One of the four case studies had a plan for communication of services internally to patients, and externally to the general population, with the following view:

“... for the population in general, we have roll-ups and pop-ups on the services with the departments, but for the public we use existence in the media, TV, radio and Twitter, to advertise the activities. These are available physically in all media forms, for in-house orientation, for the staff, and for general departmental and DHA orientation. Part of the JCI recommendation.” (Interviewee 1a)

This is also the case from a marketing point of view:

“Support groups, diabetes education Ways of communication include displaying information, brochure stands, websites, as well as social media platforms direct to consumer. I wouldn't say it is targeted to all people, rather to those who have access to our platforms, business language, therefore our communication is in English.” (Interviewee 4c)

Other communication methods and services were thoroughly discussed throughout the interviews, therefore when questioned about services at this point in the

interview, the respondents hesitated; and due to the timing of the question, this led many to give a summary of what had been discussed earlier, such as:

“Services are as we have discussed, PR is done and informative media are displayed, as well as events done internally and externally. E.g. free fasting blood sugar, as well as other lines of communication, or if on the database an SMS may be sent as a reminder of the announcements. As well as having adverts in newspapers, Arabic and English newspapers, roll ups and brochures as well as the sales departments if the event is related to nutrition. Over the past year, two events took place. We had a two-day event that was very successful where dieticians saw the patients and at the end their measurements were taken.” (Interviewee 3a)

“Counselling ... and schedules, and diet plans ... No lines of communications ... Once a diet plan is given, after two weeks of a diet being done, then we look at any types of improvement in lifestyle, way of eating and way of lifestyle. (Referral Diet Plan is shared). Since it is a private hospital please remember the monetary aspect of this service, and the expectations next time” (Interviewee 3b)

Interviewees 3a and 3b exemplify the different findings on communication, whether through the public relations department of the hospitals by using various forms of media, or ensuring use of the different services provided by the nutrition departments through the newsletter, as well as through internal and external events.

In Hospital 2, however, it was shown that healthcare professionals demonstrated knowledge of plans for including nutrition scope services in the hospital’s patient handbook. This was shown in the response of interviewee 2c:

“[The] patient handbook is still in the process of being printed and will be the tool to ensure nutrition care services are communicated to patients. Still to be printed. The department should have a leaflet, but there is nothing on a department basis. Nothing internal as much as external.” (Interviewee 2c)

And in another interview:

“... the outpatient / inpatient care, it is listed in the scope of services (online not available). Through the education leaflet, the OPD booking area (Interviewee 3d)

After a thorough look into the services and the websites of the case studies, it was revealed that there is a need to increase communication levels and include nutrition with other services available from hospitals.

8.3.7.3 Integrated care

Healthcare professionals, as in the previous sub-theme, felt that food choices being made by patients confirmed that a level of integrated care was being provided. While other healthcare professionals explained the nutrition department's involvement in different multidisciplinary teams:

“Multidisciplinary meetings are there to ensure it is part of the integrated healthcare system as well as involving referrals from physicians to the nutrition department.” (Interviewee 2a)

“A patient care plan is integrated with the multidisciplinary team, so all are aware what the nutrition plan is.” (Interviewee 3c)

Another healthcare professional emphasised the range of professionals that need to understand the importance nutrition, in order to provide integrated healthcare:

“It is part of the hospital as a team, all the doctors and the CEO to understand the importance of this department, and understand the importance of the programme.” (Interviewee 3b)

One healthcare professional explained the different routes for reinforcing the preventative aspect and included it in the integrated healthcare plan.

“Regarding preventative health, chronic conditions can be relieved. This has to be proactively done here. For the outpatients, however, it is difficult. The referrals are done through other clinics. The importance is on being able to effectively educate and for doctors to attend CMEs, this plays a huge part. It is vital to keep reinforcing the preventative aspect, engaging patients and keeping them updated, as well as supporting doctors and dietetics. Get their messages to the patients. Marketing - develop one for each programme.” (Interviewee 4b)

Here the interviewee identified the impact of education and CME (continuing medical education), and how that can play a role in increasing doctor awareness of up-to-date nutrition services in order to get integrated care. Table 8.9 shows the manifestation of value and care design in the four case studies. Shared decision-making was exemplified by the first case study. In the other three case studies however, it demonstrates that the main emphasis was upon food choices. The tools and methods used in communicating the services provided by the hospitals differed from one hospital to another, ranging from pop-up stands, to RSS feeds on the website. This also included marketing the services through a number of printed materials as part of the PR of the hospital. As for the importance of a multidisciplinary team, it was revealed that Hospital 1 and Hospital 2 integrated nutrition into most departments, while in Hospital 3 and Hospital 4, the referrals only came upon request from doctors. Table 8.9 summarises the four case studies below.

	H1	H2	H3	H4
Shared decision-making	Across departments and with patients	Food choices	Food choices	Food choices
Communication	Through different media (radio, TV and online)	Through roll-up and pop-up tabs, as well as patient handbook	PR of internal and external services and health events	Marketing of services through internal and external events
Integrated care	Multidisciplinary team	Multidisciplinary team	Nutritionist is seen upon referral from doctor or request from patient	Nutritionist is seen upon referral from doctor or request from patient

Table 8.9: Value and care design

8.3.8 Theme 8: Measurement and impact

The first sub-theme focuses on measurement of a programme's impact on a population. Measurement of impact can be done in different ways utilising a number of health needs assessments and health impact assessment tools that are available, as well as frameworks discussed (As discussed in 4.2.4).

The second sub-theme queries the tools used to measure population impact; answers here were very limited. It follows up on the first sub-theme and that was also shown to have a low response rate.

8.3.8.1 Measurement of programme impact

Measuring a programmes impact is crucial to a strategy's implementation. Evaluation measurement and impact were discussed in section 4.2.4. When interviewees were asked about the measurement of programmes, and the impact of the programmes set out for nutrition, the answers varied. One of the interviewees referred to the KPIs of the department.

"I would think this is in the KPI if any." (Interviewee 2c)

While another hospital measured the impact through satisfaction surveys conducted by the marketing department.

"Maybe the level of satisfaction is measured by the marketing department."
(Interviewee 3d)

Hospital 4 didn't conduct any measurements, as interviewee 4c answered:

"No ... nonot collecting any data ... or referring to any statistics." (Interviewee 4c)

Other healthcare professionals showed the measurement impact of pre-testing and post-testing in nutrition programmes:

“[The] level of education is measured by pre-testing prior to the workshop, and then post-testing is done to understand the level of impact measured.” (Interviewee 1a)

The importance of measuring the impact and an overview of the different routes that could lead to information being gained was explained by the quality department in one of the cases:

“If anyone has them it would be the statistics department, the prevalence of the different diseases available. There was work done with UNICEF with the Ministry of Health, an awareness campaign in the schools, this would have been a good measure for the impact on a population, but wouldn’t be completed so far. Screening of the population is important. Any information from this would be at the statistics department. Cardiac patients have special information and they are screened after six months and tested regarding their habits, as well as those seen for bariatric surgery. Others may include the diabetic clinics as during their intervention they would see habits change. The budget is allocated, and no one makes a feasibility study, the value must change on the cost put.” (Interviewee 1c)

This shows an understanding for the importance of measuring impact, yet there was minimal evidence from the interviews conducted of a constructed and planned method.

8.3.8.2 Tools in measurement

With regard to measurement, a questionnaire – the patient satisfaction survey – which includes a nutrition aspect is used to gain feedback from patients. As previously mentioned in the sub-section, measuring the pre and post effect of a workshop is done to acquire feedback. Additionally, on workshop days a quiz is used to measure the impact of the workshop on the participants:

“Questionnaire – quizzing – on spot workshop.” (Interviewee 2b)

Marketing teams in some hospitals use another tool – media coverage mapping.

The media department keeps a record of media coverage:

“The tools used to measure impact are the post test, and the media department keeps records.” (Interviewee 1a)

In Hospital 1, the importance of impact measurement is observed in interviewee 1c’s reply:

“Stats department: no feasibility studies are done as budgets are pre-allocated. The outcomes must be measured, but not for cost, there is already cost utilisation and other utilisation, but nothing related to nutrition. They must be linked. ... Maybe the statistics department would have something similar. E.g. 2,000 nationals with a certain disease so we could check whether demographics have changed by 2013, observational wise, it is evident that people are slimmer over the years, and looking different. So maybe a study must be done.” (Interviewee 1c)

This theme shows that measurement and impact are looked at in a number of ways in each hospital. Media departments cover the media mapping, and nutritionists who give workshops do their assessment of their workshops. According to Hospital 1 interviewees, it is vital to screen the population and understand the impact of nutrition strategies on them.

8.3.9 Theme 9: Innovation and best practices in technology

The first sub-theme within the category of innovation and best practices required healthcare professionals to identify technologies being used for nutrition interventions. Some of which include social media and other emerging technologies in the nutrition field.

The second sub-theme questioned the extent to which technology is used in nutrition interventions. Most of the answers in this sub-theme were “not applicable”. This could be due to a number of factors, one of which could be the

wording of the question. Another reason is that the participant may think that the question repeats the previously asked one about using technologies in nutrition interventions. A third reason may be that there are no technologies used specifically for nutrition services.

8.3.9.1 Emerging technologies in nutrition interventions

One of the private hospitals has signed up for a private programme to combat NCDs, where each doctor is assigned a number of patients, and does home visits using new emerging technologies in communication; this programme has not been implemented as yet.

“We are working on a programme, a chronic diseases management programme, where there is interaction between house and doctor and we can involve nutrition in that. What type of meal you can eat now, can this be eaten or not, this is underdeveloped.”
(Interviewee 3c)

Other participants emphasised the use of new social media websites at their hospitals, such as Facebook and Twitter pages, and websites in general.

“The use of technology is seen in Twitter/ tabs / iPads/ new technology for communication is used by having new websites and having other apps.” (Interviewee 1a)

“Websites, Twitter and Facebook are used for announcements about new doctors and services, but nutrition interventions are also mentioned. By technology do you mean the type of equipment ... types of technology, I don't know what you mean? If it is Twitter/Facebook/website, I would think this is in the treatment itself.” (Interviewee 3a)

“Yes e-health services are used in the hospitals, but not in the nutrition department.”
(Interviewee4b)

One hospital adopted a new way of interacting with the public through social media: a Twitter clinic. Once a week the department sets three nutritionists online, and they answer queries from a one-hour clinic online via the social media website,

Twitter. This, however, is not marketed on a very wide scale, therefore other healthcare professionals understand the existence of this programme but aren't sure of how to direct patients/customers to it.

“Twitter chat with a healthcare provider (direct contact with the patients) from the DHA central, but no idea where, but there is virtual contact direct with the patient.”
(Interviewee 2a)

The technologies implemented and the approaches used are based on what the head of department sees as appropriate. The process through which nutrition-based technologies are implemented to deliver high quality healthcare, is through the use of new social media avenues to interact with the patient. This seems to be the most popular method used in most hospitals. The quality department does not oversee this process of integrating emerging technologies into interventions. With a lack of strategy in promoting the engagement of patients through different means and technologies, it is left up to the head of the nutrition department to decide what is to be used.

8.3.10 Theme 10: Culture and teamwork multidisciplinary teams

The first sub-theme of culture and teamwork considers the multidisciplinary teams that are involved in the delivery of nutrition care. This includes nutritionists on ward rounds as part of a team that decides on a care plan for patients.

The second sub-theme considers the different teams that provide nutrition assessment, screening and care. Most interviewees answered in a similar way, explaining that nurses, doctors and nutritionists work together to fill in patient forms. Answers about this theme revealed that some hospitals give nutritionists access to blood tests, while in others they need to be requested.

8.3.10.1 *Multidisciplinary teams*

In private hospitals, nutritionists are asked for via referrals and are not part of internal medical rounds. In public hospitals, however, the nutritionists form part of multidisciplinary teams such as the cardiac team, the gastric team and numerous others. This is shown through the response of multiple interviewees from Hospital 1:

“Inpatient education and multidisciplinary [teams] with cardio team/geriatric team/diabetes team/infection disease unit.” (Interviewee 1b)

“A number of multidisciplinary teams are available. For each diagnosis, nutrition is part of the team. Also in their rounds they are available.” (Interviewee1c)

The quality department for the public hospital demonstrated the involvement of nutrition in multidisciplinary teams through the comments below:

“When the HCP writes the notes, the most responsible physician needs to review the plan of care by the physician, and the nutritionist writes the needs. If not, the most responsible physician would refer the plan back to a nutritionist, and it would be changed according to the request, then reviewed and signed again by the most responsible physician. The most responsible physician is the consultant, or the team leader.” (Interviewee 2c)

The practices are different in the private sector. The approach to involving the nutrition department is upon referral. Interviewee 3b explains that doctors’ rounds are done separately from the nutritionists’ rounds, as shown below:

“... we are on different teams. If it is a referral to nursing and doctors ... then they are allied to health (whether physiotherapy or nutrition) etc. only upon referral. We are not part of the internal medicine rounds.” (Interviewee 3b)

This shows that the concept of a multidisciplinary team involving the nutritionist does exist, but needs more attention in the private sector. This will be further discussed in Chapter 10 (see Section 10.4.5).

8.3.10.2 Authority of nutritionists in teams

Nutritionists are involved at multiple points in the care plan of a patient, but the authority given to nutritionists differs from one hospital to another. This section reveals that the three most important healthcare professionals in nutrition assessment, screening and delivery of care are the doctor, the nurse and the nutritionist.

“Nutritional team: if any department notices a need, then the nutrition team is referred to them via referrals.” (Interviewee 3b)

“Nutrition is assessed, through screening by the nurses and according to that the referrals go.” (Interviewee 3c)

The assessment in Hospital 1 and Hospital 2 are done by the nurse, while the screening and delivery of care are done by the nutritionist. In Hospital 3 and Hospital 4, however, they are referred to the nutritionist upon request. Lab requests and access to patient’s records are viewed with limited access. Table 8.10 further illustrates the difference between the private hospitals and the public hospitals. Where the nutritionists in the public sector are part of the multidisciplinary teams in a number of departments, this is not shown in Hospitals 3 and 4.

	H1	H2	H3	H4
Multidisciplinary teams (MDT)	Nutrition is part of the MDT, such as cardiac, digestive unit etc.	Nutrition is part of the MDT, such as maternal and paediatric unit etc.	Nutrition is not part of the MDT	Nutrition is not part of the MDT

Table 8.10: Multidisciplinary teams

Nutrition care assessment and planning are shown to be the responsibility of a number of professionals in the multidisciplinary teams. Nutritionists may be involved in the multidisciplinary teams, or in the case of private hospitals, may be referred to by the multidisciplinary team.

8.4 Case reports on the four hospitals

The remainder of the chapter shows a summary table with key findings for each of the case studies.

Theme	Hospital 1	Hospital 2	Hospital 3	Hospital 4
Leadership	Linked to authority KPI: five themes – customers, staff, quality improvement, efficiency/productivity and enablers	Linked to authority Incident report form where risk manager deals with the line manager General- not related to NCD	Leadership is very keen to spread the awareness	Leadership is keen on awareness Head of nutrition department is not experienced in dietetics therefore difficult to have a strategy
Resources and enablement	Workshops with different government, semi-government and private entities	Budget allocated by finance, or through sponsorship	Not yet involved with cross government Sponsorship is the way to get nutrition programmes financed	There are no straight guidelines or policies Support of initiatives by leadership
Process and activity	Healthy breakfast for schools Zero budget approach	Brochures, nutrition therapy plan of care	New born paediatric, adults and elderly, it is a one-to-one patient education service	Speaker programmes Community activities are per demand
Patient orientation	Multi-language patient education material Nutrition education groups; TV shows; competition	Patient Family Education	Customer satisfaction survey, surveys and admin numbers are all over the hospital The patient is free to express the satisfaction level verbally or in writing	Nutrition patient education Nutrition care process, lactation consultant Family education centre
Quality	Taking part in many evidence-based activities, but research is weak in this area JCI accredited hospital	Patient is the centre of the nutrition care plan JCI accredited hospital	Measures follow the JCI requirements, catering department rounds are done to ensure satisfaction is met Applying for the JCI	Applying for JCI accreditation

People and competencies	Annual training for nutrition department	Each department oversees the staff qualification and education, with the competency list	Two lectures are given per week as demand requires Booklet is given to all departments Referral diet plan	In nursing orientation – nutrition is included
Value and care designs	Patient satisfaction surveys in the nutrition services	Patient handbook is still in print (tool to ensure nutrition care services are communicated to patients)	Counselling and rounds, and schedules and diet plans	Support groups Diabetes educational material
Measurement and impact	Pre-tests and post-tests after workshops	N/A	N/A	N/A
Innovation and best practices	Twitter clinic	Twitter clinic	E-health services are used in the hospitals	Facebook and social media used for marketing
Culture and teamwork	Nutrition is interlinking with multidisciplinary departments, mainly: heart team and diabetes team	Nutrition is part of the multidisciplinary team and is referred to by the doctors	Only upon referral Not involved in multidisciplinary teams	Not involved with teams yet Renal unit to include nutrition on the team

Table 8.11: Key findings of the 10 factors in the four hospitals

8.5 Summary

This chapter has shown how the nutrition strategies are deployed in different departments, and at different levels. The four case studies were conducted with the aim of validating the factors identified through the literature review, and to understand whether new themes could be deduced.

This chapter has also shown the difference in nutrition delivery care between the private and public sector. In public hospitals, clear policies, lists of core competencies, training and education have been shown in the analysis. In private hospitals however, technology is implemented and awareness campaigns are part of the marketing departments KPIs. All hospitals, however, have been shown to take patient diversity into consideration when recruiting nutritionists, as well as setting out meal plans and nutrition education material.

A number of further themes were explored in the interviews for the four case studies. The themes were studied for their relevance, appropriateness, and how they were implemented in each hospital. The new themes explored were media involvement and regulations, as well as type of education of healthcare professionals, but the most prevalent one was patient population or cultural diversity. This was mentioned in more than one case study by more than one healthcare professional. This will, therefore, be an added measure to the questionnaire, which forms phase three of the data collection methods. The questionnaire will measure the importance of the themes discussed with regard to how they are seen in combating NCDs through nutrition intervention.

Chapter 9: Phase III analysis: questionnaire survey

9.1 Introduction

The objective of this chapter is to analyse the responses from the third stage of data collection: the questionnaire survey method. This chapter focuses on the analysis of the quantitative data collected from the 161 healthcare professionals across the United Arab Emirates using the ten factors identified from the literature review in Chapter 4 and one additional factor, patient diversity, added after analysis of the case studies.

