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Evaluating the influence of nutritional determinants on construction workers' nutritional intake

Abstract

Nutritional knowledge, economic, social, biological and cultural factors have been known to determine an individual's food choice and intake. Despite the existence of research on the factors which influence nutrition globally, there is little known about the extent to which these factors influence the nutrition of construction workers, which in turn influences their health and safety performance during construction activities. The present paper investigates the extent to which construction workers' nutrition is influenced by knowledge, economic, social, biological and cultural factors. A field questionnaire survey was conducted on site construction workers in the Gauteng Province of South Africa. Principal components analysis and multiple regression analysis were used to analyze the data. Findings revealed that consumption of foods termed alternative foods including dairy products, eggs, nuts, fish and cereals, was influenced by nutritional knowledge and resources. Foods termed traditional core foods were identified to be influenced by cultural background; foods termed secondary core foods comprising fruits and vegetables were reported to be influenced by economic factors, resources and cultural background; while foods termed core foods were mostly influenced by nutritional knowledge. By providing evidence of the factors which most influence selection and consumption of certain foods by construction workers, relevant nutrition interventions will be designed and implemented, taking cognizance of these factors.

Keywords: determinants, nutrition, construction workers

Introduction

Due to its invaluable role in productivity and health and safety performance improvements, the little attention given to nutrition has been a major concern for employers and organizations for decades. Good nutrition, attained from consumption of a variety of foods from different nutrition categories including proteins, carbohydrates, fats, vitamins, minerals, and water, helps in maintaining good physical and mental health which is essential for maximum concentration and alertness required to perform construction activities, thereby preventing the occurrence of incidents, accidents, injuries and even deaths. Accidents and ill-health have been a continuous source of worry in the construction industry (Musonda, 2012). The construction sector has disproportionately high incidences of accidents, injuries and fatalities (Ambekar Institute for Labour Studies, 2012). This alarming situation underscores the need for ways to improve the health and safety of construction workers. Poor health and safety performance on construction sites is partly attributable to workers unhealthy eating (Melia & Becerril, 2009). Research on the nutrition of construction workers is therefore warranted.

Research on the nutrition of construction workers is also necessary since they are the most important assets in the construction industry (Smallwood, 2012). They are at the heart of every construction activity. Since the nature of their activities predisposes construction workers to dangerous substances, falls, electrical wiring, unguarded equipment, etc., it is vital to reduce the risks posed by the inherently hazardous circumstances they are faced with on a daily basis. One way of reducing the risks is through improving nutrition. Improving nutrition requires an understanding of the factors which influence food choice decisions (European Food Information Council (EUFIC), 2005).

Research has been conducted on the factors which determine construction workers' nutritional intake (Du Plessis, 2011 and Okoro, Musonda & Agumba, 2014). However, these studies did not demonstrate the extent of influence of the nutrition determinants on workers' food choice and intake. The present paper evaluates the influence of nutrition determinants on food choice and intake.

Therefore, the objective of the paper is to establish the influence of nutrition determinants on construction workers' food choice and intake. By illustrating the extent to which construction workers' food choices and intake are influenced by the determinants, successful nutrition intervention programmes can be designed, targeting the significant determinants.

Literature Review

Measuring nutritional intake

There are different food intake methodologies used to determine nutritional intake, e.g., 24-hr dietary recalls, food frequency questionnaires (FFQ), anthropometric measures and measurement with bio-markers (Aich, Mahzebin, Fahriasubarna & Hassan, 2014). Amare, Moges, Moges, Fantahun, Admassu, Mulu & Kassu (2012) used a FFQ and 24-hour dietary recalls to assess nutrient adequacy. However, the National Cancer Institute (2013) argued that FFQs asking about the frequency of food consumption, even without asking about portion sizes, is adequate for obtaining information about food intake. This view is supported by the Medical Research Council (MRC), n. d.), which reported that FFQs can be used to assess habitual diet by asking the frequency with which certain foods or specific food groups are consumed over a reference period. Quantitative information revealing the consumption pattern of a particular subject population can

be obtained from FFQs. Which method one decides to use depends on the questions to be probed, the settings, the participants and the outcomes required (Huang, Lee, Pan & Wahlqvist, 2011).

