

Identifying factors influencing construction workers' food choices in Gauteng, South Africa: A pilot investigation

C Okoro, I Musonda, J Agumba

School of Civil Engineering and Built Environment, Department of Construction Management and Quantity Surveying, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

Correspondence: Mrs Chioma Okoro, PO Box 17011, Doornfontein, South Africa. e-mail: chomasokoro@gmail.com

ABSTRACT

Background: Nutrition is linked with health and safety performance of workers. However, there is scant literature focusing on the nutrition of construction workers, especially in South Africa.

Methods: This pilot study investigated the factors that influence the nutrition of construction workers. A survey was conducted and data were analysed using Microsoft Excel to determine mean scores and to rank the factors.

Results: Nutritional knowledge, economic factors and physiological factors were identified as influencing construction workers' food choices.

Conclusion: These findings provide information that can be used for targeting construction workers' nutrition which could, in turn, improve health and safety performance on construction sites. Identifying nutrition-influencing factors allows for the design of intervention programmes for construction workers.

Keywords: construction, health and safety, nutrition, South Africa, workers

INTRODUCTION

Nutrition has been a source of concern to researchers and organisations, including the International Labour Organization (ILO), for decades due to its association with productivity and health and safety (H&S) performance.¹ Adequate nourishment can be attained through consumption of foods containing different classes of nutrients, such as proteins, carbohydrates, vitamins, minerals, water, fats and oil.² Diversity/variety in diet is important to acquire adequate levels of essential nutrients. Good nutrition assists in maintaining healthy bodies and minds, reduces the rate of susceptibility to infections and chronic diseases such as obesity, heart disease and diabetes, and provides energy which construction workers require in order to perform their activities.³

Construction is a labour-intensive and high-risk activity, involving hazardous work. It is physically and mentally demanding, requiring moderate to maximum physical strength and stamina, manual dexterity and coordination, and mental concentration and alertness. Consumption of varieties of good quality foods helps workers to perform at peak concentration levels, minimises occurrence of accidents and fatalities, and thus reduces costs for the workers and the construction companies since absenteeism is reduced, the incidence of diseases associated with poor nutrition is reduced, and avoidable direct and indirect costs of accidents are reduced. Given the invaluable contribution of nutrition in H&S performance improvement, research on the subject is warranted.

Research reveals that construction workers have poor nutrition, comprising staple foods consumed mainly to sustain life, partly due to low wages.⁴ The dirty environment of construction sites compounds the problem. Welfare facilities and spaces for food preparation and consumption are limited or non-existent and foods get contaminated, resulting in ill-health.⁵ Improving nutrition requires

an understanding of the factors that might influence food choices.⁶

Available literature identifies that knowledge of food nutrients, associated health consequences of consuming or avoiding certain foods, and cooking skills, influence nutrition.⁷⁻⁹ Economic factors such as wages, cost and availability of healthy food alternatives; and physical factors such as availability of on-site catering facilities for storing, preparing and eating foods, as well as secluded locations, influence food choices.^{1,4,5,9} Other factors that play important roles in determining nutrition are social (family, colleagues and social values), psychological (beliefs, attitudes, habits, perceptions and motives) and physiological (hunger, taste, appetite, genetic predispositions, personality traits, gender and existing health status).¹⁰⁻¹²

Although literature exists on factors that influence food choices, there is a paucity of research, especially in South Africa, focusing on factors that might influence construction workers' choices. Previous studies have addressed workers in general, focused on environmental factors⁶ and socio-cultural factors,¹⁰ or reviewed literature focusing on construction apprentices only.⁹ In addition, a comprehensive list of factors applicable to a culturally diverse sample of South African construction workers is not available. A pilot study was therefore designed to identify the critical factors that relate specifically to construction site workers' food choices in South Africa.

METHODS

A 5-point likert-scale questionnaire was designed, comprising 35 questions with responses ranging from 1 (strongly disagree) to 5 (strongly agree). Respondents were asked to express their level of agreement with the statements regarding factors that are thought to influence nutrition. The questionnaire was self-administered to 20 construction workers at three sites (one road and two building construction sites) on two consecutive days in September 2014.

The workers were conveniently and purposefully selected based on their relative ease of access and active engagement in construction activities at the time of the visit. Site manual workers were chosen as opposed to managers because workers are more susceptible to poor nutrition and safety performance.

Mean scores (MS) were compared, using Excel, to rank the factors using the weighted responses, with higher values representing a higher level of influence.