The data collected have been analysed using the SPSS package, along with standard statistical analysis techniques:

- Descriptive analysis
- Ranking tests
- Factor analysis
- MANCOVA

An introduction to the theories of the main statistical analyses used in this research was provided in Chapter 6. Results and the analysis of the questionnaire in essence provide a healthcare professional's perspective of the importance of factors that influence nutrition interventions in the healthcare system in the United Arab Emirates. The data is presented in a tabulated format showing the response rates of the participants, and a profile of the participants as well as non-responses rates.

The majority of the questionnaire responses came from Abu Dhabi and Dubai. The qualifications and occupations of the respondents were shown to have effects on the responses. The results show the importance of the factors presented from the perspective of healthcare professionals.

The demographics of the healthcare professionals and the validation of the factors is presented. The data set is assessed for appropriateness for exploratory factor analysis. Finally, factor extraction is conducted in order to understand the interrelations between all factors questioned. Further analysis, such as MANCOVA and ANOCOVA may be applied in order to predict the most important predictor among the extracted factors.

The most important factors resulting from factor analysis are (1) quality and processes, (2) training and use of technology, (3) senior management involvement, (4) patient diversity and (5) involvement of nutrition in multidisciplinary teams; this can then be used as a blueprint in order to explore the factors influencing nutrition interventions in the UAE healthcare system.

9.2 Results of the pilot

9.2.1 Results of the pilot

Results from the pilot are shown through Cronbach's alpha and observation of the participants, as shown in the next two sections.

Reliability statistics

Cronbach's alpha	Cronbach's alpha based on standardised items	No of items
.950	.950	44

Table 9.1: Reliability statistics

Cronbach's alpha is one way of testing the internal consistency of the questionnaire (Field, 2012, Tabachnick and Fidell, 2007). The results range from 0 to 1, such that 0.95 indicates a high degree of consistency between items and low measurement error (Connelly, 2011). The pilot tests on the questionnaire resulted in alpha equal to 0.95 (as shown in Table 9.1), which indicated a high degree of consistency and demonstrated that the questionnaire was ready to be conducted on a large scale.

9.2.2 Observations from the pilot

The respondents answering the pilot questionnaire observed a number of salient points. Respondents were asked about the clarity, use of words, strength of translation, as well as length of questionnaire. Thirty respondents considered the questions and after feedback, a number of questions were reworded due to ambiguity. One of the translated questions needed a footnote to further explain the question. Most participants agreed that the translation was up to standard, but also agreed that the questionnaire was not short.

9.3 Administering the questionnaire

Healthcare professionals participating in the questionnaire were selected according to the following main criteria:

- The hospital they worked in had a nutrition department in operation.
- The hospital is known to liaise with nutrition programmes across sectors.

The questionnaires were distributed to various hospitals covering 200 healthcare professionals in different hospitals of the United Arab Emirates. The type of questionnaire used was a self-administered questionnaire.

Out of the 200 questionnaires distributed, 161 were given back to the research team. This is equal to an 80.5% response rate; this was due to the different types of follow up used. Telephone appointments were made to ensure the personnel designated by the management were available on the drop-off day for the questionnaires. The snowball technique was used, as the sample collected was a non-random sample, therefore, this further enhanced the response rate.

During the pick-up of the questionnaire, efforts were made to understand why non-respondents had not replied to the questionnaire; 39 of the questionnaires were not returned, and when investigating the cause a number of factors played a role, such as:

1. Too lengthy
2. Inappropriate timing (during break) when approached
3. Too busy, didn't have the time
4. Not interested in general research or questionnaires

The reasons given above were among the reasons why doctors and other healthcare professionals did not participate in the questionnaire.

Trained local healthcare professionals were targeted to take part in the validated questionnaire to assess their opinion, knowledge and attitudes towards the factors that influence nutrition-based strategies in the United Arab Emirates. The questionnaire covered socio-demographic information (gender, age, occupation, qualification), as well as information about the work place (type of hospital, number of beds, location of hospital). It looked at the opinions of healthcare professionals on strategy development; attitudes on the importance of resources, clear

processes, patient orientation and quality; training programmes; communication methods; measurement of impact; innovation; multidisciplinary teams, as well as considering culture diversity of patients to the success of implementing effective nutrition programmes.

There were access challenges and difficulties in getting responses from different hospitals, as approvals and ethical reviews were necessary when first approaching any hospital. When presented to the ethical boards, the research (having obtained prior ethical consideration from the university – see Appendix H) was then approved by the head of departments of nutrition, quality and in some cases the chief executive officers of the hospital. In the following section, descriptive statistics of the hospitals participating are provided, along with types of hospitals, types of services, as well as number of beds. A demographic analysis of the participants is also discussed.

9.4 Descriptive statistics of participating respondents

A total of 161 respondents replied to the questionnaire out of the 200 distributed. However, eight of the questionnaires had missing data in the demographics section, making the total number of calculated participants in the demographics section 153. Out of the respondents, there were 34 males and 119 females. The following tables and figures illustrate the descriptive statistics of the 161 respondents. Table 9.2 demonstrates the characteristics of the healthcare professional respondents.

Characteristic	N=161
Age group	
<30	39.9%
31-40	31.9%
41-50	20.3%
51+	8.0%
Gender	
Male	22.2%
Female	77.8%
Education	
High school	2.0%
Higher diploma	5.3%
Bachelors	52.3%
Masters	10.6%
PhD	4.6%
Doctor	23.8%
Other	1.3%
Occupation of participant	
Nursing	16.1%
Nutrition	28.2%
Managerial	6.7%
Quality	8.1%
Doctor	32.9%
Other	8.1%

Table 9.2: Characteristics of respondents, hospital healthcare professionals, UAE

9.4.1 Gender and number of participants

The total number of questionnaires calculated in the demographics is 153. In this phase, 34 males (22.2%) and 119 females (77.8%) responded to the questionnaire.

Table 9.3 shows the percentages and frequency of the gender respondents.

Gender	Frequency	Percentage
Male	34	22.2%
Female	119	77.8%

Table 9.3: Gender of participants

9.4.2 Age distribution of participants

Healthcare professionals that participated in the survey were mostly from the under 30 age category, and comprised 55 (39.9%) healthcare professionals; 44 of the participants (31.9%) were from the 31 to 40 range and 28 of the healthcare professionals (20.3%) were between the age of 41 and 50. In the meantime, only eight participants were over 51 (8%). Figure 9.1 demonstrates the age range of participants.

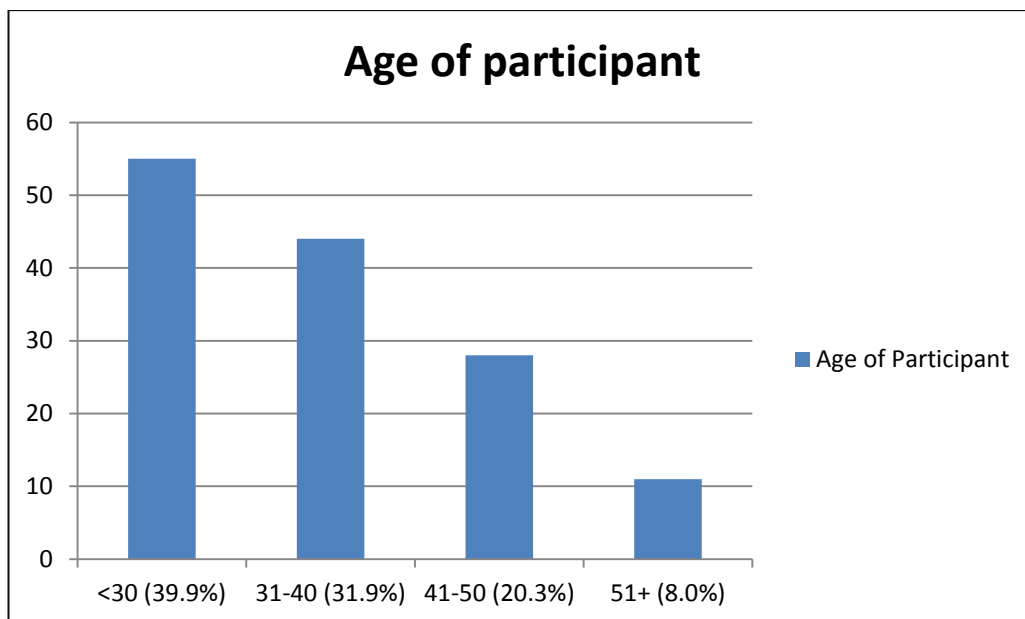


Figure 9.1: Bar chart: age of participant

9.4.3 Qualification of participants

Table 9.4 shows the different percentages of participating professionals, in terms of their different qualifications. The highest percentage was for those with bachelor's degrees, totalling more than 50%, while high school degree holders formed the minority in this section of 2%. Higher diploma formed 5.3%, Masters 10.6%, PhD holders formed 4.6% and doctors formed 23.8%.

Qualification	Frequency	Percentage
High school	3	2.0%
Higher diploma	8	5.3%
Bachelors	79	52.3%
Masters	16	10.6%
PhD	7	4.6%
Doctor	36	23.8%
Other	2	1.3%

Table 9.4: Qualification of healthcare professionals

9.4.4 Occupation of participants

The study aim involves understanding the opinions of a cross section of the healthcare profession, including nursing, nutrition, management, doctors, as well as quality and planning personnel in healthcare institutes. These were therefore the main targets for the questionnaire. Figure 9.2 shows the percentages regarding occupations of the participating healthcare professionals. The majority of the respondents were doctors (32.9%), followed by nutritionists (28.2%) and nurses (16.1%), then those in quality (8.1%) and managerial (6.7%) positions, and the remaining 8.1% of respondents were from other occupations.

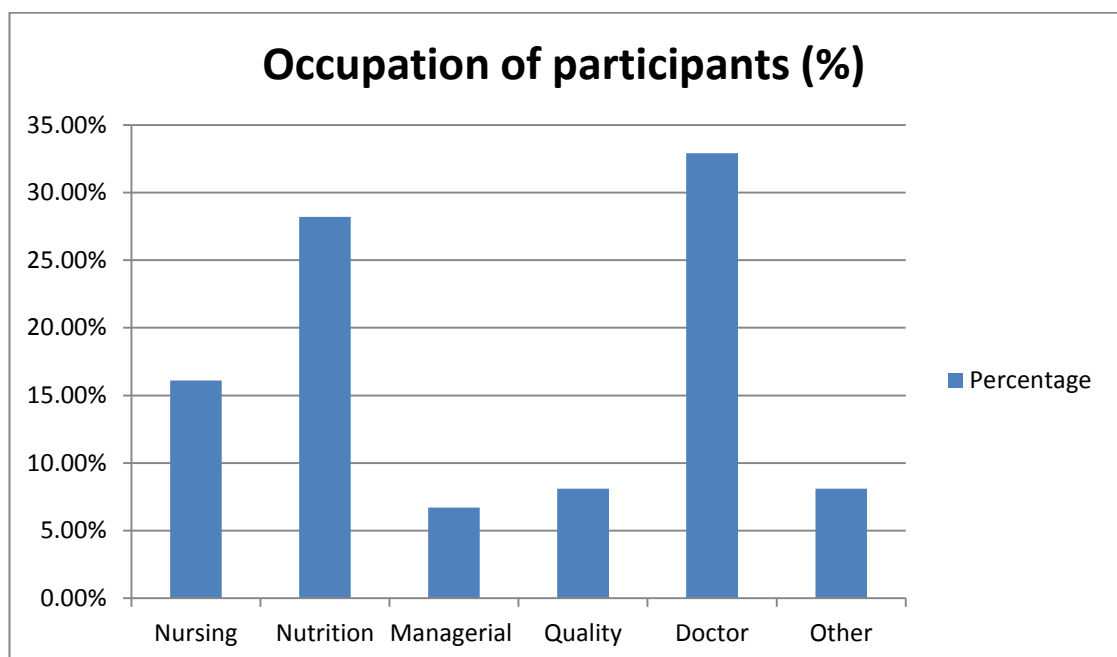


Figure 9.2: Occupation of participants

9.5 Analysis of hospital related data

The next section includes general information regarding hospitals, including some general facts about the size of the hospitals (number of beds), as well as type of hospital (government or private). In addition, it includes a description of the geographical location of the hospital.

9.5.1 Hospitals and number of beds

A profile of the respondents' hospitals is provided in Tables 9.5 and 9.6; the number of beds in the hospital has been clustered into categories of less than 100, 100 to 300 and more than 300. 16.8% of the hospitals participating had fewer than 100 beds, while 13 (12.9%) of those participating were from hospitals that had bed numbers between 100 and 300. The highest proportion of participating professionals was from hospitals with more than 300 beds, which makes 70.3% or 71 participants. The mean bed capacity was 386 beds with SD± of 201.587, as shown in Figure 8.6.

Number of beds	Frequency	Percentage
<100	17	16.8
101-300	13	12.9
301+	71	70.3

Table 9.5 Hospital profiles: number of beds

Mean number of beds	SD	Minimum number of beds	Maximum number of beds
385.75	201.587	13	700

Table 9.6: Hospital profiles: number of beds

9.5.2 Type of hospital

The data revealed that 85% of the professionals were from government hospitals, while 15% were from private hospitals. As shown in Table 9.7.

Type of hospital	Frequency	Percentage
Government hospital	130	85%
Private hospital	23	15%

Table 9.7: Type of hospitals

9.5.3 Geographical location of the hospital

The results of the descriptive analysis show that geographic locations of hospitals are most clustered in Dubai and Abu Dhabi with 87 (56.9%) and 53 (34.6%), respectively. In Figure 9.3, we can see that the remainder of the participants make up seven (4.6%) respondents from Sharjah and five (3.3%) from Um el Quwain, while only one participant was from Al Ain (0.7%). The aim of having participants from different geographic locations was to look at an overview of the whole United Arab Emirates.

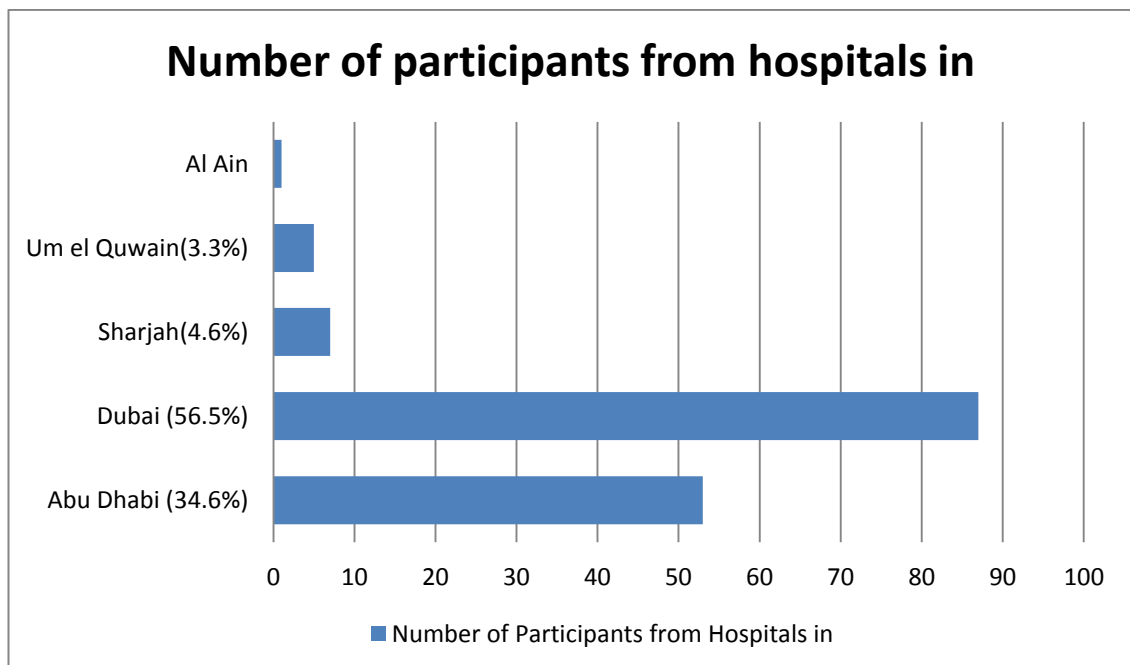


Figure 9.3: Geographical location of participant's hospitals

9.6 Descriptive analysis

9.6.1 Level of agreement of recipients towards factors affecting nutrition programmes and interventions

The participants of the questionnaire were asked to estimate their level of agreement to a number of questions in order to fulfil the aim, which is to validate the factors needed in order to implement a nutrition strategy. The scale is according to the level of agreement: 1 – strongly disagree; 2 – disagree; 3 – somewhat disagree; 4 – neither agree nor disagree; 5 – somewhat agree; 6 – agree; 7 – strongly agree. In this section, a descriptive analysis of the level of agreement of healthcare professionals on the 33 questions is presented, as well as a ranking of the 11 factors according to their level of importance. Table 9.8 describes the mean score (\pm SD) and the correspondent level of agreement to the 33 questions presented.

Table 9.8 lists 26 out of the 33 items where healthcare professionals “somewhat agreed” to the factor. It also list seven items where healthcare professionals “agreed”. This shows that none of the items were under the “neither agree nor disagree”, “disagree” or the “strongly disagree” categories. This shows the level of agreement of healthcare professionals with the items discussed. The next section ranks the importance of the 11 factors.