Food frequency questionnaires may be based on an extensive list of food items or a relatively short list of specific foods, e.g., meat, fish, eggs, fat-rich foods, dairy products, fruits, vegetables, etc. but should include: a) major sources of a group of nutrients of particular interest; b) foods which contribute to the variability in intake between individuals in the population; and c) foods commonly consumed in the study population (MRC, ibid.). Food frequency questionnaires should be able to provide the information for which it was intended, i.e, frequency of food consumption, nutrient or dietary supplement intake, or specific dietary behaviour, time period of interest (a week, a month, or a year), etc. (Cade, Burley, Warm, Thompson & Margetts, 2004). Single food items may be grouped to prevent excessive questionnaire length (Cade et al., ibid.).

Determinants of Nutritional Intake

According to Arganini, Saba, Comitato, Virgili & Turrini (2012), the factors which determine an individual's food choice and intake range from biological mechanism and genetic profiles to social and cultural factors. Other determinants were reported to be nutritional knowledge, economic, and psychological factors.

Nutritional knowledge: According to Grunert, Wills & Fernandez-Celemin (2010), nutritional knowledge is indicated by ability to identify healthiest foods from various sources or knowledge of what a healthy diet means; knowledge of the sources of nutrients; and knowledge of the health implications of eating or failing to eat particular foods. Food preparation and cooking skills were also reported to be useful indicators of nutritional knowledge (Chenhall, 2010 and EUFIC, 2011), in addition to awareness of nutritional requirements for existing health status

(Bruner & Chad, 2014), gender (Arganini et al., 2012), body size (Hassapidou & Papadopoulou, 2006) and age (Kinsey & Wendt, 2007).

Economic determinants: These were indicated to be wages (Tiwary, Gangopadhyay, Biswas, Nayak, Chatterjee, Chakraborty & Mukherjee, 2012), cost and availability of food (Du Plessis, 2011), discounts (Waterlander, de Boer, Schuit, Seidell, & Steenhuis, 2013), brand names and variety (Berger, Draganska, & Simonson, 2007) and marketing strategies (Kushi, Byers, Doyle, Bandera, McCullough, Gansler, Andrews & Thun, 2006).

Environmental determinants: In Ball, Timperio & Crawford (2006) environmental determinants of food choice and intake included physical elements of the environment. The physical elements include determinants such as facilities provided on site for storing and preparing foods (Food and Agriculture Organization (FAO), n. d.), seasonality and time (Kolbe-Alexander, Buckmaster, Nossel, Dreyer, Fiona, Noakes & Lambert, 2008).

Social determinants: Social determinants were identified to include colleagues and friends (Du Plessis, 2011), family traditions (Just, Heiman & Zilberman, 2007), social belonging (Puoane, Matwa & Bradley, 2006) and media (McCluskey & Swinnen, 2011).

Psychological determinants: In Babicz-Ziielinska (2006), it was reported that beliefs, habits, perceptions, attitudes, motives and personality determine choices of foods. The author contended that some attitudes towards food usually stem from unfamiliarity of foods or their effects on health). Heartya, McCartya, Kearneyb & Gibneya (2007) argued that individuals who perceive their eating habits to be healthy were more likely to comply with dietary guidelines than those who do not. This view was supported by Petrovici & Ritson (2006) who contended that health motivation and belief that healthy food can prevent diseases influence dietary health

preventive behavior and healthy eating. Some meats may be avoided based on beliefs about preservation of health, for instance, prevention or control of high blood pressure (Petrovici & Ritson, 2006). Other psychological factors determining food choice were indicated to be beliefs about the role of healthy eating in increasing productivity at work and in preventing accidents and injuries (Wanjek, 2005).

Physiological determinants: Physiological determinants include hunger, taste, appetite, satiety, quality and palatability of food (EUFIC, 2005).