This pilot study was conducted with the approval of the University of Johannesburg Research Ethics Board.

RESULTS

Nineteen of the 20 workers completed the questionnaire. Most (94.7%) of the respondents were male; 57.9% were aged 25 to 34 years. Of the respondents, 47.4% were electricians, 21.1%

were brick-layers, 21.1% were plumbers, 5.3% were steel fixers, and 5.3% were pavers.

Table 1 shows the ranking of the different sub-categories/factors. With regard to nutritional knowledge factors, the recorded MS were above 3.0, suggesting that respondents agreed that knowledge about what a healthy diet means, about sources of nutrients, and about the health effects of particular foods and cooking skills, influence food choices.

Economic factors, such as wages, cost, availability of food and food discounts, influenced the respondents' food choices as evidenced in the recorded MS above 3.0 for these factors. On the other hand, brand name (MS=2.95) and marketing strategies (MS=2.63) were not deemed to be influential on the workers' food choices. Wages and cost of foods ranked highest in this category.

Regarding social factors, the respondents agreed that family

Table 1. Factors influencing construction workers' food choices

Factors	Sub-factors	MS	Rank
Nutritional knowledge factors	Knowledge about what a healthy diet is	3.68	1
	Knowledge about sources of nutrients	3.63	2
	Knowledge about health effects of particular foods	3.58	3
	Cooking skills	3.53	4
Economic factors	Wages	4.05	1
	Cost/price	4.05	1
	Availability	3.84	2
	Discounts/subsidies	3.63	3
	Brand name	2.95	4
Physical factors	Marketing strategies/advertisements	2.63	5
	On-site washing up facilities	3.63	1
Social factors	On-site catering facilities	3.42	2
	Location	3.21	3
	Family norms and traditions	3.68	1
Psychological factors	Colleagues' influence	2.95	2
	Media/social networks	2.90	3
	Social class	2.74	4
	Perception of benefit to productivity improvements	4.05	1
	Perception of benefit to safety performance	3.79	2
	Body image	3.26	3
	Mood	2.84	4
	Belief about adequacy of diet	2.84	4
	Habits	2.84	4
	Beliefs about food from culture	2.68	5
Physiological factors	Cynical attitude towards nutrition promotions	2.63	6
	Belief that avoiding meat saves money	2.32	7
	Belief that killing animals for food is not good	2.21	8
	Belief that avoiding meat will keep me healthier	2.11	9
	Hunger	4.05	1
	Appetite	3.90	2
	Quality/appearance	3.84	3
Satiety	3.58	4	
Physiological factors	Taste	3.42	5
	Nutritional requirements for current health status	3.11	6
	Gender	3.05	7

norms and tradition influenced their food choices (MS=3.68). With regard to psychological factors, perceptions of benefits of healthy eating for productivity (MS=4.05) and safety performance improvements (MS=3.79) were considered most influential.

Hunger (MS=4.05), appetite (MS=3.90) and quality/appearance of food (MS=3.58) ranked highest, while gender (MS=3.05) ranked lowest among the physiological factors. It is notable that all the stated physiological factors scored MS>3.0, suggesting that they were all influential in the respondents' food choices.

Overall, wages, cost/price of food, perception of benefit to productivity improvements and hunger recorded MS>4.0. This suggests that these were the most influential factors in the food choices of the construction workers in this pilot study.

DISCUSSION

Although the study included only 19 participants, it provides useful information on construction workers' food choice determinants. The findings support views by a UK study that reported that lack of knowledge about particular foods resulted in construction workers consuming high-fat foods, believing that they would be enabled to perform their physically-demanding tasks by consuming such foods.⁸ Another study in India confirmed the influence of wages and stressed that most building and construction workers were poorly paid, could not afford proper nutrition, and predominantly consumed staple foods such as rice and potatoes, inadequate in both quantity and quality.⁴ This differs slightly from the view that food choices of Australian construction apprentices depend on affordability of the foods that are available/accessible.⁹

Availability of adequate catering facilities in a clean environment influences healthy eating habits, which concurs with findings that workers who had cafeterias, separate eating places, refrigeration and/or microwaves were able to prepare and store more healthy foods and basic items such as milk, fish and eggs, whereas their counterparts who had no such facilities were unable to eat these food items.¹³ Workers agreed that adoption of healthy eating behaviour improves safety and productivity, and that environmental factors which hinder adoption of healthy eating behaviour should be tackled as these partly motivate their choices of food.¹⁴ That family norms and traditions influence food decisions is consistent with findings from a South African study which indicated that choices amongst the black population were influenced by the social meaning attached to food such as love and humanity fostered within and outside family settings.¹⁰

The construction workers in this pilot study might not have had attachment to life course experiences which moderate beliefs and culture, as evidenced by the non-consensus regarding psychological factors.¹¹ It could also be that the workers were not vegetarians or were indifferent to beliefs regarding meat avoidance as evinced by the least-ranking psychological factors.

