



Predictive Factors of Healthy Nutrition Behaviours among Middle-aged Staff of Tertiary Institution in Ondo State, Nigeria

Omolola Justinah Awosika¹, Kerimu Ikazuwagbe Joel², Samson Olaoluwa Agbaje³, *Margaret Afolake Abiodun-Adeniyi⁴, Onyinyechukwu Blessing Duru⁵

¹Department of Public Health, College of Medical and Allied Health Sciences, Wesley University, Ondo, Ondo State, Nigeria

²Department of Human Kinetics, Faculty of Education, University of Ilorin, Ilorin, Kwara State

³Department of Human Kinetics and Health Education, University of Nigeria, Nsukka, Nigeria

⁴Department of Service Sector Management, Food and Nutrition Group, BTE, Sheffield Hallam University, Sheffield, United Kingdom

⁵Dietetics Unit, University of Nigeria, Nsukka, Medical Centre.

***Corresponding Author:** Margaret Afolake Abiodun-Adeniyi; margaret.abiodun-adeniyi@nhs.net

Abstract

Healthy nutrition is essential for bodily wellness and health, likewise, maintaining a nutrient-dense diet is critically important for adults because of the impact of food intake on health. The objective of this study was to determine the factors that influence healthy nutrition behaviours among middle-aged staff of tertiary institutions in Ondo State, Nigeria. The Cross-sectional survey design was used in this study. The population of the study was 1967 middle-aged staff of tertiary institutions in Ondo West Local Government Area of Ondo State, Nigeria. A sample size of 415 academic and non-academic staff, aged between 40 and 65 years was used. The nutritional subscale of the Health Promoting Lifestyle Profile II (HPLP-II) developed by Walker et al. (1987) was adopted and used for data collection in this study. The research questions were analyzed with mean and standard deviation while multiple linear regressions were used to test the null hypotheses at 0.05 level of significance. Findings showed that education level (beta = .351, P = .146) and marital status (beta = -.275, P = .088) made the strongest unique contributions to explaining healthy nutrition behaviours of middle-aged staff. It was concluded that educational level and marital status were strong predictors of healthy nutrition behaviours among middle-aged staff of tertiary institution in Ondo State, Nigeria. It was recommended that public health educators should embark on an informative campaign in tertiary institutions to encourage middle-aged staff adopt healthy nutrition practice to enhance the physical condition, cognitive condition, cardiovascular function, immune system and productivity.

Keyword: Healthy behaviour, Healthy nutrition, Predictors, Middle-aged Staff, Tertiary institutions

Introduction

Health behaviours, sometimes called health-related behaviours, are actions taken by individuals that affect their health, these actions may be intentional or unintentional and can promote or impair the health of individuals. Globally, about 2.8 billion people in the world do not have enough food to lead a healthy active life which is estimated as one in nine, Sub-Saharan Africa is the region with the highest prevalence of hunger, with 25% of its population undernourished leading to the prevalence of non-communicable disease among the adult's population (United Nation Food Program [UNFP], 2016). Priano et al. (2018) reported that most nurses in the United States have poor nutritional practices and 60% are obese also Schneider et al. (2019), stated that in the United Kingdom, more than 50% of health workers engage in unhealthy nutrition diets. Unhealthy eating behaviors, poor dietary status, and imbalanced food choices are modifiable risk factors for various chronic diseases, including cardiovascular diseases (CVDs) and Type 2 Diabetes Mellitus (T2DM) (Zhai et al., 2023). WHO (2024) also asserted that there is a relationship between nutrition and non-communicable diseases (NCDs) such as type 2 diabetes, cardiovascular diseases (CVD), chronic age-related disorders and certain cancers in which about 16% of the global adult population are obese while an estimated 3.4 million people die yearly from being overweight and obese. A national survey in Nigeria reported a 20% incidence of obesity from 2002 to 2014 due to unhealthy nutrition behaviour (Okafor, 2014).

Short and Mollborn (2015) defined healthy behaviours as activities undertaken by a person to maintain, achieve, or recover good health as well as prevent disease. Examples are regular physical activity, vaccinations and healthy nutrition. Healthy nutrition is essential for bodily wellness and health, likewise, maintaining a nutrient-dense diet is critically important for adults because of the impact of food intake on health. Stark (2013) defined healthy nutrition as the consumption of macronutrients in appropriate proportions to support energetic and physiologic needs without excess intake while also providing sufficient micronutrients and hydration to meet the physiological needs of the body.