Methods

An extensive literature review was conducted to identify relevant concepts and a likert-scale questionnaire was developed therefrom. The questionnaire consisted of 14-item questions relating to the frequency of consumption of a list of food items in a working week (adapted from Amare et al., 2012) as well as 42–item questions relating to food choice determinants. The questionnaire was pilot-tested, reviewed and revised by experts before being self-administered to construction workers on construction sites. This was done to enhance validity. The participants, selected through heterogeneity and convenience sampling, included workers who were actively engaged in the physical construction activities as opposed to the site managers and supervisors. This group was chosen as they were the most susceptible to poor nutrition and poor safety performance on construction sites. Out of a total of 220 questionnaires distributed, 183 were returned and used for the empirical analysis.

Data were analyzed using Statistical Package for Social Sciences (SPSS) version 22 software. Principal components analysis (PCA) using principal axis factoring and oblimin rotation was conducted to examine underlying structures of the theorized measures and to reduce the large

number of related variables prior to using them in other analysis. Preliminary considerations for PCA were assessed. The sample size requirement of 150+ was met (Pallant, 2013). Suitability of data for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity tests. Missing data and outliers were excluded before analysis. Outputs from the PCA (principal components), which contributed to the variance in the data sets were then adopted, retained, interpreted and used for correlation analysis. Decisions on which factors to retain were made using the Kaiser's criterion (retaining eigenvalues above 1), scree test (retaining factors above the "breaking point") and Monte Carlo parallel analysis (retaining factors whose initial eigenvalues were larger than the criterion values from parallel analysis). Multiple regression was subsequently conducted to determine the extent to which the nutritional intake is influenced by the determinants.

Cronbach's alpha *a* test and inter-item correlations were used to assess internal consistency reliability before and after PCA. Before PCA, the alpha index for the nutritional intake was 0.76, while values for the nutritional determinants ranged from 0.705 to 0.837, indicating good internal consistency. The alpha *a* values for nutritional intake measures after PCA ranged from "0.43 to 0.89", while *a* values for food choice determinants ranged from 0.62 to 0.85. Alpha values of > 0.4 are fairly acceptable. Where *a* values are low, it is more appropriate to report mean inter-item correlations (Pallant, 2013). Mean inter-item correlation values ranging from "0.2 to 0.4" indicate good internal consistency (Pallant, 2013). The nutritional intake sub-scale with $a = 0.43$ had a mean inter-item correlation of 0.27, indicating good internal consistency.

Results

Results from Principal Components Analysis

The suitability of the data for factor analysis was first assessed. With regard to the measures of nutritional intake, the KMO value for the measure of sampling adequacy was 0.735, exceeding the recommended value of 0.6 and the Bartlett's test of sphericity reached statistical significance at p = .000 (<.05), indicating suitability of data for factor analysis (Pallant, 2013). Four components, accounting for 61.45% of the total variance, with eigenvalues 3.685, 2.162, 1.535 and 1.222, explaining 26.32%, 15.44%, 10.96% and 8.73% of the variance, respectively, were extracted and retained based on the Kaiser's criterion, the scree test and parallel analysis. Factors with eigenvalues above 1, factors above the breaking point on the scree line and factors whose initial eigenvalues were larger than the criterion values from parallel analysis (Table 1) were retained for rotation. Interpretation of the four retained factors revealed strong item-loadings on the first two components and weak loadings on the 3rd and 4th components (Table 2). Components 3 and 4 were still retained because they had good and fairly acceptable Cronbach's alpha values, respectively. In addition, the fourth component contained important, universal and core foods (Carmona, 2004) usually consumed together. The four components were named *alternatives, traditional core, secondary core* and *core foods*, respectively, based on their nature, level of importance and universality amongst the study participants (Carmona, 2004).