#	Question	Mean score (±SD)	Corresponds to
1	Hospital senior management is effectively involved in the development of nutrition strategies	4.9(±1.574)	Somewhat agree
2	Management strategies require the involvement of senior management of the hospital to ensure lower incidence of non-communicable diseases	5.82(±1.143)	Agree
3	Before implementing nutrition programmes, the hospital establishes the relevant importance of key performance indicators	5.29(±1.327)	Somewhat agree
4	The hospital uses the lifespan approach in nutrition interventions	5.44(±4.362)	Somewhat agree
5	Cross-government or cross-sector departments are involved in nutrition interventions	5.10(±1.429)	Somewhat agree
6	It is important for this hospital to finance programmes for nutrition interventions	5.9 (±1.267)	Agree
7	Nutrition is sufficiently addressed as part of patient education in my hospital	5.37 (±1.433)	Somewhat agree
8	The demographics profile of the UAE is effectively used when setting up nutrition programmes	4.62 (±1.554)	Somewhat agree
9	Age-related programmes are important in nutrition interventions	5.69(±1.303)	Agree
10	The hospital has clear processes for patient orientation	5.19(±1.508)	Agree
11	The hospital has clear processes in place to assess user expectations of nutrition programmes	4.90(±1.463)	Somewhat agree
12	User expectation feedback are effectively used in nutrition programmes	4.87(±1.404)	Somewhat agree
13	The hospital has quality measures in place to ensure nutrition care is delivered across all areas consistently	5.22(±1.491)	Somewhat agree

14	The hospital has effective processes to ensure evidence-based nutrition interventions	5.18(±1.416)	Somewhat agree
15	Quality assurance measures are used to ensure patient-centric nutrition care	5.29(±1.404)	Somewhat agree
16	Training programmes that staff undergo include up-to-date nutrition care	4.80(±1.603)	Somewhat agree
17	The staff's core competencies includes skills to ensure patient nutrition education	5.33(±1.319)	Somewhat agree
18	Up-to-date training in nutrition care is provided in my hospital	5.87(±1.261)	Agree
19	Shared decision-making processes are used in nutrition programmes	5.09(±1.398)	Somewhat agree
20	The methods of communicating the different nutrition services provided to patients are clear	5.10(±1.486)	Somewhat agree
21	The activities in nutrition intervention are considered part of an integrated healthcare system in this hospital	5.41(±1.414)	Somewhat agree
22	In my hospital, impact of nutrition programmes are measured effectively	4.85(±1.523)	Somewhat agree
23	The hospital uses sufficient tools for measuring impacts of nutrition programmes on the population	4.64(±1.551)	Somewhat agree
24	In my hospital, clear processes are available to assess the effectiveness of nutrition health initiatives	4.76(±1.521)	Somewhat agree
25	The hospital uses various e-health services such as social media, tele-health, television commercials and internet in nutrition interventions	5.03(±1.519)	Somewhat agree
26	Technology is used in nutrition interventions in this hospital	4.96(±1.437)	Somewhat agree
27	Information to patients is achieved through advanced technological means	4.74(±1.554)	Somewhat agree
28	Multidisciplinary teams in this hospital include nutrition personnel	5.72(±1.524)	Agree

29	The hospital has different teams that provide nutrition assessment, screening and care effectively	5.12(±1.433)	Somewhat agree
30	The nutrition personnel in multidisciplinary teams have a well-defined role	5.36(±1.378)	Somewhat agree
31	The patient population of the hospital is considered before setting up menus	5.57(±1.391)	Agree
32	The hospital considers the differences in the patient ethnicity when setting up the services by nutrition department	5.46(±1.380)	Somewhat agree
33	Culture and diversity in the patient population is considered in the nutrition strategy	5.37(±1.468)	Somewhat agree

Table 9.8: List of questions and healthcare professional's level of agreement

9.7 Ranking analysis of the response variables

In the questionnaire design, the fourth question in each set of questions asked about the importance of the theme to the implementation of nutrition strategy in the hospital (see Appendix E). These questions were the fourth in each theme, namely: 1.4, 2.4, 3.4, 4.4, 5.4, 6.4, 7.4, 8.4, 9.4, 10.4 and 11.4. Table 9.9 shows the percentage and level of agreement of healthcare professionals to these questions.

According to Table 9.9, the two most important factors in the success of nutrition programme implementation were 2.4 and 10.4. Factor 2.4 involved resources and 10.4 teamwork, i.e. involving nutritional personnel in multidisciplinary teams. These were followed by people and competencies, culture diversity, strategy development, communication methods, innovation and quality, respectively.

Question #	Level of agreement	%
1.4 - Strategy	7	36.7%
2.4 - Resources	7	47.8%
3.4 - Processes	6	35.9%
4.4 - Patient orientation	6	32.7%
5.4 - Quality	7	32.9%
6.4 - Competencies	7	40.9%
7.4 - Communication methods	7	35.7%
8.4 - Measurement and impact	6	33.8%
9.4 - Innovation and best practices	7	35.9%
10.4 - Teamwork	7	44.4%
11.4 - Culture diversity	7	39.2%

Table 9.9: Percentage of the level of agreement according to the number of the question

The factors that are most important to healthcare professionals in the success of implementing nutrition programmes are now ranked according to their mode. The majority of the respondents chose resources, forming 47.8%, the highest percentage of strongly agreed respondents. While 44.4 % of the respondents strongly agreed that multidisciplinary teams are important to the success of implementing nutrition strategies. This was followed by 40.9% of the respondents who strongly agreed with training programmes, followed by 39.2% that strongly agreed with considering culture diversity as being important to the success of nutrition programmes. The percentages for strongly agreed respondents were: strategy development (36.7%), innovation (35.9%), communication methods (35.7%) and quality (32.9%). Table 9.10 shows the factors that were **strongly agreed** to have effect on the success of nutrition programmes from a healthcare professional’s point of view, ranked according to percentage in descending order.

Factor	Percentage “strongly agreed”
Resources	47.8%
Multidisciplinary teams	44.4%
Training programmes	40.9%
Culture diversity	39.2%
Strategy development	36.7%
Innovation	35.9%
Communication methods	35.9%
Quality	32.9%

Table 9.10: Ranking of factors

Table 9.10 shows that healthcare professionals strongly agreed with eight of the 11 factors proposed by the literature.

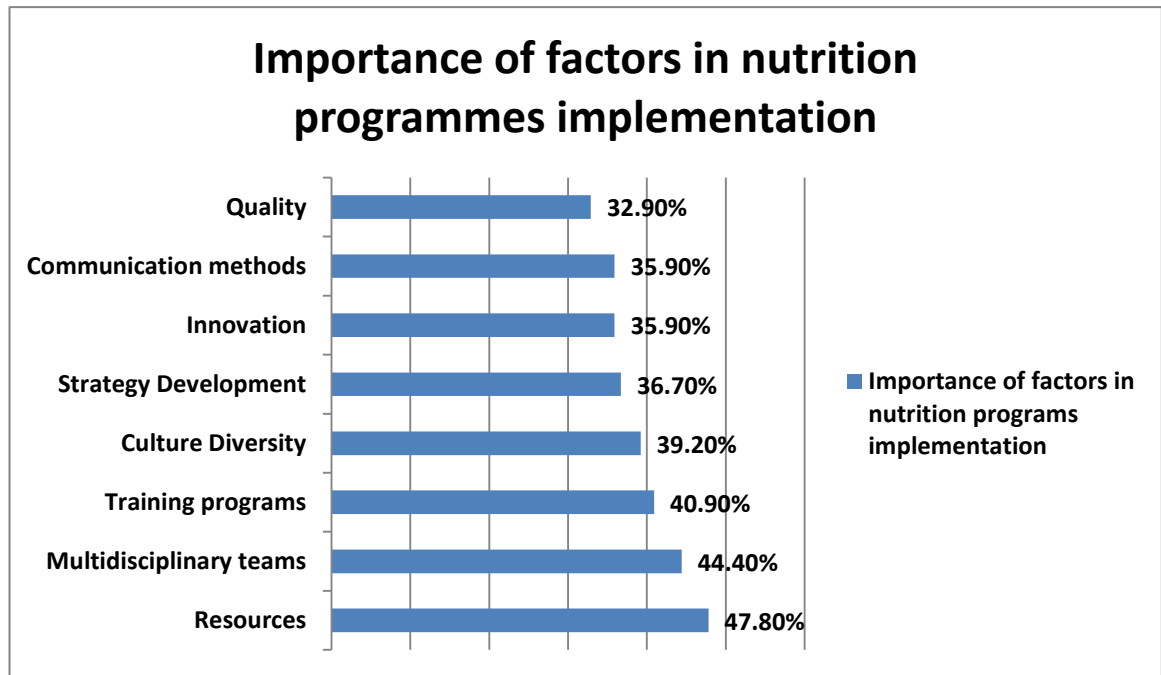


Figure 9.4: Importance of factors in nutrition programmes implementation (strongly agree)

The results of the ranking (Figure 9.4) show the first four of the eight to be similar to the results of the analytical analysis, as will be demonstrated in the next section (also see Figure 9.5). In the next section, factor analysis will be performed and the results will be tested through MANCOVA on the 11 factors, in order to understand the statistically significant difference between healthcare professionals' responses according to their age, gender, occupation and qualification.



Figure 9.5: Results of ranking percentages

9.8 Exploratory factor analysis

After performing the descriptive analysis of the questionnaire, exploratory factor analysis (EFA) was conducted to determine the best factor structure to explain the variation in knowledge and attitude of the healthcare professionals.

9.8.1 Factor analysis

An introduction to the theories of the main statistical analyses used in this research was provided in Chapter 6. The following sections describe the results of factor analysis. In exploratory factor analysis, there are a number of steps to be performed (Tabachnick and Fidell, 2007). The first step includes assessing the suitability of the data for factor analysis. The second step consists of determining the suitable number of factors present and, therefore, the dimensionality of the dataset. The third step is the factor extraction, using a Scree test, followed by factor rotation and interpretation of the data.

9.8.1.1 Assessment of the suitability of the data

First and foremost, assessment of the suitability of the data for factor analysis had to be performed. Certain requirements must be fulfilled before factor analysis can be successfully employed. Sample size, inter-correlation and missing data are dealt with in order to determine the suitability of the data for factor analysis. Literature has shown that the sample size should be more than 100, and this has been fulfilled as the number of respondents was 161 healthcare professionals (Field, 2012, Tabachnick and Fidell, 2007).

9.8.1.2 Missing data

Missing data in the literature can be dealt with in a number of ways, either by deleting cases, making estimations or through a missing data (pairwise) correlation matrix being analysed (Everitt and Dunn, 2001). Previously, researchers omitted informants who had not completed data on a variable. More recently, statisticians have promoted methods that are based on distributional models for the data (such as maximum likelihood and multiple imputations). Much has been published in the statistical literature on missing data (Little and Rubin, 2002). There are a number of ways to obtain maximum likelihood estimators, and one of the most common is called the expectation-maximisation algorithm, abbreviated as the EM algorithm. Schafer (1999) notes:

"If we knew the missing values, then estimating the model parameters would be straightforward. Similarly, if we knew the parameters of the data model, then it would be possible to obtain unbiased predictions for the missing values." (Schafer, 1999)

Missing data in this data set has been calculated and corrected using missing-value analysis (EM method).

9.8.1.3 Validity of factor analysis

The strength of inter-correlation was tested through statistical measures, the Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy, as well as the Bartlett's Test. These are acknowledged as some of the best measures to determine the suitability of a set of data for factor analysis (Field, 2012). The appropriateness of the data set requires KMO index range from 0 to 1. According to Field, the value of KMO should be 0.5 or greater (Field, 2012). Other researchers suggest 0.6 as the minimum value for a good factor analysis, and Bartlett's Test of Sphericity to be significant ($p < 0.5$).

KMO and Bartlett's Test showed that the data set was appropriate for factor analysis as KMO is 0.941 and Bartlett's Test of Sphericity is .000, both of which fulfil the requirements and show the data to be appropriate for factor analysis. Table 9.11 shows the results of the validity tests.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.941
	Approx. Chi-Square	4365.466
Bartlett's Test of Sphericity	df	528
	Sig.	.000

Table 9.11: Suitability of data for factor analysis

The next two sections illustrate factor extraction and factor rotation.

9.8.2 Validity of the instrument

The reliability coefficient for the questionnaire was 0.95. This result is consistent with previous study findings (Kato et al., 2014, Jones et al., 2014, Kruseman et al., 2012, Munoz-Astudillo et al., 2010, Bradford et al., 2010, Branscum et al., 2010).

Regarding the instrument's validity, a Varimax technique for rotated component analysis was used with a cut-off point for interpretation of the factors at 0.50 or greater. All items were loaded onto the expected dimension for which they were designed. Factor loadings were all higher than 0.5, so that each item loaded higher on its associated construct than on any other construct. Previous study findings in healthcare have also used the varimax rotation (such as Akram and Farooqi, 2014, Dien, 2010, Aydemir, 2008). Results of the factor analysis showed that around 72.1% of the variance in the variable was accounted for by five factors, as shown by the Kaiser criterion. The five factors will be explained in the following section and in the discussion chapter (see Section 10.4).

9.8.2.1 Factor extraction

Factor extraction is illustrated through a scree plot showing the five factors extracted and factor rotation. Scree plot shows that five factors are above one, with one factor above 20. This shows that this factor is very dominant and a large number of variables are included.

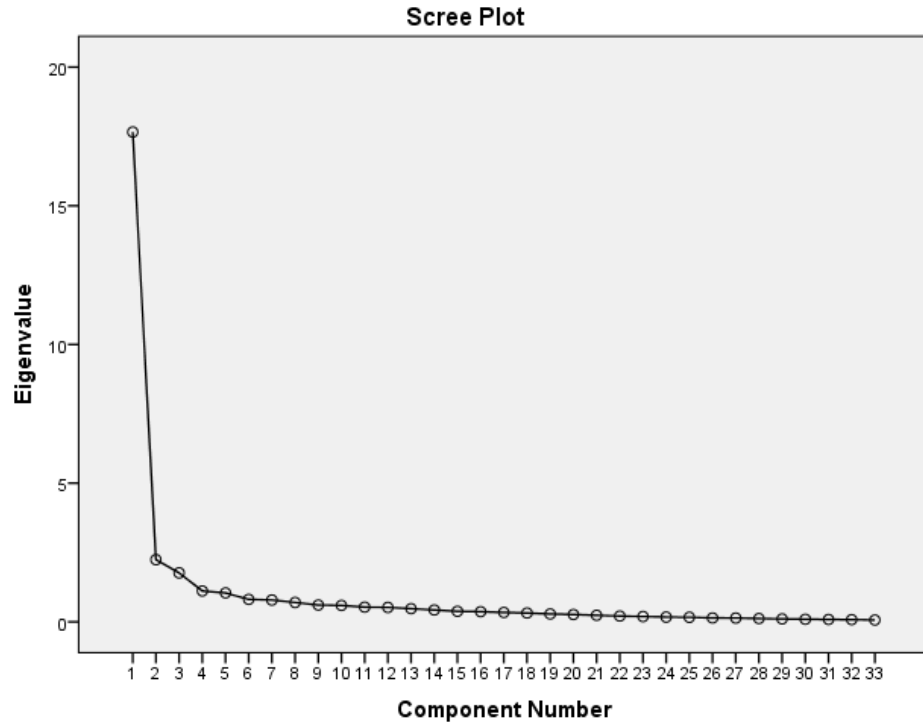


Figure 9.6: Scree plot

In keeping with the usual principal components approach, only factors with eigenvalues greater than one were returned (Hair, 2010). Figure 9.6 shows a scree plot. A Catell's scree plot shows that the five factors above eigenvalue of one contribute most to the explanation of the variance in the data set. Results of factor analysis show that around 72.1% of the variance in the variable was accounted for by five factors, as shown by the Kaiser criterion.

9.8.2.2 Factor rotation

Factors with an eigenvalue larger than one were retained. Factors with an absolute value of 0.6 were retained, using principal component analysis as an extraction method, and the rotation method was Varimax with Kaiser normalisation. The results shown in Table 9.12, demonstrate that the items measured could be reduced into five factors with an eigenvalue >1.0.

9.8.3 Extraction method: principal component analysis

Rotated Component Matrix^a

	Component				
	1	2	3	4	5
1. Quality assurance measures are used to ensure patient-centric nutrition care	.777	.297	.241	.174	.185
2. The hospital has quality measures in place to ensure nutritional care is delivered across all areas consistently	.761	.200	.245	.210	.278
3. The hospital has clear processes to ensure evidence-based nutrition interventions	.702	.322	.254	.230	.368
4. The hospital has clear processes in place to assess user expectation of nutrition interventions	.689	.434	.285	.129	.110
5. User expectation feedback are used in nutrition intervention	.649	.435	.236	.206	
6. The methods of communicating the different nutrition services provided to patients are clear	.628	.497	.179	.182	.285
7. The hospital has clear processes for patient orientation and empowerment	.607	.384	.298	.295	.269
8. In my hospital, clear processes are available to assess the effectiveness of nutrition health initiatives	.604	.567	.224	.208	
9. In my hospital nutrition programmes impact are measured effectively	.592	.536	.247	.159	
10. The demographic profile of the UAE is used as part of setting up nutrition programmes	.587	.334	.293	.107	-.199
11. Shared decision-making processes are used in nutrition programmes	.585	.361	.370	.273	.102
12. Nutrition is part of patient education in my hospital	.517	.192	.331	.349	.230
13. The activities in nutrition intervention are considered part of an integrated healthcare system in this hospital	.502	.355	.213	.305	.446
14. The hospital uses various e-health services such as social media, tele-health, television commercials and internet in nutrition interventions	.230	.811		.196	.117
15. Technology is used in nutrition interventions in this hospital	.268	.798		.200	.147
16. Information to patients is achieved through advanced technological means	.299	.796		.273	.117
17. The hospital has the tools used for measuring population impact	.460	.685	.184	.129	
18. The hospital has different teams that provide nutrition assessment, screening and care	.207	.609	.324		.474
19. The staff's core competencies includes skills to ensure patient nutrition education	.191	.586	.312	.248	.389
20. Training programmes that staff undergo include up-to-date nutrition care	.360	.582	.256	.128	.171
21. Up-to-date training in nutrition care is provided in my hospital	.497	.569	.268		.183
22. Before implementing nutrition programmes, the hospital establishes the relevant importance of key performance indicators	.214	.208	.773		
23. Strategies are in place to ensure lower incidence of non-communicable diseases	.121		.719	.232	.253
24. Hospital senior management is involved in the development of nutrition strategies	.214	.447	.637	.116	
25. It is important for this hospital to finance programmes for nutrition interventions	.207		.601	.183	.282
26. The hospital uses the lifespan approach in nutrition intervention	.469	.155	.598	.193	.116

27. Cross-government or cross sector departments are involved in nutrition interventions	.419	.314	.597	.270	-.165
28. Age-related programmes are important in nutrition interventions	.388		.574	.112	.297
29. The patient population of the hospital is considered before setting up menus	.175	.187	.176	.849	.188
30. The hospital considers the differences in the patient ethnicity when setting up the services by nutrition department	.240	.191	.248	.828	.146
31. Culture and diversity in the patient population is considered in the nutrition strategy	.244	.281	.205	.799	
32. Multidisciplinary teams in this hospital include nutrition personnel	.192	.202	.263	.416	.612
33. The nutrition personnel in multidisciplinary teams have a well-defined role	.258	.471	.150	.319	.530

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 13 iterations.

Table 9.12: Summary of exploratory factor analysis

Results for the SPSS questionnaire analysis (n=161) is shown in Table 9.12. The exploratory factor analysis is summarised and redrawn into Figure 9.7.