Healthy nutrition should contain all the necessary nutrients required by the body. Somavarapu (2017) stated that the total calories of a healthy diet for adults should be about 50-60% carbohydrates, 10-15% proteins, 20-30% fat (visible and invisible fat), and other non-nutrients such as dietary fiber, antioxidants such as vitamin C, E, riboflavin, beta-carotene and selenium which protect the body from free radical damage and phytochemicals. Food and Agricultural Organization of the United Nations (FAO; 2010) stated that for adults, total calory intake from fat should be lower than 10% of overall energy intake, unsaturated fat such as fat from fish, avocado, nuts, soybeans are preferable to saturated fats (found in an animal like pig, butter, palm/coconut oil), trans-fats (presence in baked and fried foods, such as pies, margarine, spreads, pizza, biscuits, groundnut) and ruminant trans-fats (presence in meat and dairy foods from grazing animals, such as goats and cows). WHO (2012) recommended that salt intake should be iodized and should not be less than one teaspoon per day, it helps to reduce the prevalence of non-communicable diseases such as stroke, hypertension and heart disease among adults. WHO (2015) also stated that adults' sugar intake from overall energy should be lower than 10% and 5% for more healthy outcomes, they include sugar added to beverages, and drinks, and natural sugar in fruit and honey. Also, a healthy diet should contain five different types of fruits and vegetables daily, legumes, nuts and grains that have not been processed such as beans, wheat,



millet, maize and rice exempting starchy food such as cassava and potatoes (WHO, 2020). The authors should create a link to the next paragraph.

Predictors refer to factors which determine future occurrence. Sanaati et al. (2021) stated that there are factors which influence health promotion among adults, including healthy nutrition. These factors are age, gender, education level, income level, marital status, health insurance type, disability status, presence of chronic disease, religion and employment status (academic staff and non-academic staff). However, the factors of interest in this study are age, gender, marital status, educational level, and presence of chronic illness among middle-aged staff (MaS) of tertiary institutions.

Middle-aged is the stage of transition from youth to old-age, they are the highest group in the working age group including staff of tertiary institutions. Staff of tertiary institutions in the words of Moulik and Mazumdar (2012) is regarded as the active resources that an institution can possess as they are responsible for the usage of other resources of the institution to help achieve institutional goals and objectives. According to Thailand Ministry of Public Health, (MOPH; 2017) working-age population is defined as people aged 15-60 years. Kanit and Kanya (2018) also stated that this group of people are the most important population to induce productivity and earn money for their families, they are the key success factors in the organization development and the nation as well as tertiary institutions. In this study, MaS of tertiary institutions were considered as those aged 40-65 years.

Evidence from literature shows that MaS of tertiary institutions do not engage in healthy nutritional behaviour. The Ministry of Public Health, (MOPH; 2017) stated that during the Thailand National Health and Examination Survey, it was discovered that about one-third of the working-age population had unhealthy nutrition behaviour such as sugar-sweetened beverage consumption. Kanit and Kanya (2018) reported that Suan Sunandha Rajabhat University (SSRU) staff in Thailand, had a high prevalence of obesity and overweight which is a result of unhealthy nutritional behaviours. Such behaviours include eating diets with high calories, sugar-sweetened beverages, bakeries such as cake, doughnut, deep fried food such as chicken with skin, pork and coconut milk food that positively associated with overweight and obesity. Tertiary institution staff has fundamentally stressful and demanding workloads as they experience various stressors, including limited leisure time, inadequate rest, and insufficient sleep which may weaken other health behaviors such as healthy nutrition behaviour and physical activity (Lopez et al., 2021). Furthermore, Nnadozie et al. (2021) stated that healthcare workers in tertiary health institutions in southeast Nigeria engaged in unhealthy nutrition behaviour. Therefore, they are at risk of NCDs.