With regard to the determinants of food intake, the KMO value was 0.743 and the Bartlett's test of sphericity reached statistical significance at *p* = .000, supporting the suitability of data for factor analysis. The forty-two items theorized to be nutrition determinants were then subjected to PCA. Results from repeated PCA revealed that eleven or seven components could be extracted for further interpretation and analysis. In the first analysis, eleven components exceeded eigenvalues above 1(10.679, 4.145, 2.879, 2.241, 1.883, 1.818, 1.592, 1.432, 1.377, 1.300 and 1.117),

explaining 25.43%, 9.87%, 6.85%, 5.34%, 4.48%, 4.33%, 3.79%, 3.41%, 3.28%, 3.10% and 2.66%, respectively of the variance, and accounting for a total variance of 72.53%. Results of the scree test also revealed a break after the eleventh component.

Due to the large number of the components extracted, the difficulty in naming them and the low internal consistency reliability of some of the components (*a* values ranging from 0.54 to 0.84), a decision was made to re-run the rotation with a number closer to the expected number or to the originally theorized framework to increase internal consistency reliability of the components.

The second rotation was then done with the first seven components, which accounted for 60.09% of the total variance. Interpretation of these seven (Table 3) revealed that items loaded more on each component and the structure was similar to the theorized six-factor model. In addition, the internal consistency reliability of the components improved, ranging from 0.62 to 0.85. The seven components were then adopted for further analysis. "Family norms and traditions" had a low loading (0.279) on component 1 and was dropped from further analysis. In other words, the seven-factor model was preferred because of its closeness to the theoretical framework, sufficient number of primary loadings, ease of interpretation and increased reliability of components. The seven factors (principal components) were named thus:

- *food context* (including brand name, food in season, time constraints, location, cooking skills and marketing strategies);
- *biological factors* (including taste of the food, appetite, appearance, quality, hunger and satiety);

- *nutritional knowledge* (including knowledge about food sources of energy, about sources of food nutrients, about health implications of consuming or not consuming particular foods, and about the daily dietary requirements);
- *personal ideas and systems* (including eating habits, cynical attitude towards nutrition promotion, mood, the fact that healthy food help to enhance concentration, peers/colleagues' influence, the need to belong to a social group, social media and networking, belief that avoiding meat will keep one healthier, belief that killing animals for food is not good, and belief about adequacy of current diet);
- *economic factors* (including cost/price of food, availability of food, wages/income and food discounts);
- *resources* (including on-site facilities for food storage and preservation, and heating up food, eating facilities such as benches, washing bowls, etc., knowledge of nutritional requirements for existing health conditions, for age and body size, the fact that healthy food will help to increase productivity and the fact that one will lose or add weight with certain foods); and
- *cultural background* (including knowledge of what to eat as a man or woman, and what to eat for the type of work engaged in, belief that one should only eat food from their culture and belief that avoiding meat will save money).

Results from Multiple Regression Analysis

Multiple regression analysis (MRA) was used to analyze the influence of the nutrition determinants on *alternative foods, traditional core foods, secondary core foods* and *core foods*, respectively. The results are presented hereunder.

Influence of nutrition determinants on choice and intake of alternative foods (dairy foods, eggs, nuts, fish and cereals)

Two nutrition determinants were identified to be statistically significant at the .05 level (Table 4). The determinants were *nutritional knowledge* (beta = 0.16, p = .037) and *resources* (beta = 0.31, p = .001). Of the two variables, *resources* made a larger significant unique contribution of 31%. The beta value for *nutritional knowledge* was lower at 16%, indicating that it made less of a unique contribution to nutritional intake.

Influence of nutrition determinants on the choice and intake of traditional core foods (extra salt, a lot of fried foods, a lot of sugar, pasta and grains like rice).

Only one determinant (*cultural background)* was identified to be significant at the .05 level (beta = .23, p = .021), contributing 23% of the unique variance in the choice and intake of *traditional core foods,* comprising extra salt, a lot of sugar, fried foods, pasta and grains like rice (Table 5).

Influence of nutritional determinants on the choice and intake of secondary core foods (fruits and vegetables).

Three determinants were identified to be significant at the .05 level. The three determinants included *economic factors* (beta = -.17, p = .039), *resources* (beta = .24, p = .016) and *cultural background* (beta = -.38, p = .000) (Table 6). *Cultural background* had the largest significant unique contribution (38%) of the variance, followed by resources (24%) and then economic factors (17%).