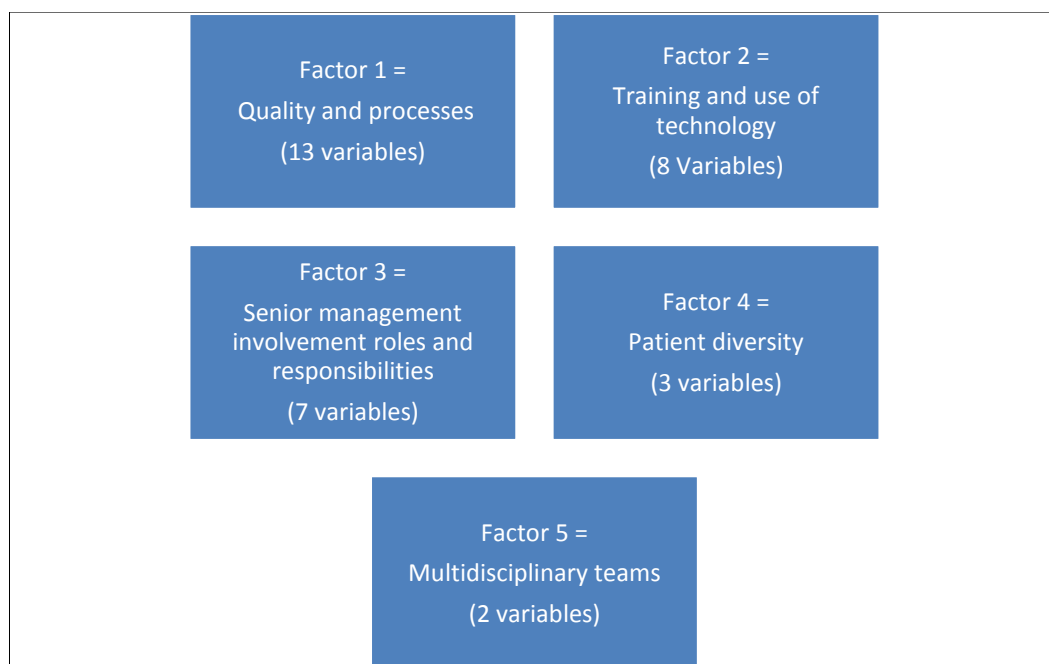


Figure 9.7: Results of factor analysis

Factor analysis was conducted on 33 items with Varimax rotation (Figure 9.7). The KMO measure verified the sampling adequacy for the analysis, KMO = 0.941 which

is well above the acceptable limit of 0.5 (Field, 2012). An initial analysis was run to obtain eigenvalues for each factor in the data. Five factors had eigenvalues over Kaiser’s criterion of one, in combination explaining 72.1% of the variance. The scree plot showed eigenvalues more than one and one factor exceeding 20, with 13 variables loaded. This will be explained further in Chapter 10 (see Section 10.4). Table 9.13 shows the factor loadings after rotations. The items that cluster on the same factor suggest that Factor 1 represents quality. The remaining factors and their representations are shown in Table 9.14.

Results of factor analysis	
Factor 1	Quality and processes
Factor 2	Training and use of technology
Factor 3	Senior management involvement roles and responsibilities
Factor 4	Patient diversity
Factor 5	Multidisciplinary teams

Table 9.13: Results of factor analysis

Starting with the factor analysis, 52% is a high value, greater than the threshold suggested by Harman (1976). However, this could also be a consequence of over 50% of the indicators being associated with a single construct (quality) (see Section 10.4.1).

9.8.4 MANCOVA

MANCOVA tests for the set of results from the factor analysis, being the dependent variables, were conducted to examine the effects of the healthcare professional characteristics (age, gender, qualification, occupation and the interrelationship

between them) on the implementation of nutrition programmes. The key assumption was that the dependent variables were normally distributed with equal variances. As mentioned above, the variables in the analysis had a relatively normal distribution. In addition, MANCOVA is robust, so small violations of the above assumption would have little impact (Hair, 2010). MANCOVA results presented in Table 9.14 indicate that the five factors (from the factor analysis) had an impact on the success of implemented nutrition programmes. Occupation and qualification in particular also had a significant effect. Multivariate analysis of covariance (MANCOVA) was conducted for the five variables resulting from the factor analysis (Table 9.14). Simple analysis of covariance (ANCOVA) was then conducted on the 11 control variables from Table 9.9. Roy's largest root (MANCOVA) results are as follows:

Effect	Model	F	P
Factor 1	Roy's largest root	10.552***	0.000
Factor 2	Roy's largest root	2.878 ***	0.005
Factor 3	Roy's largest root	12.828***	0.000
Factor 4	Roy's largest root	4.976 ***	0.000
Factor 5	Roy's largest root	6.670 ***	0.000
Age	Roy's largest root	1.876 *	0.063
Qualification	Roy's largest root	5.170 ***	0.000
Gender	Roy's largest root	0.425	0.939
Occupation	Roy's largest root	3.848 ***	0.000
Age*Qualification	Roy's largest root	5.535 ***	0.000
Age*Gender	Roy's largest root	1.140	0.350
Age*Occupation	Roy's largest root	0.417 **	0.024

Qualification*Gender	Roy's largest root	1.293	0.253
Qualification*Occupation	Roy's largest root	2.101 **	0.035
Gender*Occupation	Roy's largest root	3.330 ***	0.001
Age*Qualification*Gender	Roy's largest root	53.000	1
Age*Gender*Occupation	Roy's largest root	54.000	.158
Qualification*Gender*Occupation	Roy's largest root	53.000	1
Age*Qualification*Gender*Occupation	Roy's largest root	53.000	1

Table 9.14: Roy's largest root test of covariance (MANCOVA)

Note:

***Italicised characters represent significance at the 0.001 level

**Italicised characters represent significant at the 0.005 level

* Italicised characters represent significant at the 0.010 level

The MANCOVA looks at the mean values for the different response variables. This is to check to see if there are differences in the multivariate response variables. The F value shown in Table 9.14 represents the values for one particular observation and $F^* \rightarrow$ (Sig at 10%); $F^{**} \rightarrow$ (Sig at 5%); $F^{***} \rightarrow$ (Sig at 1%). Occupation is considered a factor as it has been shown to be significant. Gender is not a factor and age is not a factor as they are not significant, and therefore had no effects on the data. This suggests the data to be robust and independent of age and gender of participant.

The qualification of the participant has shown to have a significant effect on the response, as well as the interrelationship between occupation and qualification, and gender and qualification with p values of 0.0001 and 0.016, respectively. This is using the Roy's largest root as a model to test the multiple covariance analysis.

To understand the moderating effect of the five variables from the factor analysis, MANCOVA has been used and followed up by an ANCOVA using the dependent variables, fixed variables and covariates. Dependent variables are the 11 factors

that are responses to the predictor variables and include: (1) strategy development, (2) resources, (3) demographics, (4) patient empowerment, (5) quality assurance measures, (6) training programmes, (7) communication methods, (8) measurement of impact, (9) innovation, (10) the inclusion of the nutrition department in multidisciplinary teams, and (11) patient cultures are important factors in the success of implementation nutrition programmes.

The fixed variables used in the ANCOVA are gender, occupation, qualification and age. The covariates are the results of the factor analysis (Table 9.15) and are used as metric variables. The dimensionality of the 33 factors was deduced to five covariates (quality processes, training and technology, roles and responsibilities, patient diversity and multidisciplinary teams). The results of the ANCOVA are as shown in Table 9.16.

	Quality and processes	Training and use of technology	Senior management involvement and responsibilities	Patient diversity	Multi disciplinary teams
Strategy development is important to the success of implementing nutrition programmes	3.992 **	4.275**	84.182***	8.305***	4.929**
Resources are important to the success of implementing effective nutrition programmes	0.651	.952	14.441***	5.640**	16.844***
Demographics are important to the success of implementing effective nutrition programmes	44.977***	.062	23.979***	1.504	15.649***
Patient empowerment is important to the success of implementing effective nutrition programmes	9.599 ***	1.262	10.716***	14.667***	18.825***
Quality assurance measures are a success to implementing effective nutrition programmes	35.661***	8.739***	11.096***	6.477**	5.529**

Training programmes are important to the success of implementing effective nutrition programmes	23.847***	.003	23.843***	3.082*	8.740***
Communication method is important to the success of implementing effective nutrition programmes	7.634 ***	1.739	.402	4.495**	14.140***
Measurement of impact is important to the success of implementing effective nutrition programmes	24.471***	9.556***	34.458***	20.544***	3.422*
Innovation is important to the success of implementing effective nutrition programmes	1.681	8.166***	7.201***	5.416**	21.464***
The inclusion of the nutrition department in multidisciplinary teams is important to the success of implementing effective nutrition programmes	1.344	3.651*	16.216***	4.923**	40.023***
Considering culture diversity of the patients is important to the success of implementing effective nutrition programmes	1.108	.279	10.159***	14.112***	2.827*

Table 9.15: Univariate ANCOVA

F* → (Sig at 10%)

F** → (Sig at 5%)

F*** → (Sig at 1%)

Results in Table 9.15 show that factor 1 is highly significant at the 1% level with six response variables: demographics, patient empowerment, quality, training, communication and measurement of impact. While factor 2 is highly significant at the 1% level with three response variables: quality, measurement of impact and innovation. Factor 3 is highly significant at the 1% level for 10 factors, in fact all except for communication. Factor 4 is highly significant at the 1% level with culture diversity of the patient population considered to be important in the success of implementing nutrition programmes. Factor 5 is highly significant at the 1% level with six of the response variables: resources, demographics, patient empowerment, training, communication and inclusion of nutrition personnel in multidisciplinary teams being important to the success when implementing nutrition programmes. In

Table 9.16, the ANCOVA results for the fixed factors, age, gender, qualification and occupation will be shown. Levels of significance will also be annotated with *, ** and *** as denoting significance at the 10%, 5% and 1% levels.

	Age	Gender	Qualification	Occupation
Strategy development is important to the success of implementing nutrition programmes	2.827	.322	.917	.583
Resources are important to the success of implementing effective nutrition programmes	.199*	.264	4.660***	3.773***
Demographics are important to the success of implementing effective nutrition programmes	2.357	.990	.341	2.312
Patient empowerment is important to the success of implementing effective nutrition programmes	.405	.459	.446	1.032
Quality assurance measures are a success to implementing effective nutrition programmes	.431	.282	.360	1.119
Training programmes are important to the success of implementing effective nutrition programmes	.777	1.100	1.816	1.911
Communication method is important to the success of implementing effective nutrition programmes	.531	.507	1.955*	1.467
Measurement of impact is important to the success of implementing effective nutrition programmes	.151	.058	1.231	.473
Innovation is important to the success of implementing effective nutrition programmes	.777	.017	.979	.801
The inclusion of nutrition department in multidisciplinary teams is important to the success of implementing effective nutrition programmes	.632	1.796	2.636**	4.237***
Considering culture diversity of the patients is important to the success of implementing effective nutrition programmes	1.250**	.157	3.243***	3.472***

Table 9.16: ANCOVA on the fixed factors

F* → (Sig at 10%)

F** → (Sig at 5%)

F*** → (Sig at 1%)

The results indicate that age is significant at the 10% level for resources being important in the success of implementing effective nutrition programmes. Age is also significant at the 5% level for understanding culture diversity of the patients as an important factor for the success of implementing effective nutrition programmes. Qualification and occupation were shown to have the highest significance ($p < 0.0001$) for resources and culture diversity. While qualification was shown to be significant at the 5% level for inclusion of nutrition in multidisciplinary teams, and 10% significance for communication between departments/across the hospital. Gender shows to have no significance on any factor.



Figure 9.8: Results of the ANCOVA

The results of the ANCOVA, as shown in Figure 9.8 are consistent with the results of the descriptive statistics in three of the factors, resources, multidisciplinary teams and culture diversity. The results will be further discussed and explicitly illustrated in Chapter 10.

9.9 Summary

This chapter discussed the responses from the questionnaire involving hospitals across the United Arab Emirates, the examples and results were presented descriptively as well as in tables and figures. Questionnaire results for all parts of the questions were analysed and possible indications from the outcomes were highlighted.

Distribution of the questionnaire was achieved through different healthcare institutions and hospitals. More than 50% of the participants were from the Emirate of Dubai (56.5%). The respondents were based in hospitals from different Emirates, but mostly from Dubai and Abu Dhabi and covered both private and government sectors.

The level of agreement of healthcare professionals was averaged and the results show that the mean values of the healthcare professionals ranged between “somewhat agree” and “agree” to all 33 questions.

The descriptive and analytical analysis included mean \pm (SD), factor analysis, ranking and MANCOVA, which were all applied to the data. Results of the ranking showed that all respondents agreed or strongly agreed on all factors being important. Resources and multidisciplinary teams were demonstrated to have the highest scores. Factor analysis resulted in four factors, which were then tested for regression showing significant results.

In conclusion, the analysis of the 161 questionnaires showed that according to the descriptive analysis all responses were above the average of four which corresponds to “neither agree nor disagree”.

Thematic analysis identified through the literature, enabled correlation through factor analysis. The findings from the factor analysis showed that the dataset met the factor analysis criteria. They were grouped into predetermined dimensions, based on the literature review. Five factors were distilled; these were quality, training and use of technology, senior management involvement, patient diversity and involvement of nutrition in multidisciplinary teams. The five factors shown to explain the variance will then be used as a blueprint in order to enhance the role of nutrition in the UAE healthcare system. This chapter has provided an analysis of the quantitative data for this study. However, further discussion and interpretation of the survey findings in the context of other empirical studies will be shown in Chapter 10.

Chapter 10: Discussion

10.1 Introduction

The five factors highlighted in the results of this research are: (1) quality and processes, (2) training and use of technology, (3) senior management involvement, (4) patient diversity and (5) involvement of nutrition in multidisciplinary teams. The five factors are seen to be those required to strengthen the role of nutrition in a healthcare system and will form the basis of the discussion chapter. This study utilises the analyses of ten policy maker interviews, four case studies, and a questionnaire from 161 healthcare professionals. It applies the validation processes shown in Chapter 6 to guide the analysis. This chapter draws on the findings in Chapters 7, 8 and 9 to discuss the triangulated results that answer the research question: What are the factors that influence nutrition interventions in the United Arab Emirates' healthcare system? The objective of the study was to explore the factors that influence nutrition interventions in the healthcare system of the United Arab Emirates. A tabulated form of the results from the case studies and the questionnaire is seen in the chapter. The contribution of the chapter is in the in-depth discussion of the five factors that enhance the role of nutrition.

10.2 Overview of the flow of the research

In order to obtain a holistic view of the current role of nutrition in the United Arab Emirates, this study considered a number of main areas, namely:

- identification of “what” the overall strategy is for the health sector with regard to nutrition programmes

- examination of “how” the factors that affect nutrition intervention programme implementation are dealt with in day-to-day activities
- exploration of “what” the view of healthcare professionals is regarding the role of the factors that affect nutrition programme implementation.

In order to achieve the study objectives, an extensive qualitative analysis approach was adopted for the interviews with policy makers, as well as for the case studies of four hospitals. This was coupled with quantitative analysis of the questionnaire designed to validate critically important factors (which emerged from the core literature and the conducted interviews) that affect nutrition programme implementation. Figure 10.1 shows a flow chart of the research process undertaken.

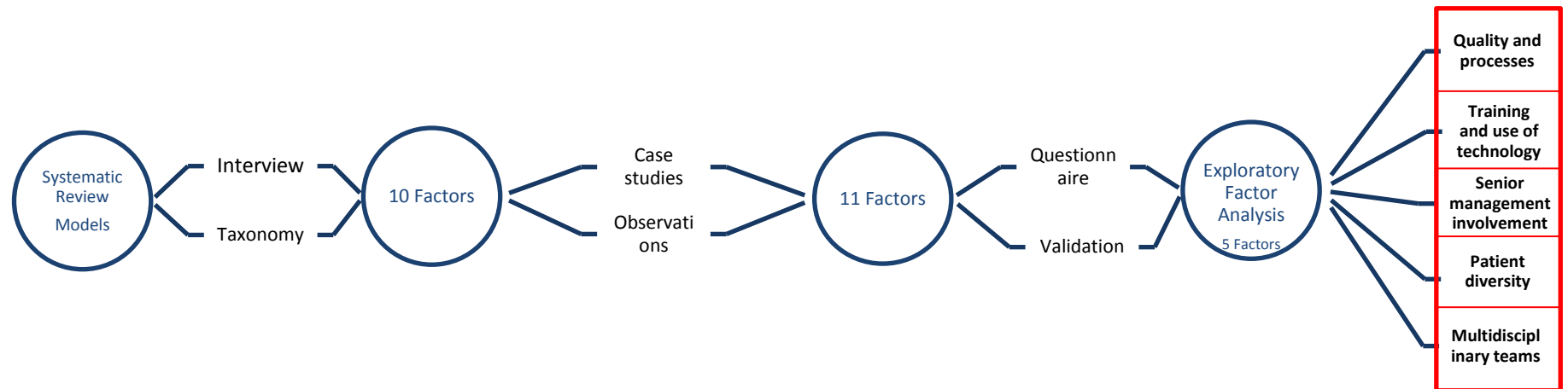


Figure 10.1: Research flow chart

The taxonomy mentioned in the first link of the image is shown in Appendix G (repeated from Chapter 3; see Table 3.9).

The second link in Figure 10.1 shows the qualitative aspect which entails the case studies that were undertaken to understand nutrition-based programmes (as seen in Chapter 8). The quantitative aspect in the third link is also shown; where validation for factors that affect the successful implementation of nutrition programmes was obtained (as seen in Chapter 9). The five factors ultimately resulting from the factor analysis will be discussed in this chapter.

10.3 Discussion of the research findings

The systematic review showed a number of studies covering policies, strategies and activities in nutrition interventions on a national and international level. From the outcomes of the studies, several factors were deduced that potentially play a role in the strategies, policies and activities discussed in those studies. The most commonly repeated factors that influence nutrition delivery were multidisciplinary teams, leadership involvement and cross-government involvement. This indicates their importance towards policies and strategies, particularly in the case of leadership, and especially at the international level.

The role of cross-government interaction as an influencing factor was demonstrated by Beaglehole et al. (2011) where the development of an overarching strategy was recommended to decrease the burden of nutrition-related diseases on healthcare. Strategy as a factor was mentioned repeatedly. One of these studies by Choi et al. (2008) went beyond strategy to mention further factors that need to be implemented to guarantee success, namely, Collaboration, Information, Education,

Novelty, Communication and Evaluation. Choi et al. developed an acronym for these factors: "SCIENCE".

Two of the studies agreed that assessment plays an important role in nutrition and interventions (Mutale, 2013, Wright et al., 2005). All studies emphasised the need for monitoring and assessment, while Mutale et al. (2013) mentioned the use of the balanced scorecard to assess nutrition intervention. This assessment method has been used by WHO in the framework for assessing baseline status in third world countries.

Several other factors were mentioned in more than one study emphasising their role at the international and national level, such as health promotion and education, cost-effectiveness and financing interventions. On the other hand, a few factors were only mentioned once, for example, the potential factor on the relationship between the doctor and the patient (decision-making process) (Abiola et al., 2014). This was interesting because of its well-established practical importance.