Healthy nutrition behaviour among MaS of tertiary institutions is not only beneficial for educational institutions but also for the overall success of public health strategies and efficient long-term outcomes. Engaging in healthy nutrition enhances productivity and functionality among staff, it reduces the likelihood of early exit from work, chronic illnesses, poor job performance, susceptibility to non-communicable diseases, mild cognitive impairment and low quality of life. Sing et al. (2015) stated that faculty members are prestigious role models, who have a great influence on society's sociocultural structure and foster healthier behaviours within academic and professional environments.

However, unhealthy nutrition behaviours among MaS are modifiable risk factors for several chronic diseases, such as obesity, cardiovascular diseases (CVDs), Type 2 Diabetes Mellitus (T2DM) and chronic age-related disorders. These diseases can affect the effectiveness and



efficiency at work. Consequently, it is imperative to identify the factors that predict healthy nutrition behaviours so as to design health interventions that control or mitigate the influences of such factors on the adoption of healthy nutrition among the middle-aged staff of tertiary institutions in Ondo State. Also, there is a knowledge gap in the literature on healthy nutrition behaviour among MaS of tertiary institutions in the study location. Thus, the current study investigated the predictive factors of healthy nutrition behaviours among MaS of tertiary institutions in Ondo State, Nigeria.

Purpose of the Study

The purpose of this study was to investigate the predictive factors of healthy nutrition behaviours among MaS of tertiary institutions in Ondo State, Nigeria. Specifically, the study determined the:

1. level of health nutrition behaviours among MaS of Tertiary Institutions in Ondo West LGA
2. relationship between healthy nutrition and predictive factors

Research Questions

What is level of health nutrition behaviours among MaS of Tertiary Institutions in Ondo West LGA?

What is relationship between healthy nutrition and predictive factors among MaS of Tertiary Institutions in Ondo West LGA?

Hypothesis

There is no significant association between healthy nutrition and predictive factors among MaS of Tertiary Institutions in Ondo West LGA

Materials and Methods

Study design and setting

The cross-sectional survey research design was conducted between October 2021 to January 2022 at three tertiary institutions in Ondo West Local Government Area of Ondo State.

Participants

The population of the study consisted of all the 1,967 MaS of tertiary institutions in Ondo West Local Government Area, Ondo State.

Sample procedures

The study sample comprised 415 participants. The sample size was calculated using Taro Yamane's (1967) sample size determination formula. The multistage sampling procedure was used to draw the sample for this study. In stage one, proportionate random sampling technique was used to select the sample size. The proportion of each tertiary institution in the population was used to compute the number of participants that were selected in each of the schools. The proportion of the schools is as follows: Wesley University, Ondo (0.11 or 11%),



Adeyemi College of Education, Ondo (0.599 or 60%) and University of Medical Sciences, Ondo (0.289 or 29%). Therefore, a total of 46, 249 and 120 participants were selected from Westley University, Ondo, Adeyemi College of Education, Ondo and University of Medical Sciences, Ondo, respectively. The second stage involved the use of simple random sampling technique by balloting without replacement to select two faculties and schools each in Westley University Ondo, University of Medical Sciences, Ondo and Adeyemi College of Education Ondo, Ondo State, Nigeria. In the third stage, simple random sampling technique by balloting without replacement was used to select four departments each at Wesley University, University of Medical Sciences and Adeyemi College of Education, Ondo, Ondo State. This stage produced a total of twelve departments. In the fourth stage, convenience sampling was used to select the participants in the departments until the sample size was completed.

Instrument for data collection

The nutritional subscale of the Health Promoting Lifestyle Profile II (HPLP-II) developed by Walker et al. (1987) was adopted and used for data collection in this study. The alpha reliability coefficient for HPLP-II total scale was .922. Furthermore, alpha coefficient for the subscale ranges from .702 to .904. In this study, the Cronbach alpha reliability coefficient for HPLP-II the total scale was .846. After the consent form that explained the conditions of participation (e.g., confidentiality, anonymity, right to refuse or abandon) was signed by the participants, the questionnaire was administered to the participants which consist of socio-demographic variables in section A and nutritional subscale of HPLP-II in section B.