Influence of nutrition determinants on the choice and intake of core foods (meat and corn meal).

From the regression coefficients (Table 7), it can be seen that only one item (nutritional knowledge (beta = 0.27, p = .001) was identified to have a significant unique influence of 27% on the choice and intake of *core foods* comprising meat and corn meal.

Discussion

Principal components analysis revealed that nutritional intake is measurable by four factors, namely: *alternative foods* including dairy foods, eggs, nuts, fish and cereals; *traditional core foods* including salt, sugar, fried foods, pasts and grains; *secondary core foods* including fruits and vegetables; and core foods including meat and corn meal. The framework also revealed that nutrition determinants comprised seven factors as opposed to the six-factor model theorized from literature.

The influence of the seven nutrition determinants on consumption of *alternative foods*, *traditional core foods*, *secondary core foods* and core foods, was examined separately. Results revealed the following:

Influence of nutrition determinants on alternative foods (dairy foods, eggs, nuts, fish and cereals).

The influence of *resources* on choice and intake of *alternative foods* was identified to be significant. This seemed to suggest that provision of on-site facilities for food storage and preservation, and for heating up food, eating facilities such as benches, washing bowls, etc., as well as awareness of nutritional requirements for existing health conditions, for age and body size, and awareness of the contribution of healthy food in productivity improvements have influence on

choice and intake of dairy foods, eggs, fish, nuts and cereals. It is notable that most foods in this category require refrigeration because of their protein content, as viewed by Wanjek (2005). It would therefore mean that these foods will be consumed where there is proper storage and preservation facility. The finding that resources have influence on consumption of *alternative foods* aligns with findings from studies by Wanjek (2005) and Escoffery, Kegler, Alcantara, Wilson & Glanz (2011).

In Wanjek (2005), it was indicated that provision of on-site facilities for food storage and preparation resulted in healthy food choices by workers. It was also reported, in the same study, that awareness of the benefit of healthy eating in productivity improvements encouraged better food choices. Similarly, Escoffery et al. (2011) reported that participants who had cafeterias, refrigeration and microwaves were able to prepare and store more healthful foods and side items such as milk, eggs and fish; whereas their counterparts who had no such facilities were unable to eat these food items.

Nutritional knowledge was also identified to be significant in influencing choice and intake of dairy foods, eggs, nuts, fish and cereals. This finding aligns with findings from a study by Soederberg-Miller and Cassady (2012) which indicated that knowledge and understanding about nutrition enhances dietary modifications and allows for positive decision-making processes.

Influence of nutrition determinants on "traditional core foods' (extra salt, a lot of sugar, a lot of fried foods, pasta and grains like rice).

Intake of foods termed *traditional core foods* was identified to be significantly influenced by *cultural background.* The finding that *cultural background* influenced food choice and intake is in line with findings from studies by Kulkarni (2004) and Boyle and Holben (2012) which indicated

that people of various groups with strong attachments to their cultural orientation were reported to consume foods in this component based on their beliefs.

In Kulkarni (2004), traditional health beliefs, dietary customs and cultural variations were identified to influence choice of food. For instance, the traditional Mexican diet is low in fat and high in fibre (Kulkarni, 2004: 192). Nutrition intervention programmes such as nutrition education should therefore emphasize consumption of healthy traditional diets which are, first and foremost, culturally acceptable by the target population.

In Boyle and Holben (2012) it was revealed that some American ethnic groups believe in materialism and that disease can be prevented, while other cultures believe in spirituality and that humans cannot control disease (Boyle and Holben, 2012:566). While the former group may likely consume healthy foods, the latter may indulge in unhealthy diets with the belief that the management and progression of their health is entirely out of their control. In the same study, it was also indicated that Asian/Pacific Island Americans indulged in high intakes of salt, American Indians ate fried bread and a lot of refined sugar, European Americans commonly had high intakes of fat, salt, sugar and fast foods and Southern African Americans commonly ate fried foods (Boyle and Holben, 2012:568).