The factors emerging from the systematic review were further modified through the examination of the care models and the extensive literature taxonomy (Appendix G).

Following this, the interviews with the policy makers reinforced a number of factors and collated others into common themes. Results from the policy level interviews show that strategy development has shifted from communicable diseases to non-communicable diseases. The necessity to concentrate on the challenge of NCDs was highlighted in Alwan (2013), who declared that nutrition strategies need to be on

top of the policy, and questioned the readiness of Middle East countries for such action (Alwan and Maclean, 2009). Meanwhile, Joshi et al. (2014) observed that task shifting from physicians to non-physician healthcare workers, if accompanied by health system restructuring, is a potentially effective and affordable strategy for improving access to healthcare for NCDs.

The results of the policy interviews agree with the findings of other studies, in which the public health agenda focuses on the role of nutrition in healthcare systems, as discussed in Chapter 7, Section 7.4.1. The results are consistent with previous studies and suggest that a number of actions are needed to enhance the role of nutrition (Hoffhines et al., 2014, Pimentel et al., 2014, Darnton-Hill et al., 2004, Puska, 2002, Rahim et al., 2014). Legislation and standardisation of policies in regards to the nutrition role has been shown to be important to policy makers. This is also in line with previous work which looked at policy in different settings, such as closed systems, including schools and workplaces, for nutrition interventions, as well as population health policy and the role of law with regard to NCDs (Boylan et al., 2013, Caraher and Cowburn, 2005, Cross, 1980, de Koe, 1997, Fox, 2011). The implications of those findings exemplify the importance of policy setting and standardisation in order to enhance the role of nutrition and nutrition interventions.

Analysis of the data collected from the interviews, case studies and questionnaires revealed several findings, as demonstrated in the following sections. Based on the literature review and the taxonomy shown previously, the three stages of validation for the identified list of factors (see Chapter 6, Section 6.5.4) enabled the researcher

to conclude that all of the 11 factors identified in the literature review and case study analysis are critical and significant in the context of nutrition intervention implementation. The ranking results show that all healthcare professionals either strongly agree or agree with the importance of all 11 factors. Table 10.1 describes the findings from the case study analysis and questionnaire analysis. The table includes the 44 instrument questions. For each one of the instrument questions the following is shown:

1. The mean value as calculated from the questionnaire analysis.
2. The rank of the factor as calculated from the questionnaire analysis.
3. The factor implemented in the four case studies.

The case study results are also shown in Table 10.1 with the four case studies shown as H1 to H4. H1 represents Hospital 1; H2 represents Hospital 2; H3 represents Hospital 3 and H4 represents Hospital 4. This shows the overall findings of the qualitative and quantitative aspects to facilitate the discussion in Section 10.4.

The analysis and discussion demonstrates the significance of the factors in the context of healthcare management and nutrition intervention implementation and will be referred to throughout the chapter.

The purpose of the table is to present a summary of the results of the case study analysis and the descriptive analysis of the questionnaire design by condensing into one table. This will therefore facilitate the next discussion when referencing the five results of the factor analysis in Section 10.4.

The five factors distilled were shown to be statistically significant with high reliability coefficients. A rotation method was used in order to load the expected dimensions from the previous findings of the taxonomy and the case study results.

Factor title	Instrument question	Case study				Questionnaire	
		H1	H2	H3	H4	Mean (\pm SD)	Rank
Strategy development	Hospital senior management is effectively involved in the development of nutrition strategies	✓	✓			4.9 (\pm 1.574)	
	Management strategies require the involvement of senior management of the hospital to ensure lower incidence of non-communicable diseases	✓				5.82 (\pm 1.143)	
	Before implementing nutrition programmes the hospital leadership establishes the relevant key performance indicators	✓	✓	✓	✓	5.29 (\pm 1.327)	
	Strategy development is important to the success of implementing nutrition programmes						36.7%*
Resources and enablement	The hospital uses the lifespan approach in nutrition intervention	✓	✓	✓		5.44 (\pm 4.362)	
	Cross-government or cross sector departments are involved in nutrition interventions	✓	✓			5.10 (\pm 1.429)	
	It is important for this hospital to finance programmes for nutrition interventions	✓	✓		✓	5.90 (\pm 1.267)	
	Demographics are important to the success of implementing effective nutrition programmes						47.8% **
Process and activity	Nutrition is sufficiently addressed as part of patient education in my hospital	✓	✓	✓	✓	5.37 (\pm 1.433)	
	The demographic profile of the UAE is effectively used as part of setting up nutrition programmes	✓	✓	✓	✓	4.62 (\pm 1.554)	
	Age-related programmes are important in nutrition interventions	✓	✓		✓	5.69 (\pm 1.303)	
	Demographics are important to the success of implementing effective nutrition programmes						35.9%*
Patient orientation	The hospital has clear processes for patient orientation	✓	✓	✓	✓	5.19 (\pm 1.508)	
	The hospital has clear processes in place to assess user expectation of nutrition programmes	✓	✓	✓	✓	4.90 (\pm 1.463)	
	User expectation feedback are effectively used in nutrition programmes	✓	✓	✓	✓	4.87 (\pm 1.404)	
	Patient empowerment is important to the success of implementing effective nutrition programmes						32.7%*

Factor title	Instrument question	Case study				Questionnaire	
		H1	H2	H3	H4	Mean	Rank
Quality	The hospital has quality measures in place to ensure nutritional care is delivered across all areas consistently	✓	✓			5.22 (±1.491)	
	The hospital has effective processes to ensure evidence-based nutrition interventions				✓	5.18(±1.416)	
	Quality assurance measures are used to ensure patient-centric nutrition care	✓	✓			5.29(±1.404)	
	Quality assurance measures are a success to implementing effective nutrition programmes						32.9%**
People and competencies	Training programmes that staff undergo include up-to-date nutrition care	✓	✓			4.80(±1.603)	
	The staff's core competencies includes skills to ensure patient nutrition education	✓	✓			5.33(±1.319)	
	Up-to-date training in nutrition care is provided in my hospital					5.87(±1.261)	
	Training programmes are important to the success of implementing effective nutrition programmes						40.9%**
Value and care design	Shared decision-making processes are used in nutrition programmes	✓				5.09(±1.398)	
	The methods of communicating the different nutrition services provided to patients are clear	✓	✓	✓	✓	5.10(±1.486)	
	The activities in nutrition intervention are considered part of an integrated healthcare system in this hospital	✓	✓			5.41(±1.414)	
	Communication method is important to the success of implementing effective nutrition programmes						35.7%**

Factor title	Instrument question	Case study				Questionnaire	
		H1	H2	H3	H4	Mean	Rank
Measurement and impact	In my hospital the impacts of nutrition programmes are measured effectively	✓				4.85 (±1.523)	
	The hospital uses sufficient tools for measuring impacts of nutrition programmes on population	✓				4.64 (±1.551)	
	In my hospital, clear processes are available to assess the effectiveness of nutrition health initiatives	✓	✓			4.76 (±1.521)	
	Measurement of impact is important to the success of implementing effective nutrition programmes						33.8%*
Innovation and best practices	The hospital uses various e-health services such as social media, tele-health, television commercials and internet in nutrition interventions	✓				5.03 (±1.519)	
	Technology is used in nutrition interventions in this hospital	✓				4.96 (±1.437)	
	Information to patients is communicated through advanced technological means			✓		4.74 (±1.554)	
	Innovation is important to the success of implementing effective nutrition programmes						35.9%**
Teamwork	Multidisciplinary teams in this hospital include nutrition personnel	✓	✓			5.27(±1.524)	
	The hospital has different teams that provide nutrition assessment, screening and care effectively	✓	✓	✓	✓	5.12(±1.433)	
	The nutrition personnel in multidisciplinary teams have a well-defined role	✓	✓			5.36(±1.378)	
	The inclusion of nutrition department in multidisciplinary teams is important to the success of implementing effective nutrition programmes						44.4%**
Culture diversity	The patient population of the hospital is considered before setting up meal menus					5.57(±1.391)	
	The nutrition department considers the differences in the patient ethnicity when planning nutrition programmes					5.46(±1.380)	
	Culture and diversity in the patient population is considered in the nutrition strategy					5.37(±1.468)	
	Considering culture diversity of the patients is important to the success of implementing effective nutrition programmes						39.2%**

**Strongly agree *Agree

Table 10.1: Analysis of the 44 instrument questions

10.4 Five factors that influence nutrition

The five factors distilled above are clearly illustrated in Figure 10.2 and described in more detail in the sections that follow. These are the factors that have an influence on nutrition intervention success and are conclusive when forming the key findings to this research, as shown earlier in Chapter 9, Figure 9.7.

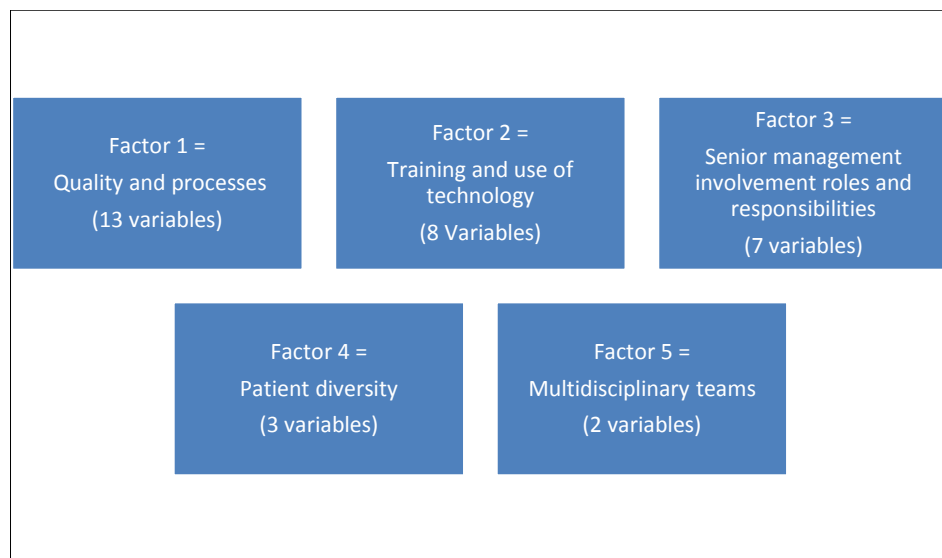


Figure 10.2: Five factors that influence nutrition

10.4.1 *Quality and processes*

In order for the implementation of nutrition interventions to be successful, quality programmes and quality assurance accreditations are required. The findings in this research confirm that quality and processes is a critical factor to the implementation of nutrition interventions. This was discussed previously in Sections 8.3.5 and 2.3.1. This result is consistent with previous study findings (Lohr and Schroeder, 1990, Keller et al., 2014, Duprat Ceniccola et al., 2014, Kraft et al., 2014, Lim et al., 2014, Tetteh, 2012, Anderson, 1995, Hughes, 2008, Mitchell, 2008, Halbesleben and Whitman, 2012). Anderson (1995) shows the importance of

measuring service quality, while Mitchell (2008) defines patient safety and quality care. An implication is that it is necessary to consider nutrition as a part of the quality processes to improve nutrition interventions in a healthcare setting.

Results from the questionnaire show that quality and processes ranked in the top eight factors that healthcare professionals “strongly agreed” with. Results from the questionnaire factor analysis showed 13 factors associated with processes and quality, namely:

1. Quality assurance measures are used to ensure patient-centric nutrition care
2. The hospital has quality measures in place to ensure nutritional care is delivered across all areas consistently
3. The hospital has clear processes to ensure evidence-based nutrition interventions
4. The hospital has clear processes in place to assess user expectation of nutrition interventions
5. User expectation feedback is used in nutrition intervention
6. The methods of communicating the different nutrition services provided to patients are clear
7. The hospital has clear processes for patient orientation and empowerment
8. In my hospital, clear processes are available to assess the effectiveness of nutrition health initiatives
9. In my hospital nutrition programme impacts are measured effectively
10. The demographic profile of the UAE is used as part of setting up nutrition programmes
11. Shared decision-making processes are used in nutrition programmes
12. Nutrition is part of patient education in my hospital
13. The activities in nutrition intervention are considered part of an integrated healthcare system in this hospital

Table 10.2: Questionnaire factor analysis – quality and processes factors

Table 10.2 demonstrates the importance of nutrition care processes and quality in healthcare delivery. This is in line with previous findings that addresses different aspects of healthcare that affect and influence the patient care delivery process (Campinha-Bacote, 2002, Downey-Ennis, 2008, O'Regan et al., 2008, Lovestam et al., 2014, Kim and Baek, 2013, Baker and Cotugna, 2013). Some of the main frameworks to be used with centrality have been discussed in Chapter 4 (Section 4.2.4. and 4.2.5).

Case study results (shown in Table 10.2 and in Chapter 8, Table 8.5 Section 8.3.3) regarding processes indicate that educational processes such as lectures, workshops, group discussions and educational materials are all part of nutrition care planning. The demographic profile of the population of the United Arab Emirates is taken into consideration when recruiting nutritional personnel. Age-related programmes were observed across all four case studies. This is indicative of patient-centric health systems.

Results regarding quality in the case studies were quite consistent where hospitals either were accredited by the Joint Commission International standards, or were planning to get accreditation in the coming year. Joint Commission accreditation ensures that a patient-centric delivery care model is applied in hospitals.

Based on these findings, it can be argued that the quality and processes factor significantly influences nutrition intervention implementation in a healthcare system. Hospitals need to have quality measures in place to ensure nutrition care is delivered across all areas consistently, to enable them to have successful implementation of nutrition interventions.

10.4.2 Training and use of technology

Human resource management (HRM) also plays an important role in successful nutrition intervention implementation. In reality, this is a wide concept that covers healthcare professional selection, recruitment, education, training, teamwork and healthcare professional empowerment to patient involvement.

The use of technology and training programmes, in terms of advocating the use of up-to-date technologically advanced methods in nutrition programmes, was shown in the results of the study. All study findings confirmed that training and use of technology are important factors that influence nutrition interventions. The present findings seem to be consistent with other research studies with particular regard to the use of technology in nutrition interventions, a number of authors have confirmed the importance of this factor in the context of nutrition (Atkinson et al., 2009, Short et al., 2014, Moore et al., 2014, Burgess-Champoux, 2013, Millery et al., 2014, Adeleke et al., 2014, Choi et al., 2008, Anderson, 2004, Lane et al., 2007, Neuenschwander et al., 2012, Atkinson et al., 2010). The work by Anderson (2004) shows strategic service quality management for healthcare, while Burgess-Champoux (2013) indicates the importance of the innovative use of technology in nutrition education. While the research by Choi et al. (2008) showed how technology and training are part of the seven important themes that enhance global capacity in the surveillance, prevention and control of chronic diseases.

Previous studies have also shown the importance of training and having up-to-date nutrition knowledge in enhancing the role of nutrition (Amos et al., 1989, Atkinson et al., 2010, Atkinson et al., 2009, Ballesteros Arribas et al., 2007, Brown et al.,

2014, Burgess-Champoux, 2013, Crogan and Evans, 2001, Dickin et al., 2014, Dodgson et al., 2014).

Results from the factor analysis demonstrate that the following factors load onto training and use of technology:

1. The hospital uses various e-health services such as social media, tele-health, television commercials and internet in nutrition interventions
2. Technology is used in nutrition interventions in this hospital
3. Information to patients is achieved through advanced technological means
4. The hospital has the tools used for measuring population impact
5. The hospital has different teams that provide nutrition assessment, screening and care
6. The staff's core competencies includes skills to ensure patient nutrition education
7. Training programmes that staff undergo include up-to-date nutrition care
8. Up-to-date training in nutrition care is provided in my hospital

Table 10.3: Questionnaire factor analysis – training and use of technology

This shows the importance of technology and training in nutrition interventions and is consistent with previous studies (Short et al., 2014, Moore et al., 2014, Burgess-Champoux, 2013).

Results of the questionnaire showed that healthcare professionals viewed training as the third most important factor that was strongly agreed to have an influence on successful implementation of nutrition programmes, while technological innovation ranked the sixth most important factor. This shows the relevance of the themes to the healthcare professionals, and their insistence on the importance of incorporating technology and training for the success of nutrition intervention.

Results of the case studies show that e-health applications are implemented differently, as some consider online social media as being an application of e-health; while others include the standardisation of the use of updated technologies. Staff development and training in nutrition as well as training on new technologies in nutrition interventions is not very clear, but is viewed as very important in the success of implementing nutrition programmes.

Based on the findings, the following conclusions can be drawn from the literature and the questionnaire and case study analysis. The speed of technologies emerging is greater than researchers can currently cope with. There is a need for policies to ensure e-health applications and services are embedded in the system and to ensure up-to-date nutrition training is available.

10.4.3 Senior management involvement and responsibilities

The study findings (policy interview analysis, case study analysis and factor analysis) confirm that senior management involvement is important in the success of nutrition intervention. This result is consistent with previous study findings on the involvement and responsibility of senior management. The need and importance of senior management involvement has been highlighted by a number of studies (Vamvakas, 2013, Puska, 2002, Berthelsen et al., 2014). Vamvakas et al. (2013) show a number of reasons for moving toward a patient-centric paradigm of clinical practice which puts top management responsible. Puska (2002), however, explains the WHO's strategy on nutrition and non-communicable diseases prevention and shows the importance of senior management as an integral part of the processes. Maher et al. (2012) do not mention senior management as a factor, yet Choi et al.

(2008) and Puska et al. (2002) concentrate on its importance. Maher et. al (2012) and Choi et al. (2008) show the critical factors that influence the strategies of nutrition that deal with non-communicable diseases. The results of the ranking (seen in Table 10.1) in the questionnaire analysis showed that healthcare professionals strongly agreed that senior management involvement is a success factor in nutrition intervention; this factor ranked fifth. This explained the importance of establishing KPIs and strategies to ensure a lower incidence of NCDs. It is important to involve senior management in the strategy and setting of finances, as well as liaise with other governments and departments to enhance the approach of the hospitals with regard to nutrition intervention.

The results of the factor analysis in the questionnaire demonstrated that the following factors fall into the senior management involvement category:

1. Before implementing nutrition programmes, the hospital establishes the relevant importance of key performance indicators
2. Strategies are in place to ensure lower incidence of non-communicable diseases
3. Hospital senior management is involved in the development of nutrition strategies
4. It is important for this hospital to finance programmes for nutrition interventions
5. The hospital uses the lifespan approach in nutrition intervention
6. Cross-government or cross sector departments are involved in nutrition interventions
7. Age-related programmes are important in nutrition interventions

Table 10.4: Questionnaire factor analysis – senior management involvement

This shows the importance of senior management being involved in nutrition interventions and is consistent with previous studies (Berler et al., 2005, Shorosh, 2011, Wolfskill, 2007).