CONCLUSIONS AND RECOMMENDATIONS

The study set out to establish factors that influence the food choices of construction workers in Johannesburg, Gauteng. The findings evinced that wages, cost/price of food, benefits to productivity and safety performance, and hunger were the major factors. Other factors included nutritional knowledge, availability of washing up

facilities, availability of healthy food alternatives, food discounts/subsidies, taste and quality of food.

However, the results cannot be generalised to all construction workers in South Africa. A larger, more representative study population should be used to confirm these findings, using a mixed methods approach.

Nevertheless, the results of this pilot study can assist in the design of intervention programmes to help improve construction workers' nutrition and thus H&S performance. It is suggested that nutrition intervention programmes should focus on the identified factors. Employers could collaborate with organisations to provide healthy food alternatives on site. Canteens and vending machines could contain healthy food alternatives to ensure availability and accessibility to healthy food options. Moreover, the healthier options could be discounted to ensure affordability.

Identifying the factors that might influence construction workers' food choices is critical to allow for explicit and effective nutrition intervention programmes for H&S performance improvements, tailored and streamlined for construction workers. Improving nutrition will sustain physical and mental health and inevitably improve safety performance.

DECLARATION

The authors declare no conflicts of interest.

REFERENCES

1. International Labour Organization. A comprehensive approach to improving nutrition at the workplace: A survey of Chilean companies and tailored recommendations. Santiago: ILO; 2012.
2. Amare B, Moges B, Moges F, Fantahun B, Admassu M, Mulu A, et al. Nutritional status and dietary intake of urban residents in Gondar, Northwest Ethiopia. *BMC Publ Health*. 2012; 12:752.
3. Viester L, Verhagen EALM, Proper KI, van Dongen JM, Bongers PM, van der Beek AJ. VIP in construction: Systematic development and evaluation of a multifaceted health programme aiming to improve physical activity levels and dietary patterns among construction workers. *BMC Publ Health*. 2012; 12:89.
4. Tiwary G, Gangopadhyay PK, Biswas S, Nayak K., Chatterjee MK, Chakraborty D, Mukherjee S. Socio-economic status of workers in the building and construction industry. *Indian J Occup Environ Med*. 2012; 16(2):66-71.
5. Smallwood JJ, Deacon C. Construction camps in building and civil engineering construction. Proceedings of the International Conference on Infrastructure Development and Investment Strategies for Africa. 16-18 Sep, 2015; Livingstone Zambia.
6. Watkins CM, Lartey GK, Golla V, Khubchandani J. Workers' perception: Environmental factors influencing obesity at the workplace. *Am J Health Stud*. 2008; 23(2):74-80.
7. Divakar S, Prema L, Kumar CEA. Health and nutritional knowledge assessment scale for workers in Cashew Industry. *J Hum Ecol*. 2012; 37(3):185-188.
8. Men's Health Forum (MHF). Beyond the greasy spoon: Improving the diet of male construction workers. Foods Standards Agency, United Kingdom; 2009.
9. Du Plessis K. Diet and nutrition: A literature review of factors influencing blue-collar apprentices. Incolink, Victoria: Australia; 2011.
10. Puoane T, Matwa P, Bradley H. Socio-cultural factors influencing food consumption patterns in the Black African. *Hum Ecol*. 2006; Special Issue (14):89-93.
11. Sobal J, Bisogni, CA, Devine CM, Jastran M. A conceptual model of the food choice process over the life course. In: Shepherd R, Raats M, editors. *The psychology of food choice*. Wallingford: CABI; 2006. pp. 1-18.
12. Petrovici DA, Ritson C. Factors influencing consumer dietary health preventative behaviours. *BMC Publ Health*. 2006; 6:222.
13. Escoffery C, Kegler MC, Alcantara I, Wilson M, Glanz K. A qualitative examination of the role of small, rural worksites in obesity prevention. *Prev Chronic Dis*. 2011; 8(4):A75.
14. Lingard H, Turner M. Improving the health of male, blue collar construction workers: a social ecological perspective. *Constr Manage Econ*. 2015; 33(1):18-34.