Influence of nutrition determinants on "secondary core foods" (fruits and vegetables).

Economic factors, resources and *cultural background* were identified to have significant influence on consumption of fruits and vegetables. The finding that *economic factors* such as cost/price and discounts significantly influenced intake of fruits and vegetables corroborates with findings from studies by Waterlander et al. (2012 and 2013) which indicated that reduced prices of fruits and vegetables lead to increased rates of consumption of these foods.

The finding that wages influenced nutritional intake is consistent with findings from Tiwary et al. (2012), which indicated that fruits and vegetable consumption amongst construction workers was rare and this was primarily due to the low wages they were paid. Findings from Du Plessis (2011 and 2012) also support the results that wages, availability of foods and *cultural background* including cultural beliefs and gender–based distinctions have influence on intake of fruits and vegetables amongst construction workers.

The finding that *resources,* comprising on-site facilities and space available, knowledge of nutritional requirements, and contribution of healthy eating to productivity improvement, influence intake of fruits and vegetables is also consistent with findings from a study by Wanjek (2005). That *cultural background* has significant influence on consumption of fruits and vegetables supports findings from Puoane et al. (2006) which indicated that *cultural background* and identity influenced foods consumed among black South Africans.

Influence of nutrition determinants on "core foods" (meat and corn meal).

Nutritional knowledge was identified to have influence on consumption of meat and corn meal. This finding is consistent with findings from a study by Kulkarni (2004) which indicated that knowledge, especially of the health implications of eating or not eating certain foods, determined intake of foods including, inter alia, corn and meat. This view also aligns with results from Crites and Aikman (2005) which indicated that nutritional knowledge influences health evaluations which influence attitudes towards choice, preparation and consumption of corn and meat.

Conclusion

The study set out to establish the influence of nutrition determinants on nutritional choice and intake amongst construction workers. The study identified the most significant factors which

determine the choices and intake of foods classified in the current study as *alternative foods, traditional core foods, secondary core foods* and *core foods.*

With regard to consumption of foods termed *traditional core foods*, *cultural background* was identified to be the most influencing factor. Consumption of foods termed *secondary core foods* including fruits and vegetables was identified to be influenced by *economic factors, resources* and *cultural background.* Consumption of foods termed *core foods*, including meat and corn meal were identified to be mostly influenced by *nutritional knowledge* and *cultural background.*

Knowledge of the factors which influence construction workers' decision on food choice is invaluable in improving their nutrition because it will enable policy makers to direct improvement efforts towards the identified determinants. The study therefore provides a basis for future design of explicit, relevant and effectual nutrition intervention programmes targeted at construction workers, taking into consideration the identified significant factors.

In an effort to improve nutritional knowledge, intensive nutritional education programmes should consider cultural background of construction workers. In addition, since *resources* were identified to be a significant determinant, policy makers in the construction industry should provide the *resources*, namely: secluded spaces/areas for eating; on-site facilities for storing and heating up food and adequate eating facilities including benches, washing bowls, etc.

Furthermore, since some of the factors identified included aspects that may be beyond the workers' control, for instance wages and cost of food (economic factors), supplementary feeding programmes would be invaluable in ensuring that workers eat healthily. Construction employers and managers can also commit to healthy eating through environmental or organizational changes

such as increasing the availability of healthy foods at worksites at canteens and in vending machines; arranging with food vendors to sell healthy food options at reduced prices and collaborating with organizations to provide healthy foods on-site.

Whilst the findings of this study could be applied to most construction workers, it may not be generalizable to construction workers in other countries where beliefs and attitudes to dietary choices may differ from those of the sample population. In addition, the sample comprised predominantly male workers and therefore the results may not be generalizable to female workers since opinions may also differ considerably. Future research could therefore use a different sample to determine the significant influences on nutritional choice and intake.