The results of the case studies indicate that senior management are involved in nutrition strategy by being directly linked to either the authority or the Emirate, or in the case of private hospitals, by being supportive of nutrition interventions. Different health authorities such as the MOH, HAAD, DHA have been listed and explored in Chapter 5, see Section 5.4. Authorities have annual updates from a number of hospitals, but these were not evident in the private hospitals. Policies, on the other hand, are provided in the hospitals for catering and nutrition care.

These results are indicative of the importance of the involvement of senior management at different levels (senior management to the healthcare professionals, and authorities to the hospitals), in the implementation of successful nutrition intervention.

10.4.4 Patient diversity

This factor involves understanding the patient population and focusing on ethnic minorities, as well as the general public. Targeted promotion programmes and nutrition interventions are shown to be important and are consistent with recent research findings. Parrish et al. (2012) explains that public hospitals work with palliative care to address patient cultural diversity. Palliative care is an approach that improves the quality of life for patients and their families facing the problems associated with life-threatening illness, i.e. cancer. Myer et al. (2012) shows the importance of patient preparation activities before initiating an intervention in a case study. This also shows the importance of understanding the diversity of a population prior to prevention measures.

The study findings in this research confirm that patient diversity is critical, as mentioned previously (patient diversity, Chapter 9, Figure 9.4 and Figure 9.5). This result is consistent with previous study findings (Parrish et al., 2012, Myer et al., 2012, Friedman and Parrish, 2010).

Results of the four case studies analysed led to the inclusion of this factor in the questionnaire as shown in Table 10.1. also discussed in Chapter 8, Section 8.4. This was due to different interviews in the case study that indicated the importance of considering the differences in ethnicities and understanding the patient population in order have a successful nutrition intervention.

The results of the factor analysis in the questionnaire revealed the following factors to be associated with patient diversity:

1. The patient population of the hospital is considered before setting up menus
2. The hospital considers the differences in the patient ethnicity when setting up the services by nutrition department
3. Culture and diversity in the patient population is considered in the nutrition strategy

Table 10.5: Questionnaire factor analysis – patient diversity

Results of the questionnaire indicated that healthcare professionals strongly agree that diversity in culture and patient population is important in the success of nutrition intervention implementation and ranked as this factor fourth, as shown in the graph (see Figure 9.5 and Table 10.2).

Through these findings, we can see that it is vital to tailor nutrition interventions based on an understanding of the patient population and patient diversity in a hospital. This may also be applicable for a community as a whole where

understanding the demographics and diversity of a population will result in tailored nutrition interventions that target specific ethnic minorities. It could be argued that understanding patient diversity has been shown to be important in the success of nutrition interventions.

10.4.5 Multidisciplinary teams

Involvement of nutrition personnel as part of the multidisciplinary team varied greatly between the hospitals in the cases studied, as shown in Table 10.1. All nutritional staff members interviewed emphasised the importance of including a nutritionist on the rounds and the formation of multidisciplinary teams with clear roles for nutrition personnel in the four hospitals. Community involvement and nutrition interventions applied in health awareness campaigns consisted of multidisciplinary teams.

Results from the factor analysis of the questionnaire showed the two factors loaded onto multidisciplinary teams are:

1. Multidisciplinary teams in this hospital include nutrition personnel
2. The nutrition personnel in multidisciplinary teams have a well-defined role

Table 10.6: Questionnaire factor analysis – multidisciplinary teams

The findings from the case study analysis and the questionnaire analysis, and as shown in Table 10.2, confirm that multidisciplinary teams are an important influencing factor on the implementation of nutrition interventions. This was demonstrated previously (Section 8.3.10 and Table 9.8). This result is consistent with previous study findings (Mamudu et al., 2011, Howard et al., 1997, Ball et al., 2014, Drenthen and Van Binsbergen, 2008, Fitzgerald and Davison, 2008). Mamudu

et al. (2011) emphasised the importance of global action through the UN resolution on the prevention and control of non-communicable diseases through collaboration across different sectors, as well as formation of multidisciplinary teams. While Fitzgerald and Davidson (2008), on the other hand showed the influence of innovative healthcare delivery teams, which also emphasises the importance of a team to enhance the skills among different interventions.

The ranked results show that healthcare professionals strongly agree that multidisciplinary teams are important in the success of nutrition intervention implementation and ranked this factor as second on the list (as shown in Figure 9.4). This explains the need to include nutrition personnel in multi-disciplinary teams and have a well-defined role in order to enhance nutrition interventions and care. It can be argued that multidisciplinary teams are important in the implementation of nutrition care delivery.

10.5 Roadmap for the success of implementing effective nutrition programmes

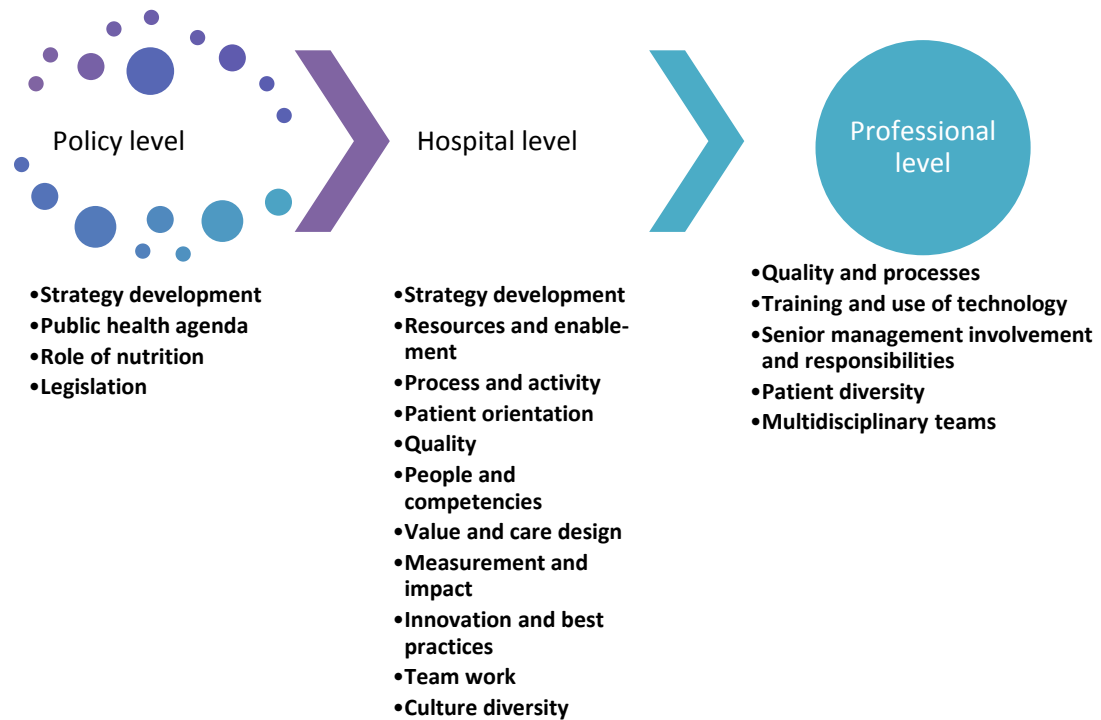


Figure 10.3: Road map of factors influencing nutrition interventions in the UAE

This study highlighted a number of elements found to be critical in driving nutrition interventions as an enabler in healthcare. It is thus appropriate and beneficial to combine these elements into a generic roadmap that can provide a description of the role of these elements in healthcare. Based on a comprehensive discussion and interpretation of factors identified through the questionnaire survey and primary case studies, as discussed in Chapters 7, 8 and 9, as well as the literature review in Chapters 2, 3 and 4. This study proposes a road map of factors that influence nutrition interventions in the UAE healthcare system. The proposed roadmap includes several elements for success in nutrition intervention, as identified and discussed earlier in Chapters 7, 8 and recently in this chapter.

Figure 10.3 illustrates the proposed roadmap. The identified factors were classified into three main clusters labelled as: nutrition at a policy level; nutrition at a hospital level; nutrition at a healthcare professional level. Each of these clusters will be explained in the following sub-sections.

Nutrition policy plays a vital part in defining the factors that influence the role of nutrition in a healthcare system. The need for senior management involvement is vital in the success of nutrition intervention; this can be taken to a higher level. Policy maker involvement is important in nutrition delivery care. As shown in Chapter 4, the five-tier framework for public health (see Figure 4.2), the policy makers would be involved in changing the context to make individuals' default decisions healthy, in order to achieve long lasting nutrition interventions. There is an important shift in the UAE's strategy to combat nutrition-related diseases. More importantly, there is a need for a multi-sectorial national nutrition strategy, NCD surveillance and monitoring systems to be in place, as well as the need for an operational policy, a strategy to enhance the role of nutrition, and an action plan to promote physical activity.

There are five major aspects to take into consideration for a roadmap for hospitals and healthcare professionals. Patient expectation and patient empowerment, multidisciplinary teams, quality processes and training. Nutrition on a hospital level and a healthcare professional level need to focus on educating the different age groups in the population. This is done via hospitals, schools and national interventions. Hospitals need to aim towards patient empowerment through self-management techniques, as well as individualisation. Ready availability of nutrition

education material on specific nutrition-related diseases would lead to specific tailored educational material for each patient, empowering their choices.

It is necessary to understand patient expectations through health impact assessments. This may also be applicable for a community as a whole. An understanding of the demographics and diversity of a population will result in tailored nutrition interventions that target specific ethnic minorities. An understanding of patient diversity has been shown to be important in the success of nutrition interventions. Nutrition personnel in multidisciplinary groups inside the hospital will have specific roles and be part of acute care. Additionally, a multidisciplinary team for health promotion and prevention outside the hospital would involve multi-skilled healthcare professionals.

Finally, interventions should also focus on schools. School interventions start through implementing policy-level legislation on banning junk food, including educational promotional programmes, as well as having incentives for schools to be part of a national programme. National promotional programmes may include incentives given to outlets, factories and schools to be part of the health promotion, formulating a strong reason for community involvement.

The historical transformations that have occurred since the 1970s demonstrate how the different authorities have tried to improve the quality of care in the United Arab Emirates and align it with international standards. Currently, there is a need for policies to ensure nutrition interventions are embedded in the healthcare system, in order to reach Vision 2021.

The entire findings in this section were presented in terms of the major issues related to nutrition interventions. Each of the factors was supported by the literature presented. The discussion integrated the whole research study and encompassed the secondary data, questionnaire and interviews with key informants, as well as the case studies.

10.6 Summary

The chapter summarised the process used to define the five factors that influence the nutrition role in the healthcare system. The factors are quality and processes, training, senior management involvement, patient diversity and multidisciplinary teams. The statistical analysis, as well as the importance ranking of the factors, was demonstrated. Significantly, the findings showed that by focusing on the five factors successful nutrition interventions can occur.

The chapter presented the key findings and analysis of data derived from the integration of numerous data collection methods: case studies, survey questionnaires, Ministry of Health documents and the vision of the United Arab Emirates with specific regard to health. This met the objectives presented for this research. This was done in order to propose a roadmap for the success of nutrition interventions. The interpretation of the results was guided by empirical studies.

The chapter also presented a proposed roadmap. The roadmap is primarily based on the findings of the quantitative and qualitative studies conducted among ten policy makers, four hospitals and 161 healthcare professionals. The roadmap is expected to be useful to a wide range of healthcare organisations, since it provides

a set of elements that suit any situation where the aim is to explore the influencing factors on nutrition intervention.

The final chapter presents the overall conclusions drawn from the study, key findings and makes suggestions for future research.

Chapter 11: Conclusions

11.1 Introduction

This study is the first to examine, empirically and rigorously, the different aspects of factors that influence nutrition interventions in the UAE.

This chapter draws some conclusions from the study. It summarises the key research findings, points out the lessons learned and the contributions to knowledge that the study has made. It highlights the limitations of the study and makes recommendations for future research for the successful implementation of nutrition interventions. This research project was undertaken with the aim of exploring the factors that influence nutrition interventions in the United Arab Emirates.

This chapter starts with an overview of the thesis and then discusses the key findings, the limitations, further research and theoretical as well as practical contributions of the research.

11.2 Overview of research

The research question aimed to discover whether there are factors that influence nutrition interventions in the UAE. In order to obtain evidence to answer the question, an extensive literature review was done covering international and national policies, strategies and activities, along with the factors influencing these. The elements were explored using a systematic review taxonomy as well as through looking at some of the various models.

The United Arab Emirates was shown geographically and historically, as well as demographically, with the aim of understanding the influencing factors on nutrition interventions in its healthcare delivery system. The healthcare system was described with emphasis on the vision and the UAE healthcare strategy.

The research design included three stages that were used for triangulation and led to a broader framework to explore factors influencing nutrition interventions in the healthcare system of the UAE. The three stages were: 1) ten key informant interviews to pilot and deduce the relevant questions for the second stage, 2) four case studies of hospitals in the country, and 3) 161 questionnaires from healthcare professionals from different departments, to obtain an insight into their perceptions.

The policy maker results revealed the importance of the subject, as well as the relevance of preventative measures as the UAE participated in the high-level meeting on NCDs in the United Nations. Key documents were shared and utilised in the analysis of nutrition intervention in healthcare delivery. This coupled with the taxonomy and the systematic review resulted in a list of factors that may potentially affect nutrition interventions in the UAE. This was used as the basis for the questions asked in the following stage.

The qualitative results from the four hospital indicated the day-to-day activities of nutrition interventions and one extra factor that needed to be taken into consideration, namely patient diversity. Therefore, a questionnaire was designed using all factors introduced in the first stage together with this new factor. The questionnaire went through validity and reliability testing. One validity test was

done by piloting the survey via a team with international expertise on the Middle East, as well as questionnaire design experience. The incorporation of their suggestions resulted in a modified questionnaire that passed reliability testing and resulted in a high alpha coefficient.

The quantitative results were obtained through analysis of the 161 questionnaire responses. A 7-point Likert scale was used to identify the level of importance of factors from the point of view of healthcare professionals. The analysis showed none of the answers to be “disagree”; all answers were within the range of “strongly agree”, “agree”, or “neither agree nor disagree”. This shows the relevance and importance of the factors to the healthcare professionals. Factor analysis was undertaken in order to reveal the most important factors affecting nutrition as reported by healthcare professionals. It resulted in five factors being distilled: 1) quality; 2) training and use of technology; 3) senior management involvement; 4) patient diversity; and 5) involvement of nutrition in multidisciplinary teams. The five factors shown to explain the variance were then used as a blueprint for the roadmap in order to enhance the role of nutrition in the UAE healthcare system.

Enough evidence was generated through this study to reject the null hypothesis and to support the research hypothesis that there are important factors influencing nutrition intervention policies, strategies and activities within the UAE healthcare system.

11.3 Limitations of the study

The research aims to contribute to knowledge by understanding the factors that influence nutrition interventions in healthcare. Like any research, this study also has

a number of limitations, the mentioning of which can be valuable to future research. These limitations are mainly related to the broadness of the topic under investigation. The originality and value of the research is seen in the fact that no previous studies were found to have explored factors influencing nutrition interventions in healthcare systems of the United Arab Emirates. Every care was taken to design and structure this research in order that any limitations would not significantly affect the results. The validation processes can be seen in Figure 6.3, in order to establish the importance of the derived factors.

Despite the efforts noted, this research was still subject to a number of limitations, including time constraints, access to information, inconsistent secondary data, generalisability and other aspects. These will be discussed in the sub-sections below.

The factors influencing nutrition interventions in the healthcare system seems to be an area of research where theory is still inadequate, as it covers a wide number of aspects. This created an option to follow an exploratory approach in this study. Time constraints and limited access to national statistics and research bodies of information were the main constraints.

The sample size in the last phase of data collection was limited to the number of hospitals approached. Although the response rate was high (80.5%), more responses from different demographic locations would have given a better understanding of the United Arab Emirates as a whole, this will be further discussed in the generalisability section (Section 11.3.1).

11.3.1 Generalisation of study

This study is limited in terms of its representativeness and generalisability, however, it is an exploratory research project, therefore, generalisation is not expected. In the primary phase of the research, the lack of a mailing list of key informants involved in nutrition strategies and of policy makers in nutrition intervention implementation led to the use of the snowball technique. The snowball technique resulted in a non-random sample.

In the second phase of the research, the case studies presented non-homogenous experiences with nutrition interventions and health awareness campaigns in the different hospitals. A lack of time at the case study phase limited the number of cases, therefore, it was only possible to reach out to large hospitals with embedded nutrition departments. All of those factors enrich the data collected, but inhibit generalisation and future comparison of the whole study.

In the final phase of the research, the sample targeted in the questionnaire phase was hard to reach with a full random selection. Although a mailing list was developed by the researcher and was used to draw the sample, generalisation of findings is still restricted. Most replies came from Abu Dhabi and Dubai, being the largest populated and second largest populated cities. However, it is important to note that access to healthcare professionals in the whole of the United Arab Emirates covering the seven emirates would be diversified and therefore enrich the data collected at the questionnaire phase.

11.3.2 Patient involvement

Patient involvement was not part of this study due to ethical approvals and time constraints. This study researched stakeholders in the healthcare industry, but did not take into account the attitudes and perceptions of patients. To determine the views of end users of nutrition intervention, another study would need to be undertaken regarding the satisfaction of the patient.

11.4 Contribution of the thesis

This study makes several significant contributions towards research into factors affecting nutrition intervention; as it merges interdisciplinary theories from strategy and management and applies them to hospitals and healthcare contexts. This work is an important contribution to knowledge in the health system field, using nutrition as an example to illustrate the complexity of policy formulation and strategy development and implementation.

This study is the first in the UAE to explore factors that play a role in healthcare policy strategy and intervention. It explores the nutrition interventions that help in reducing NCD levels in the UAE. This is in line with the healthcare strategy of the UAE and Vision 2021 which aims to reduce NCDs (See Appendix F). This makes the study a valuable contribution towards this important goal, both theoretically and practically. This study is also the first in the UAE to use the triangulated method to understand factors influencing nutrition interventions.

The main contributions are discussed in the following sections.

11.4.1 Theoretical contributions

This study evaluated the role of nutrition by studying the influencing factors in nutrition intervention. Not only did this study provide an empirical assessment of the essential elements in nutrition programme implementation, but it also assessed the factors distilled from a comprehensive review of the relevant literature. One of the theoretical contributions of this study is the 'taxonomy'. Extensive research was explored to come up with a tabulated format of the study field discussing various factors that affect nutrition strategies, policies and activities. This comprehensive methodical approach confirmed the existence of factors that affect nutrition interventions. The study identified five factors for the successful implementation of nutrition intervention, which is considered the second theoretical contribution of this study:

- (1) Quality and processes
- (2) Training and use of technology
- (3) Senior management involvement and responsibility
- (4) Patient diversity
- (5) Multidisciplinary teams

11.4.2 Practical contributions

The five factors above formed the basis for the main practical contribution. A major practical contribution is the road map. The road map suggested can be applied in different healthcare settings to improve the role of nutrition interventions in controlling NCDs.