Data collection procedure

Ethical approval was sought, and a certificate of approval was received from the Institutional Review Ethics Committee of the Faculty of Education, University of Nigeria, Nsukka before data collection. To have access to the respondents, the research team met with the authorities of the three tertiary institutions differently. A proper introduction was made by the research team to the school authorities, the authorities helped the research team to meet with the middle-aged staff at different departments in the institutions. The purpose of the research was explained to the staff, informed consent were obtained and the confidentiality of their information was assured. After they had given their consent, the research team administered 415 copies of the questionnaire to MaS at their convenience or free time. All the instruments administered were returned, which gave a 100% return rate. However, only 411 copies of the questionnaire were rightly filled. This represents a response rate of 99.01%. Subsequently, 411 copies of the questionnaire were used for data analysis.

Data Analysis

The administered copies of nutrition subscale of the HPLP-II were retrieved... After collecting the information from the retrieved copies of the questionnaire, IBM Statistical Package for the Social Sciences (SPSS Version 25)—was used to analyze the data. To display the responses based on the independent and dependent factors, the data was examined item by item. The participants' sociodemographic data were analyzed using the mean and standard deviation, and multiple linear regression analysis was employed to test the null hypotheses at the 0.05 level of significance.

Results

Table 1. Mean and Standard Deviation of Level of Healthy Nutrition Behaviours among MaS of Tertiary Institutions in Ondo West LGA (n=411)

S/N	Items	Mean	SD
Nutrition			
2.	Choose a diet low in fat, saturated fat and cholesterol	2.14	0.70
8.	Limit use of sugars and food containing sugar (sweet).	2.45	0.82
14.	Eat 6-11 serving of bread, cereal, rice and pasta each day	2.34	0.83
20.	Eat 2-4 serving of fruit each diet	2.43	1.66
26.	Eat 3-5 servings of vegetables each day.	2.22	0.72
32.	Eat 2-3 serving of milk, yoghurt or cheese each day	2.35	0.80
38.	Eat only 2-3 serving from the meat, poultry, fish, drie beans, eggs and nuts group each day.	2.36	0.77
44.	Read labels to identify nutrients, fats, and sodium content in packaged food.	2.45	1.00
50.	Eat breakfast	2.60	0.85
Cluster mean		2.37	0.41
Total Score			
Health Nutrition Behaviours		Mean	SD
Nutrition		2.37	.41
		21.29	3.66

Note. HPLP-II = Health-promoting lifestyle profile version 2, (Nutrition) SD=Standard Deviation
Scoring Protocol for HPLP-II

***Score range of 1 to 4 (4-point rating scale)**

0.00 to 0.1.99 = Low level; 2.00 to 2.99 = Moderate level; 3.00 to 3.49 = High level; 3.50 to 4.00 = Very high-level

Source: Walker et al. (1978)

For total HPLP-II Score

Score of 52-91 = Poor lifestyle; Score of 92-131= Moderate health promoting Lifestyle; Score of 132-171= Good health promoting Lifestyle; Score of 172-208 = Excellent health promoting Lifestyle.

Result in Table 1 showed that, the middle-aged staff of tertiary institutions in Ondo West LGA moderately engaged in Health Nutrition Behaviours (\bar{x} =2.37; SD=.41).

Table 2.

Summary of Standard Multiple Linear Regression showing Predictors of Health Promoting Behaviours (Nutrition) among Middle-Aged Staff of Tertiary Institutions in Ondo West LGA (n=411)

Variables	B	S.E	β	t	p-value	95% C.I for B	
						Lower	Upper
(Constant)	18.96	1.22	-	15.57	0.00	16.56	21.35
Age	.015	.019	.042	.788	.431	-.022	.051
Gender	-.014	.362	-.002	-.038	.970	-.726	.698
Educational level	.351	.241	.072	1.46	.146	-.123	.825

Marital status	.275	.161	.090	1.71	.088	-.041	.591
Current illness	.258	.442	.029	.584	.560	-.611	1.13
R ²	.018						
AdjR ²	.006						
F	1.493						

Note. B = Unstandardized beta coefficient; β = Standardized beta coefficient; S.E = Standard error of estimate; C.I = Confidence Interval; R² = R Square; Adj:R²=Adjusted R²; F = F-ratio .