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TABLE 1: Comparison of Initial Eigenvalues and Criterion Values

Component	Initial eigenvalue from PCA	Criterion value (random eigenvalue) from parallel analysis	Decision
1	3.685	1.4014	**accept**
2	2.162	1.2653	**accept**
3	1.535	1.2081	**accept**
4	1.222	1.1082	**accept**
5	0.850	1.0396	reject
6	0.819	0.9110	reject

TABLE 2: Loading Matrix of Nutrition Components

Item	Component			
	1	2	3	4
dairy products	**.702**	-.137	.029	.042
eggs	**.683**	-.099	.014	.471
nuts	**.680**	.105	.088	-.105
fish	**.590**	.136	-.005	-.034

cereals	**.405**	.353	.183	-.231
extra salt	-.026	**.725**	-.281	.071
a lot of sugary foods	.014	**.666**	-.036	.167
a lot of fried foods	-.172	**.609**	.248	-.009
pasta	.268	**.466**	.206	-.141
grains like rice	.127	**.420**	-.018	-.036
vegetables	-.002	-.083	**.795**	.166
fruits	.120	-.018	**.793**	.052
meat	.078	.010	.044	**.597**
corn meal	-.049	.085	.075	**.336**

TABLE 3: Loading matrix of the components of nutrition determinants after rotation

Measures	Component						
	1	2	3	4	5	6	7
brand name	***.726***	.180	.065	.074	-.013	-.153	-.147
food in season	***.694***	-.027	-.024	.084	.056	.024	.123
time I have before work and during breaks	***.551***	.051	.017	-.067	.027	-.134	.373
location of where the food is sold	***.540***	.046	-.065	.118	-.073	-.123	.064
cooking skills	***.482***	-.029	.038	-.061	.078	.013	.369
the way the food is advertised or marketed	***.469***	.178	.020	.133	-.010	-.158	.121
what I am used to from home and family traditions	***.279***	.113	-.016	.129	.201	-.137	.106
the taste of the food	.156	***.765***	.283	-.093	-.030	.139	.110
my appetite for particular foods	.186	***.623***	-.007	.020	-.081	-.086	.054
how presentable the food is	-.002	***.612***	-.323	.067	-.043	-.243	.122
the feeling of fullness I get from the food	.015	***.576***	-.046	.005	.346	.060	.012
the quality of the food	-.096	***.564***	.009	.115	.031	-.142	-.061
how hungry I am	-.016	***.507***	.108	.149	.307	.158	.057
what I know will give me energy	-.177	.046	***.786***	.085	.172	.149	.074

what I know would give me different nutrients, eg., proteins, carbohydrates, vitamins and minerals	-.123	.105	***.721***	.069	-.094	-.163	-.091
what I know can happen to my health if I eat or don't eat particular foods	.228	.206	***.427***	-.128	.178	-.270	-.099
what I know an adult should eat in a day	.180	-.138	***.404***	-.043	-.030	-.086	.122
my eating habits, eg. adding salt no matter what, having my food with beer or juice instead of water, eating something sweet after a meal, eating the same cereal everyday	-.058	.256	-.124	***.610***	.023	-.010	.038
my idea that particular foods are advertised for the benefit of the sellers or advertisers	.142	-.206	.084	***.574***	.165	-.021	-.088
my mood, eg. happy, sad, stressed, etc.	.196	.226	.018	***.538***	.110	.027	-.075
the fact that healthy food will help me concentrate on my work and avoid accidents and injuries	-.331	.020	.064	***.521***	.104	-.182	-.092
what my friends choose for us to eat	.104	.276	.011	***.483***	-.036	.075	.213
the need to belong to a particular social group	.002	.114	-.068	***.471***	.013	-.112	.248
social media and networking	.315	.277	.032	***.471***	-.102	-.034	.005
my belief that avoiding meat will keep me healthier	.204	-.163	.080	***.448***	-.278	-.188	.313
my belief that killing animals for food is not good	.328	-.047	.159	***.429***	-.106	.043	.268