Another important practical contribution of the study was the development of the questionnaire used to collect opinions of healthcare professionals with regard to

policies, strategies and activities. The questionnaire reliability and validity was corroborated with a high reliability coefficient (0.95), which was within the range of previous similar study findings. Moreover, the contributions from international experts in questionnaire design, and the validation process all led to a rigorous questionnaire.

11.5 Area for future research

The number of people dying from NCDs is increasing every decade and lifestyle changes are inevitable. Despite the attempt to be exhaustive and cover a broad area of research, there are many areas in which future research is needed. Each factor discussed in this study needs more in-depth study.

- First, there is a need for a coherent approach to understanding the different stages of life and key transitions, instead of tackling individual risk factors in isolation. Furthermore, there is a need to produce a strategy plan that tackles health across the lifespan of the stages of life.
- Second, it would be advantageous to better understand the current cross-government campaigns required to ensure that there is support for and from the different sectors (health services, mass media, school curricula, voluntary associations, and food producers, supermarkets and restaurants).
- Thirdly, further study could examine a mechanism to translate policy into practice, in order for guidelines to be used within the UAE hospitals to increase the role of nutrition in the prevention of NCDs.

- Fourthly, a comparative research study could compare other countries (that have similar socioeconomic and demographic backgrounds) using the tool that was extensively tested for validity and reliability in this research. This would also allow for a comparison of the results of the quantitative chapter to other countries.
- Finally, further research could focus on the patient perspective and expectations of the role of nutrition, which would add value to nutrition interventions. Another area for further research could be community involvement in a patient-centric system for combating NCDs.

11.6 Summary

Preventative measures in nutrition intervention have come a long way since the integration of the healthcare system. Hospitals work through multidisciplinary teams in order to strengthen healthcare. This research examined policy makers' opinions on what they believe the role of nutrition in a healthcare system should be. It continued by scrutinising the literature for the influencing factors that affect the role of nutrition and examining those factors from a qualitative perspective using four hospitals as case studies, and a quantitative perspective using questionnaires to 161 healthcare professionals. The results of the factor analysis revealed five major factors that influence nutrition interventions in the healthcare system: quality, training, senior management involvement, understanding patient diversity, and involving nutrition personnel in multidisciplinary teams.

This study rigorously examined the different aspects of the nutrition role in the United Arab Emirates. This chapter extended the discussion of the research from

Chapter 10, incorporating the key findings of the research and sought to draw some conclusions for the study. It summarised the key research findings, pointed out the lessons learned, and the contributions to the knowledge made. A number of potential limitations were acknowledged, however they are not considered to undermine the overall value of the study owing to the triangulated nature of the data collection.

A further aim of this chapter was to discuss areas for future research, such as involving the community for the successful implementation of nutrition interventions. This research project was undertaken with the aim of studying the factors that influence the role of nutrition interventions in the healthcare system of the United Arab Emirates, and has been summarised in this chapter.

11.7 Final conclusion

This chapter reflected on the study and drew the research to an end. The objective was to understand the role of nutrition in the healthcare system from different perspectives, the policy level, the healthcare professional level and the case study level. The objective was to understand the influencing factors on the nutrition role in healthcare systems. It is important to note that such understandings in prevention methods are needed in order to decrease the incidence of non-communicable diseases.

Key findings demonstrated the importance of having clear quality processes for nutrition intervention, as well as involving senior management, having training and e-health incorporated into interventions, and increasing the nutritionist's role in multidisciplinary teams. The findings are supported by the literature, as well as

being ranked as highly important to healthcare professionals. With future work suggested in Chapter 11, this study has contributed to a road map that aims to enhance the role of nutrition in a healthcare system by showing the influencing factors at each level. Finally, in addition to the contributions made by this study, it has been revealed that the nutrition role and importance of non-communicable diseases is a topic that is worth further detailed consideration, and this study provides some level of background for further research.

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Appendices

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Appendix A: Interview pro forma – policy maker interviews

Organisation

Position

What are the strategies in place for preventative health?

What is the focus on nutrition?

How do nutrition programmes fit into the strategy?

Panel

External Documents

Appendix B: Interview pro forma – case study questions

Date _____

Duration _____

Assessment number _____

Case study questions

Factors influencing nutrition interventions

1.1 Strategy development

Leadership – development – implementation

- a) To what extent is leadership involved in the development of nutrition strategies?

- b) What strategies are in place to ensure lower incidence of non-communicable diseases?

- c) What are the nutrition strategies, policies, KPIs of your organisation?

Prompt questions:

Covered by external documents _____ Yes No

1.2 Resources and enablement

Lifespan approach – cross government departments – financial resources

- a) To what extent is the lifespan approach involved in nutrition intervention?

- b) What cross-government or cross-sector departments are involved in nutrition interventions?

- c) How are financial resources being used?

1. What process ensures that the life course of non-communicable disease is covered? To what extent is the lifespan approach involved in nutrition intervention?
2. What cross-government or cross-sector departments are involved in nutrition interventions?
3. Has funding been specifically allocated for nutrition programmes and interventions? To what extent does cost affect implementation of nutrition interventions?
4. Is there any local source of funding for services related to nutrition programmes? To what extent are there measures to ensure cost effective interventions are in place?

Covered by external documents _____ Yes No

1.3 Process and activity

Education and demographic profile

- a) What are the processes in nutrition patient education?

- b) How is the demographic profile of the UAE used as part of setting up nutrition programmes?

- c) What are the age-related nutrition programmes available?

Prompt questions:

1. Are the public well informed regarding health matters?
2. To what extent is there a clear understanding about the demographics present in the UAE?
3. To what extent are demographics taken into consideration in the present strategies of nutrition interventions?

Covered by external documents _____ Yes No

1.4 Patient orientation

Patient empowerment - user expectation

- a) What are the processes in patient orientation/empowerment?

- b) What measures are in place to measure user expectation of nutrition interventions?

- c) How is user expectation used in nutrition interventions?

Prompt questions:

Covered by external documents _____ Yes No

1.5 Quality

Quality through evidence-based medicine

- a) What quality measures are in place to ensure nutritional care is delivered consistently across all areas?

- b) What are the measures taken to ensure EVB nutrition interventions are used in your hospital to empower and educate patients?

- c) What quality measures are used to ensure patient-centric nutrition care?

Prompt questions:

Covered by external documents _____ Yes No

1.6 People and competencies

Autonomy and responsibility

- a) What training programmes do staff undergo to ensure up-to-date nutrition care is provided?

- b) What are the core competencies to ensure patient nutrition education?

Prompt questions:

Covered by external documents _____ Yes No

1.7 Value and care design (services)

Shared decision making – integrated care

- a) How is shared decision-making used in nutrition programmes and interventions?

- b) What are the services provided for nutrition care and what are the lines of communication to ensure patients know the different nutrition services provided?

- c) To what extent are the activities in nutrition intervention considered as part of an integrated healthcare system?

Prompt questions:

Covered by external documents _____ Yes No

1.8 Measurement and impact

a) How do nutrition programmes impact on the population measured?

b) What are the measurement tools used to measure population impact?

Prompt questions:

1. What are the measurement mechanisms to ensure nutrition programmes are effective?
2. What is the measure to ensure nutrition programmes have an impact on the population?
3. What measures are taken to ensure implementation of programmes are met?

Covered by external documents _____ Yes No

1.9 Innovation and best practices

Technology

- a) Does your hospital use different e-health services such as social media, tele-health, TVCs and internet in nutrition interventions?

- b) To what extent is technology used in nutrition interventions?

Prompt questions:

1. To what extent is the government investing in technology to support nutrition related diseases?
2. To what extent are there local investments in technology to support this service?
3. To what extent is there any local research into aspects of technology and nutrition intervention?
4. What is the local policy in relation to introducing new technology to enhance services?
5. Is our current technology fit for purpose?
6. To what extent is staff able to use the available technology?

Covered by external documents _____ Yes No

1.10 Culture and teamwork

Multidisciplinary teams

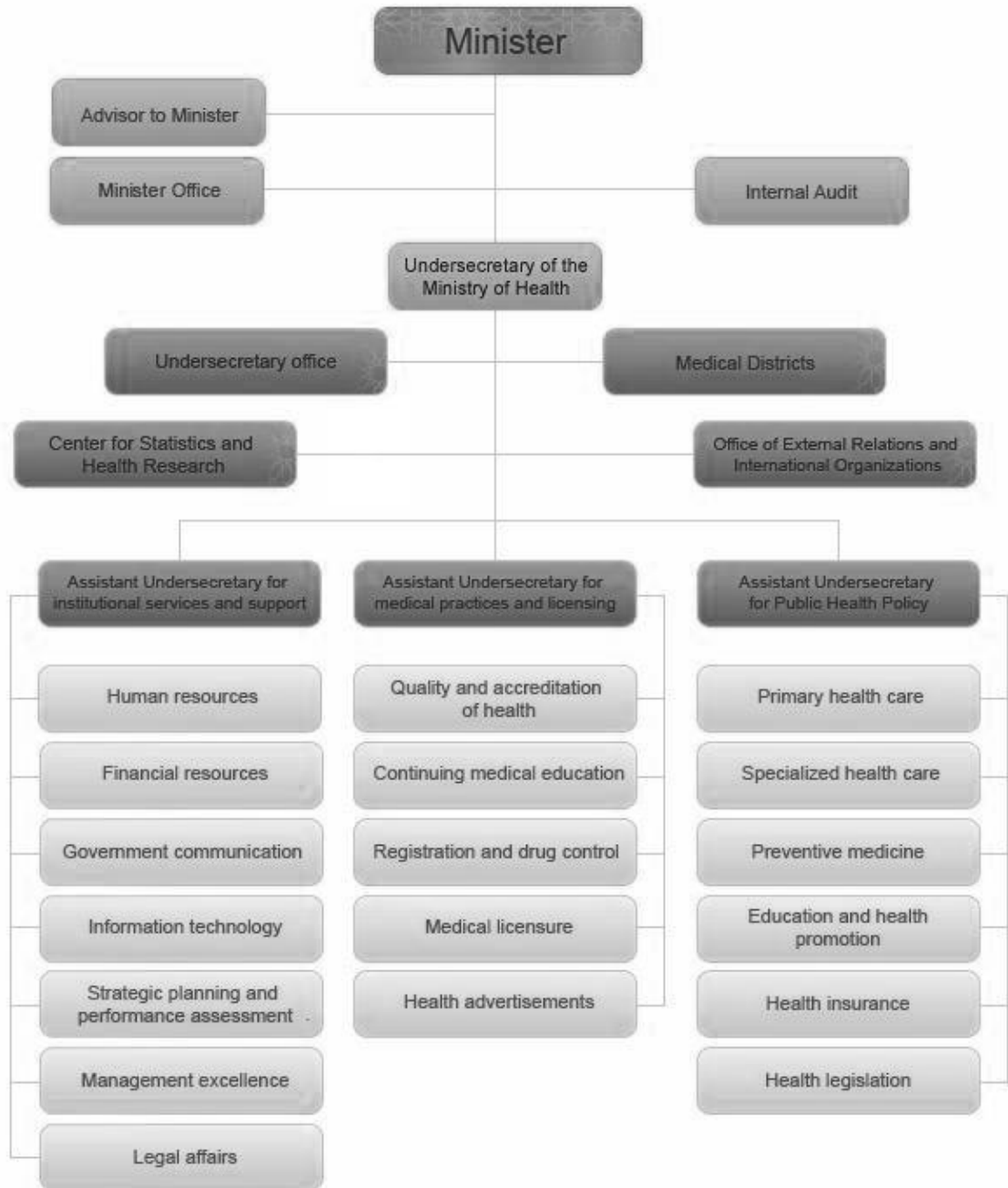
- a) What multidisciplinary teams are involved in nutrition delivery care?

- b) What are the different teams that provide nutrition assessment, screening and care?

Covered by external documents _____ Yes No

Appendix C: Organisation chart of the Ministry of Health

Organisation chart of the MOH obtained from the official website.



Appendix D1: Participant letter (English)

Dear Participant

The role of nutrition has been given a bigger role in healthcare strategies, worldwide, as the burden of non-communicable diseases is on the rise. This is also in line with Vision 2021 that states **“The UAE will intensify its fight against lifestyle diseases, where early intervention to change habits can dramatically improve citizens’ prospects for quality of life.”** Understanding drivers, factors and their importance are baseline materials in order to provide a blueprint of what needs to be done in the United Arab Emirates.

As my research is on the United Arab Emirates healthcare nutrition strategy implementation titled: **“The Management of Healthcare Systems in the 21st Century: The Role of Nutrition and its Impact on Improvement of Health: A UAE Context”**, part of my research includes a questionnaire. The questionnaire includes ten themes deduced from the literature as well as from the case studies that have been performed on various hospitals within the UAE.

The study aim is to understand the role of nutrition in the healthcare delivery system. A major part of the study aims to assess the factors needed in order to implement nutrition based strategies and interventions. For this purpose, we invite a number of hospitals to take part in this research. This will involve professionals expressing their understanding of experiences in implementing nutrition interventions. This will therefore result in a model which can assist hospitals in developing nutrition strategy.

The completion of the following questionnaire and the participation of different healthcare professionals is highly appreciated, as the success of this research depends on the receiving the maximum number of responses.

The information obtained will only be used for the purpose of the study, and confidentiality and anonymity is promised. The questionnaire is designed simply to ensure completion is speedy.

We look forward to receiving the completed questionnaire and the supervisory team and I would like to thank you for your kind cooperation, time and effort.

Prof M.Zairi

Emeritus Professor
University of Bradford
School of Management

Dr Craig Johnson

Sr. Lecturer & Director of
Studies
University of Bradford
School of Management

Reem AlGurg

PhD Researcher
University of Bradford
School of Management

Appendix D2: Participant letter (Arabic)

عزيزي المشترك

تم منح دوراً كبيراً للتغذية في استراتيجيات الرعاية الصحية حول العالم، في الوقت الذي يتزايد فيه عبء الأمراض غير المعدية. ويتمشى أيضاً هذا مع رؤية عام 2021 التي تنص على أن "تقوم الإمارات العربية المتحدة بتكثيف جهودها لمكافحة أمراض المتعلقة بنمط الحياة، من حيث يمكن تحسين جودة الحياة بشكل كبير بالتدخل المبكر لتغيير العادات." يعتبر فهم الحوافز والعوامل وأهميتها من المواد الأساسية لوضع خطة لما يحتاج عمله في الإمارات العربية المتحدة.

بما أن بحثي يتمحور حول تطبيق استراتيجية التغذية في الرعاية الصحية في الإمارات العربية المتحدة تحت عنوان: "إدارة أنظمة الرعاية الصحية في القرن الحادي والعشرين: دور التغذية وتأثيرها على تطوير الصحة: محيط إماراتي"، فيتضمن جزءاً منه استبياناً، ويشمل عشر مواضيع مستنتجة من الأبحاث السابقة ومن دراسة الحالات التي تم عملها في العديد من المستشفيات في الإمارات العربية المتحدة.

تهدف الدراسة إلى فهم دور التغذية في نظام إيصال الرعاية الصحية، وجزء كبير منها يقيم العوامل المطلوبة لتطبيق الاستراتيجيات المبنية على التغذية والتدخل المبكر. ولهذا، قمنا بدعوة عدد من المستشفيات ليشركوا في هذا البحث، الأمر الذي سيضمحل المختصين ليقدموا تجاربهم في تطبيق تدخلات التغذية. وسينتج هذا نموذج يُمكن المستشفيات من تطوير استراتيجية التغذية.

سيكون محل تقديرنا إتمام الاستبيان التالي ومشاركة المتخصصين في الرعاية الصحية فيه، فجاح هذا البحث يعتمد على تلقي أكبر عدد من الردود.

سيتم استخدام المعلومات المكتسبة بهدف الدراسة فقط، والتعهد بالسرية والخصوصية. تم تصميم الاستبيان بشكل مبسط لتسهيل سرعة إتمامه.

نتطلع إلى تلقي الاستبيانات المنجزة، ونشكركم أنا وفريق الإشراف لتعاونكم وجهودكم ووقتكم الثمين.

بروفسور م. زبيري	د. كريغ جونسون	ريم القرقي
أستاذ فخري	محاضر أول ومدير الدراسات	باحثة دكتوراه
جامعة برادفورد	جامعة برادفورد	جامعة برادفورد
كلية الإدارة	كلية الإدارة	كلية الإدارة

Questionnaire

استبيان

A number of factors are important in the success of combating non-communicable diseases through nutrition interventions

هناك عدد من العوامل المهمة تساهم في نجاح مكافحة الأمراض غير المعدية من خلال التدخل الغذائي

Section A

القسم الأول

تهدف الأسئلة التالية إلى تقييم العوامل الهامة لإنجاز استراتيجية التغذية. يُرجى ترتيب التالي تبعاً لمستوى الموافقة:

1- غير موافق بشدة؛ 2- غير موافق؛ 3- غير موافق إلى حد ما؛ 4- محايد؛ 5- موافق إلى حد ما؛ 6- موافق؛ 7- موافق بشدة

The following questions aim to assess the factors needed in order to implement a nutrition strategy

Please Rank the following according to Level of Agreement

1 – Strongly disagree; 2 – Disagree; 3 – Somewhat disagree; 4 – Neither agree nor Disagree; 5 – Somewhat agree; 6 – Agree; 7 – Strongly agree

Strategy Development									تطوير الاستراتيجية	
1.1	Hospital senior management is effectively involved in the development of nutrition strategies	1	2	3	4	5	6	7	1.1	تشارك الإدارة العليا للمستشفى بفعالية في تطوير استراتيجيات التغذية
1.2	Management Strategies require the involvement of senior management of the hospital to ensure lower incidence of non-communicable diseases	1	2	3	4	5	6	7	1.2	تتطلب استراتيجيات الإدارة مشاركة الإدارة العليا لضمان انخفاض حدوث الأمراض غير المعدية
1.3	Before implementing nutrition programs the hospital leadership establishes the relevant key performance indicators	1	2	3	4	5	6	7	1.3	يحدد المستشفى مؤشرات الأداء الرئيسية ذات العلاقة قبل البدء بتنفيذ برامج التغذية
1.4	Strategy development is important to the success of implementing nutrition programs	1	2	3	4	5	6	7	1.4	يعتبر تطوير الخطة الاستراتيجية عاملاً مهماً في تنفيذ برامج التغذية الفعالة
Resources and enablement									الموارد والتزويد	
2.1	The hospital uses the lifespan approach in nutrition intervention ¹	1	2	3	4	5	6	7	2.1	تستخدم المستشفى عامل التطور العمري في وضع برامج التدخل الغذائي ¹
2.2	Cross-government or cross sector departments are involved in nutrition interventions	1	2	3	4	5	6	7	2.2	تشارك المستشفى القطاعات أو الدوائر الحكومية في برامج التدخل الغذائي

¹ For example diabetes education is taught across different age group (school-age, preconception mothers, pregnancy, as well as elderly) as a preventative measure.