Table 2 shows the results of standard multiple regression analyses of the relationship between healthy nutrition and predictive factors. The results showed that the entire model explained only 1.8 percent of the variance or change in the dependent variables (healthy nutrition), $F(5,405) = 1.493$, $P = .191$. The table further shows that though statistically significant education level (beta = .351, $P = .146$) and marital status (beta = -.275, $P = .088$) made the strongest unique contributions to explaining healthy nutrition of middle-aged staff when the variance/change explained by all other variables in model is controlled for. Furthermore, presence of a chronic illness (beta = .258, $P = .560$), age (beta = .015, $P = .431$) and gender (beta = -.014, $P = .970$) made less of unique contribution to explaining healthy nutrition. Thus, the variables were not statistically significant.

Discussion

This present study investigated the factors that influence healthy nutrition behaviour among MaS of Tertiary Institutions in Ondo West LGA, Ondo State, Nigeria. The findings in Table 1 showed that middle-aged staff of tertiary institutions had moderate level of healthy nutrition behaviours. The result was expected, thus, not a surprise. The finding could be justified by lack of consistent health promotion initiatives in the tertiary institutions, economic factors opposing middle-aged staff of tertiary institutions, and heavy workloads on middle-aged staff of tertiary institutions. The findings are also in line with those of Joseph-Shehu et al. (2019) who reported moderate healthy nutrition behaviours level among university staff in Nigeria. The agreement between both studies may be as a result of similarity in participants and working environment of both studies. The findings have implications for the administrators of tertiary institutions to formulate healthy nutrition behaviours policy and programmes that will promote middle-aged staff healthy nutrition behaviours towards maintaining energy and productivity, promotes mental well-being and enhance quality of life.

Table 2 showed that although not significant, education level and marital status are strong predictors of healthy nutrition among MaS. This finding is expected and is not surprising because as education level increases, the individual becomes more informed and likely to be exposed to healthy nutrition information which could lead to adoption of a healthy diet. While, marital status influences choice of diet, for instance, being married can lead to adoption of varieties of diets so as to meet up with the different nutritional needs of each member of the family. Also, a spouse can influence healthy nutritional behaviour of his or her partner. This finding was similar to those of Joseph-shehu et al. (2019) and Znyk et al. (2024) who reported that individuals with higher education level engage more in healthy nutrition than those with lower education level among university workers in Nigeria. The similarity in the findings of both studies may be as a result of similar participants. Nevertheless, Table 1 findings also show that gender, age and presence chronic illness



contributed less to healthy nutritional behaviour of middle-aged staff of tertiary institutions. The result on gender is surprising and not expected because it is observed that females are involved in preparing food than males, therefore, they should have more information on the importance of healthy nutrition than males. This finding disagreed with those of Nnadozie et al. (2021) which reported that female contributed significantly than male on healthy nutrition behaviour. While, the finding on age and presence of a chronic illness was in consonance with the study of Znyk et al. (2024) who observed that age did not have significant influence on healthy diet choice, also adult with chronic diseases developed unhealthy eating habits.

Conclusion

Based on the findings, it was concluded that education level and marital status were strong predictors of healthy nutrition behaviour. However, public health educators should embark on an informative campaign in tertiary institutions to encourage middle-age staff on healthy nutrition practice to enhance physical condition, cognitive condition, cardiovascular function, the immune system and productivity and also there should be formulation of health policies by the school managements to encourage middle-aged staff to engage in healthy nutrition behaviour.

Limitation of the study

This study has some limitations in that it uses few demographic variables and convenience sampling techniques to select the participants in the study.

References

- Food and Agriculture Organization of the United Nations. (2010). *Fats and fatty acids in human nutrition: report of an expert consultation*. Retrieved from https://www.fao.org/fileadmin/user_upload/nutrition/docs/requirements/fatsandfattyacidsreport.pdf
- Joseph-Shehu, E., Ncama, B., & Irinoye, O. (2019). Health-Promoting Lifestyle Behaviour: A Determinant for Noncommunicable Diseases Risk Factors Among Employees in a Nigerian University. *Global Journal of Health Science, 11*, 15.
- Kanit, N., & Kanya, N. (2018). The University Staff Survey: Nutritional Status and Food Consumption Behavior. *International Academic Research Conference*. Retrieved from: [http://www.ijbts-journal.com/images/main_1366796758/42\)%20VI18-1123_Full%20Paper-Kanit%20Ngowsiri.pdf](http://www.ijbts-journal.com/images/main_1366796758/42)%20VI18-1123_Full%20Paper-Kanit%20Ngowsiri.pdf).
- López-Olivares, M., De Teresa, G. C., Nestares, T., Fernández-Gómez, E., & Enrique-Mirón, C. (2021). Lifestyle factors influencing dietary patterns of university professors. *Int J Environ Res Public Health, 18*, 9777.
- Ministry of Public Health. (2017). Health for working age group. Bureau of Technical Advisors, *Ministry of Public Health*. Retrieved from: advisor.anamai.moph.go.th/main.php