my belief that my current diet is adequate	.072	-.066	.258	***.358***	-.114	-.081	.093
the cost/price of the food	.049	-.168	.074	.118	***.845***	.051	-.127
the foods available	.062	.074	-.014	-.249	***.729***	-.198	.100
the wages I am paid/income I make	-.254	.069	.005	.079	***.636***	-.154	.233
the foods on special offers or discounts	.333	.122	.006	.204	***.464***	.190	.011
the facilities on site for storing and heating up my food	.466	.034	-.100	.106	.041	***-.633***	-.065
the eating facilities provided on site, eg. benches, tables, washing bowls/sinks, etc.	.355	.033	.074	.120	.042	***-.616***	-.026
what I know my body needs for my current health status	.174	.036	.237	-.080	-.071	***-.564***	.138
what I know my body needs at my age	-.114	-.048	.151	.100	-.062	***-.558***	.300
the fact that healthy food will help increase my productivity at work	-.188	.131	.055	.073	.232	***-.525***	-.112
what I know my body size needs	.144	-.175	.212	-.059	.074	***-.413***	.263
my idea that I will add or lose weight with particular foods	.047	.173	-.131	.298	.110	***-.318***	.020
what I know I should eat as a man or woman	.202	.035	-.002	-.011	.014	.003	***.652***

what I know my body needs for the type of work I do	-.222	.232	.109	-.059	.091	-.062	***.560***
my belief that I should only eat food from my culture	.109	.027	.049	.396	.015	.022	***.515***
my belief that avoiding meat will save money	.251	-.206	-.252	.367	-.097	-.138	***.427***

TABLE 4: Coefficients - Influence of nutrition determinants on the choice and intake of *alternative foods*

Model	**Unstandardized**		**Standardized**	**Sig.**	**Zero-order correlations**
	B	Std. Error	Beta		
(Constant)	1.561	.355		.000	
Food context	.015	.076	.020	.843	.268
Biological factors	-.012	.081	-.013	.879	.147
Nutritional knowledge	.161	.076	**.163**	**.037**	.299
Personal ideas and systems	.073	.083	.089	.376	.310
Economic factors	-.062	.064	-.077	.335	.066
Resources	.284	.086	**.313**	**.001**	.417
Cultural background	.011	.075	.015	.880	.244

TABLE 5: Coefficients – Influence of nutrition determinants on the choice and intake of *traditional core foods*

Model	Unstandardized		Standardized	Sig.	Zero-order correlations
	B	Std. Error	Beta		
(Constant)	1.399	.423		.001	
Food context	.058	.090	.063	.524	.342
Biological factors	-.002	.096	-.002	.983	.188
Nutritional knowledge	-.096	.091	-.081	.291	.092
Personal ideas and systems	.102	.098	.103	.302	.355
Economic factors	.098	.076	.101	.200	.194
Resources	.166	.103	.152	.107	.344
Cultural background	.206	.089	.229	**.021**	.395

TABLE 6: Coefficients – Influence of nutrition determinants on the choice and intake of *secondary core foods*

	Unstandardized		Standardized	Sig.	Zero-order correlations
	B	Std. Error	Beta		
(Constant)	2.959	.533		.000	
Food context	.156	.114	.138	.173	.109
Biological factors	-.044	.121	-.031	.713	.022
Nutritional knowledge	.213	.114	.147	.065	.202
Personal ideas and systems	.207	.124	.170	.097	.142
Economic factors	-.200	.096	-.169	**.039**	-.070
Resources	.316	.130	.236	**.016**	.227
Cultural background	-.421	.112	-.381	**.000**	-.085

TABLE 7: Coefficients – Influence of nutrition determinants on the choice and intake of *core foods*

	Unstandardized		**Standardized**	**Sig.**	**Zero-order correlations**
	B	Std. Error	Beta		
(Constant)	3.285	.410		.000	
Food context	.078	.088	.092	.377	-.017
Biological factors	.143	.098	.132	.147	.121
Nutritional knowledge	.289	.088	.270	**.001**	.227
Personal ideas and systems	-.124	.096	-.139	.196	-.101
Economic factors	.055	.073	.064	.453	.117
Resources	-.102	.100	-.103	.307	-.036
Cultural background	-.131	.087	-.159	.132	-.137