وكأجراء وقائي؛ على سبيل المثال يتم التثقيف عن مرض السكري حسب السن وللشريحة المستهدفة (الأطفال، الأمهات، مرحلة قبل الحمل، الرجال، وكبار السن)

2.3	It is important for this hospital to finance programs for nutrition interventions	1	2	3	4	5	6	7	من المهم لهذا المستشفى تمويل برامج التغذية	2.3
2.4	Resources are important to the success of implementing effective nutrition programs	1	2	3	4	5	6	7	تعتبر الموارد عاملاً مهماً في تنفيذ برامج تغذية فعالة	2.4
Process and activity									الإجراء والتشاطف	
3.1	Nutrition is sufficiently addressed as part of patient education in my hospital	1	2	3	4	5	6	7	يبدل المستشفى الذي اعمل فيه جهداً كافياً في عملية تثقيف المريض فيما يخص التغذية	3.1
3.2	The demographic profile of the UAE is effectively used as part of setting up nutrition programs	1	2	3	4	5	6	7	تستخدم الإحصاءات السكانية بشكل فعال لوضع برامج التغذية في دولة الإمارات العربية المتحدة	3.2
3.3	Age-related programs are important in nutrition interventions	1	2	3	4	5	6	7	تعد البرامج المرتبطة بالعمر مهمة في برامج التدخل الغذائي	3.3
3.4	Demographics are important to the success of implementing effective nutrition programs	1	2	3	4	5	6	7	يعتبر التركيب السكاني عاملاً مهماً في تنفيذ برامج تغذية فعالة	3.4
Patient Orientation									توجيه المريض	
4.1	The hospital has clear processes for patient orientation	1	2	3	4	5	6	7	لدى المستشفى إجراءات واضحة في توجيه المريض	4.1
4.2	The hospital has clear processes in place to assess user expectation of nutrition programs	1	2	3	4	5	6	7	لدى المستشفى إجراءات واضحة لقياس توقعات المستخدم لبرامج التغذية	4.2
4.3	User expectation feedback are effectively used in nutrition programs	1	2	3	4	5	6	7	تستخدم التوقعات لدى المستخدم بشكل فعال لصياغة لبرامج التغذية	4.3
4.4	Patient empowerment is important to the success of implementing effective nutrition programs	1	2	3	4	5	6	7	يعد تمكين المريض عاملاً مهماً في طريق تنفيذ برامج التغذية الفعالة	4.4
Quality									الجودة	
5.1	The hospital has quality measures in place to ensure nutritional care is delivered across all areas consistently	1	2	3	4	5	6	7	لدى المستشفى مقاييس جودة موحدة لضمان تقديم الرعاية الغذائية لكافة أقسام المستشفى	5.1
5.2	The hospital has effective processes to ensure evidence-based nutrition interventions	1	2	3	4	5	6	7	لدى المستشفى إجراءات فعالة لضمان استخدام التدخلات الغذائية المبينة على أدلة علمية	5.2
5.3	Quality assurance measures are used to ensure patient-centric nutrition care	1	2	3	4	5	6	7	يتم اتباع مقاييس للجودة لضمان رعاية صحية تتمحور حول المريض	5.3
5.4	Quality assurance measures are a success to implementing effective nutrition programs	1	2	3	4	5	6	7	تعتبر معايير ضمان الجودة عاملاً مهماً في تنفيذ برامج التغذية الفعالة	5.4
People and Competencies									الأشخاص والكفاءات	
6.1	Training programmes that staff undergo includes up-to-date nutrition care	1	2	3	4	5	6	7	تتضمن البرامج التدريبية التي توخرها المستشفى الموظفين على برامج الرعاية الغذائية الحديثة	6.1

6.2	The staff's core competencies includes skills to ensure patient nutrition education	1	2	3	4	5	6	7	تتضمن كفاءات طاقم العمل على مهارات تضمن التثقيف الغذائي للمريض	6.2
6.3	Up-to-date training in nutrition care is provided in my hospital	1	2	3	4	5	6	7	يوفر المستشفى أساليب تدريب حديثة في مجال التغذية	6.3
6.4	Training programs are important to the success of implementing effective nutrition programs	1	2	3	4	5	6	7	تعتبر برامج التدريب عاملاً مهماً في تنفيذ برامج التغذية الفعالة	6.4
Value and Care Design									القيمة وتصميم الرعاية	
7.1	Shared decision making processes are used in nutrition programmes	1	2	3	4	5	6	7	تستخدم طرق صنع القرار المشترك، في برامج التغذية	7.1
7.2	The methods of communicating the different nutrition services provided to patients are clear	1	2	3	4	5	6	7	الطرق المتوفرة لتعريف المريض بخدمات التغذية المختلفة واضحة	7.2
7.3	The activities in nutrition intervention are considered part of an integrated healthcare system in this hospital	1	2	3	4	5	6	7	تعتبر أنشطة التدخل الغذائي جزءاً من نظام الرعاية الصحية المتكاملة في هذا المستشفى	7.3
7.4	Communication method is important to the success of implementing effective nutrition programs	1	2	3	4	5	6	7	تعتبر طرق التواصل عاملاً مهماً في تنفيذ برامج التغذية الفعالة	7.4
Measurement and Impact									القياس والتأثير	
8.1	In my hospital impact of nutrition programmes are measured effectively	1	2	3	4	5	6	7	يتم في المستشفى قياس مدى فاعلية تأثير برامج التغذية	8.1
8.2	The hospital uses sufficient tools for measuring impacts of nutrition programs on population	1	2	3	4	5	6	7	يتم في المستشفى استخدام وسائل ملائمة في قياس مدى تأثير برامج التغذية على السكان	8.2
8.3	In my hospital, clear processes are available to assess the effectiveness of nutrition health initiatives	1	2	3	4	5	6	7	يتم في المستشفى اجراءات واضحة لتقييم فعالية برامج التغذية	8.3
8.4	Measurement of impact is important to the success of implementing effective nutrition programs	1	2	3	4	5	6	7	يعتبر قياس مدى تأثير البرامج الموضوعه عاملاً مهماً في تنفيذ برامج التغذية الفعالة	8.4
Innovation and Best practices									الإبداع وأفضل الممارسات	
9.1	The hospital uses various e-health services such as social media, tele-health, television commercials and internet in nutrition interventions	1	2	3	4	5	6	7	يستخدم المستشفى الخدمات الصحية الإلكترونية المختلفة مثل وسائل التواصل الاجتماعي، الإعلانات التلفزيونية والإنترنت في التدخل الغذائي	9.1
9.2	Technology is used in nutrition interventions in this hospital	1	2	3	4	5	6	7	يستخدم المستشفى التكنولوجيا الحديثة في برامج التدخل الغذائي	9.2
9.3	Information to patients is communicated through advanced technological means	1	2	3	4	5	6	7	يتم استخدام أحدث التقنيات والوسائل التكنولوجية في إيصال المعلومة للمرضى	9.3
9.4	Innovation is important to the success of implementing effective nutrition programs	1	2	3	4	5	6	7	تعتبر الابتكارات عاملاً مهماً في تنفيذ برامج التغذية الفعالة	9.4

Teamwork								فريق العمل		
10.1	Multidisciplinary teams in this hospital include nutrition personnel	1	2	3	4	5	6	7	10.1	من المهم ان تتضمن "الفرق ذات التخصصات المتعددة" اخصائي تغذية
10.2	The hospital has different teams that provide nutrition assessment, screening and care effectively	1	2	3	4	5	6	7	10.2	لدي المستشفى فرق عمل مختلفة تعمل بشكل فعال على التقييم الغذائي والفحوصات المتعلقة بالتغذية
10.3	The nutrition personnel in multidisciplinary teams have a well-defined role	1	2	3	4	5	6	7	10.3	اخصائي التغذية لديه دور واضح في "الفرق ذات التخصصات المتعددة"
10.4	The inclusion of nutrition department in multidisciplinary teams is important to the success of implementing effective nutrition programs	1	2	3	4	5	6	7	10.4	يعتبر الحاق قسم التغذية في فرق عمل "ذات التخصصات المتعددة" عاملا مهما في تنفيذ برامج التغذية الفعالة
Culture Diversity								تنوع الثقافات		
11.1	The patient population of the hospital is considered before setting up meal menus	1	2	3	4	5	6	7	11.1	يتم الأخذ في الاعتبار تنوع شرائح المرضى في المستشفى قبل إعداد القوائم الغذائية
11.2	The nutrition department considers the differences in the patient ethnicity when planning nutrition programs	1	2	3	4	5	6	7	11.2	يراعي قسم التغذية الفروقات في التنوع التركيبي للمرضى عند تخطيط برامج التغذية
11.3	Culture and diversity in the patient population is considered in the nutrition strategy	1	2	3	4	5	6	7	11.3	يتم مراعاة الثقافات والتنوع التركيبي للمرضى عند وضع استراتيجية التغذية
11.4	Considering culture diversity of the patients is important to the success of implementing effective nutrition programs	1	2	3	4	5	6	7	11.4	الأخذ في الاعتبار بتنوع ثقافات المرضى يعتبر عاملا مهما في تنفيذ برامج التغذية الفعالة

بكلمات معدودة نرجو تدوين تجربتك الخاصة وتعليقاتك أدناه على موضوع استراتيجية التغذية في مكافحة الأمراض غير المعدية :

Your own experience and comments on the topic of nutrition strategies in combating non-communicable diseases:

Section B : About you

Gender		الجنس	
1 Male <input type="checkbox"/>		<input type="checkbox"/>	1 ذكر
2 Female <input type="checkbox"/>		<input type="checkbox"/>	2 أنثى
Age			
1. <30 <input type="checkbox"/>		2. 31-40 <input type="checkbox"/>	
3. 41-50 <input type="checkbox"/>		4. 50+ <input type="checkbox"/>	
Qualification			
المؤهل العلمي			
1 High School <input type="checkbox"/>	4 Masters <input type="checkbox"/>	<input type="checkbox"/>	4 ماجستير
2 Higher diploma <input type="checkbox"/>	5 PhD <input type="checkbox"/>	<input type="checkbox"/>	5 دكتوراه
3 Bachelors <input type="checkbox"/>	6 Medical Degree <input type="checkbox"/>	<input type="checkbox"/>	6 طب
7 Other (please specify) _____		7 أخرى (يرجى التحديد)	
Occupation			
المهنة			
1 Nursing <input type="checkbox"/>	4 Quality <input type="checkbox"/>	<input type="checkbox"/>	4 الجودة
2 Nutrition <input type="checkbox"/>	5 Planning <input type="checkbox"/>	<input type="checkbox"/>	5 التخطيط
3 Managerial <input type="checkbox"/>	6 Doctor <input type="checkbox"/>	<input type="checkbox"/>	6 طبيب
7 Other (Please specify) _____		7 أخرى (يرجى التحديد)	
Type of Hospital			
نوع المستشفى			
1 Government <input type="checkbox"/>		<input type="checkbox"/>	
2 Private <input type="checkbox"/>		<input type="checkbox"/>	
Number of beds in Hospital			
عدد الأسرة في المستشفى			

Hospital is Based in			
يقع المستشفى في			
1 Abu Dhabi <input type="checkbox"/>	5 Ras Al Khaima <input type="checkbox"/>	<input type="checkbox"/>	5 رأس الخيمة
2 Dubai <input type="checkbox"/>	6 Um el Quwain <input type="checkbox"/>	<input type="checkbox"/>	6 أم القيوين
3 Sharjah <input type="checkbox"/>	7 Fujairah <input type="checkbox"/>	<input type="checkbox"/>	7 الفجيرة
4 Ajman <input type="checkbox"/>	8 Al Ain <input type="checkbox"/>	<input type="checkbox"/>	8 العين

Thank you for your cooperation

If you would like a summary of the results,

Please complete the following details

Name: _____

Organization: _____

Email: _____

Reem Al Gurg
School of Management
University of Bradford
Reemalgurg@gmail.com
rswalgur@bradford.ac.uk

شاكرين لكم حسن تعاونكم

إذا أردت ملخص للنتائج، يرجى تزويدنا بالتفاصيل التالية

الاسم: _____

المنظمة: _____

البريد الإلكتروني: _____

ريم الفرق
كلية الإدارة
جامعة برادفورد
Reemalgurg@gmail.com
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Appendix F: Vision 2021 UAE

World-class healthcare					
Indicator	Definition	Source	2012 Result	2021 Target	Key sponsor
Deaths from cardiovascular diseases per 100,000 population	This indicator measures the deaths from cardiovascular disease per 100,000 population.	WHO	211 deaths per 100,000 population (2008 figure published in the 2013 report)	158.2 deaths per 100,000 population (i.e. reduce the current number by 25%)	MOH
Prevalence of diabetes	This indicator measures the number of people between the age of 20 and 79 with diabetes in the UAE, as a proportion of the total population. This age group is aligned with the age group used by the International Diabetes Federation).	International Diabetes Federation	19% (2013) based on International Diabetes Federation statistics	16.3% (to reduce the current value by 14%)	MOH
Prevalence of obesity amongst children	This indicator measures the proportion of children between the age of 5 and 17 who are considered obese out of the total children of the same age group. Obesity in children is defined as follows: Children aged 5 to 12: The proportion of children with a BMI greater than 2 standard deviations above the growth standard median; Children aged above 12: The proportion of children with a BMI greater than 30.	WHO	14.4% (2010)	12% (to reduce the current value by 17%)	MOH
Average healthy life expectancy	This indicator measures the average number of years that a person can expect to live in full health.	WHO	67 years (2012 figure published in the 2014 report)	73 years	MOH
Prevalence of smoking any tobacco product	This indicator measures the daily consumption of cigarettes and tobacco products among different segments of society.	WHO	19% among men 2% among women (2009 figures published in the 2013 report)	To reduce the current rates by 15% as follows: 16% among men 1.7% among women	MOH

Number of deaths from cancer per 100,000 population	This indicator measures the deaths from malignant tumours per 100,000 population.	WHO	78 deaths per 100,000 population (2008 figure published in the 2013 report)	64.2 deaths per 100,000 population (to reduce the current number by 18%)	MOH
Percentage of accredited health facilities	This indicator measures the share of public and private hospitals adhering to national or internationally recognised standards.	MOH	41% (2012)	100%	MOH
Healthcare Quality Index	This indicator measures countries' performance in three areas: basic health outcomes, health infrastructure and preventative care, and physical and mental health satisfaction.	Legatum Prosperity Indicator	Rank 35 (2013)	Rank 20	MOH
Number of physicians per 1,000 population	This indicator measures the average number of physicians per 1,000 population (including general practitioners and all specialties except dentistry)	WHO	1.93 physicians per 1,000 population (2006-2013 average published in the 2014 report)	2.9 physicians per 1,000 population (to increase the current number by 50%)	MOH
Number of nurses per 1,000 population	This indicator measures the average number of nurses per 1,000 population.	WHO	4.09 nurses per 1,000 population (2006-2013 average published in the 2014 report)	6 nurses per 1,000 population (to increase the current number by 50%)	MOH

Appendix G: Taxonomy of the literature

	Area	Critical factor	Choi (2008)	HM. GOV (2010)	Puska (2002)	Mamudu et al. (2011)	Baker et al. 2005	PAHO (Pan America Health Organization)	Eat Well Australia	Neira and de Onis, 2006	USDA, 2014
1	Strategy	Leadership			√						√
		Development	√	√				√	√		
		Implementation		√					√		
2	Resources and enablement		√	√	√			√	√		
		Life course approach vs risk factor approach		√				√			√
		Involvement of cross sectors and cross government		√		√					√
3	Process and activity		√					√	√		
		Education	√				√				
4	Patient orientation										
		Patient empowerment									
5	Quality							√			
		Quality of care through evidence-based medicine							√		
6	People and competencies		√								√
		Autonomy and responsibility									
7	Value and care design (services)			√				√			
		Shared decision making									
		Integrated care									
8	Measurement and impact		√		√				√		
9	Innovation and best practices		√					√	√		
10	Culture and teamwork	Multidisciplinary teams				√			√		√

Appendix H: Ethics approval confirmation

RE: EC.1059 - Amendment No. 1 Inbox x

OF Ali <O.F.Ali@bradford.ac.uk> Dear Reem, Ethics Checklist: EC1059 From 2011-12 Thank you for submitting the... Apr 11 ☆

Reem Al Gurg — Forwarded message — From: OF Ali <O.F.Ali@bradford.ac.uk>... Apr 11 ☆

OF Ali <O.F.Ali@bradford.ac.uk> to me, Mohamed, Craig Apr 11 ☆

Dear Reem

Ethics Checklist: EC1059 Amendment

Thank you for submitting the amendments and supporting documentation. These have now been reviewed by the Chair of the Humanities, Social & Health Sciences Research **Ethics Panel**.

I am pleased to inform you that the Chair of the Research **Ethics Panel** has now signed off and **approved** this research study/project, with no further **ethical** scrutiny required.

Please add a sentence onto any material you share with participants that **Ethical Approval** was given by the Chair of the Humanities, Social & Health Sciences Research **Ethics Panel** at the University of Bradford on 11th April 2014.

Best Wishes

Omar Ali
Research Funding Coordinator
Research & Knowledge Transfer Support
Room C.21, Richmond Building
University of Bradford
BD7 1DP

Tel: 01274 233112
Email: o.f.ali@bradford.ac.uk

Ethics Checklist EC.1059 Inbox x phd/Interviews Policy Makers

Lynda Nuttall <L.D.Nuttall@bradford.ac.uk> to me, m.zaini, d.r.ward 7/6/12 ☆

Hi Reem

Ethics Checklist EC.1059
Title: Comparative study on Healthcare Management: Nutrition and Vitamin D

Thank you for submitting your **ethics** checklist to the Chair of the Humanities, Social and Health Sciences Research **Ethics Panel**.

I am pleased to confirm that the Chair is happy to sign this off as having no **ethical** issues requiring consideration by the Research **Ethics Panel**.

It is now in order for your project to proceed.

Best wishes

Lynda

Lynda Nuttall
Research Support/Ethics Administrator
Research and Knowledge Transfer Support
Room C.21, Richmond Building
University of Bradford
BD7 1DP

Tel: 01274 23 3170
l.d.nuttall@bradford.ac.uk