- Moulik, S. R., & Mazumdar, S. (2012). Exploring the relationship between perceived uses of appraisal satisfaction in the Indian IT sector. *Journal of Business and Social Research*, 2(5), 63-76.
- Nnadozie, U. U., Asouzu, N. C., Anekwu, E. M., Obayi, N. O. K., Maduba, C. C., Anamazobi, A. E., Anikwe, C. C., Nnolim, I. B., & Nnadozie, A. A. (2021). Feeding behavior among health-care workers in a tertiary health institution Southeast Nigeria. *Annals of African Medicine*, (3), 169-177.
- Okafor, C. I., Gezawa, I. D., Sabir, A. A., Raimi, T. H., & Enang, O. (2014). Obesity, overweight, and underweight among urban Nigerians. *Niger J Clin Pract*, 17, 43–9.
- Priano, S.M, Hong, O.S., & Chen, J.L. (2018). Lifestyles and health-related outcomes of U.S. Hospital nurses: A Systematic review. *Nurs Outlook*, 66(1), 66-76.
- Sanaati, F., Geranmayeh, M., Moghadam, B. M., & Zareiyan, A. (2012). A population-based study of health-promoting behaviours and their predictors in Iranian males. *Archives of Public Health* 79(1), 1-7.
- Schneider, A., Bak, M., Mahoney C., Hoyle, L., Kelly, M., Atheron, M. I., & Kyle, G. R. (2019). Health-related behaviours of nurses and other healthcare professionals. *J Adv Nurs*, 75(6), 1239-1251.
- Short, S.E, & Mollborn, S. (2015). Social Determinants and Health Behaviors: Conceptual Frames and Empirical Advances. *Current Opinion in Psychology*,5,78-84.
- Singh, O.P, & Singh, S.K. (2015). Quality of work life of teachers working in higher educational institutions: a strategic approach towards Teacher's excellence. *Int J Adv Res Comput Sci Manag Stud*, 3, 180–6.
- Somavarapu, S. (2017). Healthy Nutrition to Build a Healthy Nation. *American Journal of Biomedical and Life Sciences*, 5, 123. 10.11648/j.ajbls.20170506.13.
- Stark, C. (2013). Guidelines for Food and Nutrient Intake. *In Biochem., Physiol., and Molecluar Asp. of Hum. Nutrition*, 34–47.
- United Nations World Food Programme. (2016). What is malnutrition. Fighting Hunger Worldwie. Retrieved from: <https://www.wfp.org/hunger/malnutrition>.
- Walker, S. N., Sechrist, K. R., & Pender, N. J. (1987). The Health -Promoting Lifestyle Profile: development and psychometric characteristics. *Nursing Research*, 36(2), 76-81.
- World Health Organization. (2012). *Guideline: Sodium intake for adults and children*. Retrieved from <https://www.who.int/publications/i/item/9789241504836>.
- World Health organization. (2015). *Guideline: Sugars intake for adults and children*. Retrieved from <https://www.who.int/publications/i/item/9789241549028>.
- World Health Organization. (2020). *Healthy Diet*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/healthy-diet>



World Health Organization. (2024). *Obesity and overweight*. Retrieved from <https://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight>

Zhai, Z., Yang, Y., Lin, G., Lin, W., Wu, J., Liu, X., Zhang, S., Zhou, Q., Liu, H., & Hao, G. (2023). The hypertension and hyperlipidemia status among type 2 diabetic patients in the community and influencing factors analysis of glycemic control. *Diabetology Metabolic. Syndrome. (15)*, 73.

Znyk, M., Raciborski, F., & Kaleta, D. (2024). Dietary Behaviour and Determinants of Diet Quality among Primary Health Care Patients in Poland. *Nutrients; 16 (7)*: 925.