Original Research Article

FOOD LITERACY: A MATTER OF CONCERN AMONG FEMALE UNIVERSITY STAFF

ABSTRACT

Aim: This study investigated the level of food literacy using the five domains of food literacy.
Study design: A cross-sectional study with a stratified random sampling technique was adopted. A self-administered questionnaire was used to collect data on five domains of food literacy; nutrition knowledge, food preparation skills, ability to plan daily meals, ability to practice healthy eating, and ability to select healthy foods.
Place and Duration of Study: Obafemi Awolowo University campus Ile – Ife, Nigeria, between September 2020 and August 2021.
Methodology: About 203 teaching and non-teaching staff selected using a multistage stratified random sampling technique representing about 10% of the total population of staff. Continuous and bivariate logistic regression was used to determine the likelihood of high food literacy. Predicted probability of high food literacy was for female.

Results: The results showed the mean age was 45.38 ± 10.98. Mean food literacy score was 84.15±6.20. A minimum of one out of three scored high in food literacy set skills except in food preparation in which less than 20% scored high. Food preparation skills ($r = 0.294$, $p<0.01$), daily meal planning ($r = 0.202$, $p<0.01$), and ability to select healthy food ($r = 0.206$, $p<0.01$) had a positive and significant relationship with nutrition knowledge. No significant difference in the nutritional knowledge of males and females. Household type had a positive and significant relationship ($\chi2= 55.511$, $p<0.001$) with food literacy. Females were less likely to have higher food literacy scores than males (OR = 0.647, 95%CI = 0.367 – 1.143). Surprisingly, more males practiced healthy eating than female (OR =0.905, 95%CI = 0.686 - 1.195).
Conclusion: Higher nutrition knowledge does not translate to healthy dietary practice. Food literacy programme should be intensified, especially with emphasis on healthy practice.

Keywords: Food Literacy, Females, Males, Nigeria

1. INTRODUCTION

Food literacy is just emerging as a crucial concept [1]. Backed by the recognition that we all eat, food literacy is gaining traction in an era of rising crises associated with food ranging from consumption of "junk food" [2] to food preparation methods [3]. For the world to be healthy, there is a need for an intentional approach. Food literacy is regarded as an important food skill set to improve dietary behavior of people. It includes the positive relationship built through social, cultural, and environmental experiences with food enabling people to make decisions that support health [4].

Unhealthy food habit can be detrimental to health because it involves the consumption of diets high in refined carbohydrates, sodium, saturated fat, and calories [5,6]. Choice of food is influenced by hunger, food cravings, appeal of food, time considerations, convenience of food, food availability, eating

behaviors (including the culture or religion of the family), benefits of foods (including health), situation-specific factors, mood, body image, habit, cost, media, and vegetarian beliefs. Major barriers to eating healthy diets are a lack of sense of urgency about personal health in relation to other concerns, and taste preferences for other foods [7].

A lot of people use food to show forth their societal class, some use it to forge friendship, display their creativity and others use it to achieve lifetime goals [8]. In order to address a broad range of factors affecting eating behaviour, food literacy must be considered. In addition, particular circumstances that are common in today's everyday life - e.g. being rushed, having too little sleep and experiencing psycho-social stress - make people even more vulnerable to making unhealthy food decisions [8]. Food literacy describes a gamut of food-related skills, knowledge and attitudes that promote personal health and wellbeing [9].

Adequate food literacy is associated with a healthier diet, smaller portions and a reduction in processed and fast foods. On the other hand, insufficient food literacy is associated with an absence of food skills like cooking and food preparation, which are believed to hinder healthy dietary practices and can produce significant environmental and societal consequences [10]. The definitions researchers have provided for food literacy have varied greatly and continue to develop according to new research. Currently, there is no consensus definition of food literacy; although some definitions are cited more frequently than others, the term is often used contingent on the context of the research [11,12]. The concept of food literacy developed by Vidgen and Gallegos [13] is one of the most cited definitions and approaches to describing food literacy in academic research [14]. Vidgen and Gallegos [13] described food literacy as, "the scaffolding" that empowers individuals, households, communities, or nations to protect diet quality through change and strengthen dietary resilience over time.

The theoretical foundation on which this study was based is the Theory of Planned Behaviour (TPB), which was adapted as used in a study conducted by Hui *et. al.* [15]. TPB reasoned action holds that the intention (motivation) to perform a certain behavior is dependent on whether individuals evaluate the behavior as positive. TPB holds that all behaviour is not executed under purposeful control and that behaviors lie on a continuum from total control to complete lack of control.

Food literacy is multifaceted and it is composed of a collection of inter-related knowledge, skills, and behaviours required to plan, manage, select, prepare, and eat food to meet needs and determine intake. Hence, for this study, five food literacy skill sets were investigated in a university community, and comparison was made by gender. It was hypothesized that a significant relationship existed between nutritional knowledge and food literacy.

2. METHODOLOGY

2.1. RESEARCH DESIGN

This is a cross-sectional study of staff of Obafemi Awolowo University (OAU), Ile-Ife, Osun State. Ile-Ife is an ancient town in South Western Nigeria. Obafemi Awolowo University, a federal government-owned and operated tertiary institution is built on about 5,000 acres of a total of 13,000 acres of University-owned land. The university consists of 2 colleges, 13 faculties, 103 departments, 2,000 staff members, and a student population of about 35,000 [16]. The University staff is divided into teaching and non-teaching staff; the teaching staff comprises the lecturers, while the non-teaching staff are the laboratory attendants, secretaries, portals of halls of residences, library attendants, cleaners and security men.

2.2. SAMPLE SIZE AND SAMPLING TECHNIQUE

The sample size for the study was two hundred and three, which was taken at 95% confidence and 5% margin of error [17]. We adopted a multistage stratified random sampling technique. The thirteen (13) faculties in OAU were grouped into nine (9) science and four (4) non-science oriented. Four (4) faculties

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were selected from the science-oriented and two (2) from the non-sciences faculties using a simple random technique (ballot). Each group was divided into teaching and non-teaching staff. The teaching staff from both science and non-science-oriented faculties were pulled together; 120 people were interviewed, while 90 were interviewed from the pool of non-teaching from both faculty orientations. Later, only 117 and 86 respondents were included in the final analysis after the removal of outliers.

2.3. RESEARCH INSTRUMENT

A self-administered structured questionnaire comprising six sections was used. Section one measured the socio-demographic characteristics of the staff, and sections two to five covered the food literacy set skills; nutrition knowledge, food preparation skills, daily food planning; ability to practice healthy eating, and ability to select healthy foods. The instrument was subjected to test-retest to measure the replicability of results and reliability, which was conducted in May/June 2019. A reliability coefficient of 0.68 was recorded.

2.4. DATA COLLECTION PROCEDURE

The data for the study was collected in the first semester of the academic session, which was between September and December 2019. The respondents signed a consent form to participate in the study and were asked to fill out the questionnaire.

2.5. MEASUREMENT OF VARIABLES

Assessment of nutrition knowledge was measured using a 4-Likert scale rated as strongly agree, agree, disagree, and strongly disagree with the questions in the section, a mix of both positive and negative questions; the positive questions were scored as strongly agree=4, agree=3, disagree=2, strongly disagree=1 and the negative questions scores were reversed. “Yes” and “No” questions were used to measure food preparation skills, daily food planning, ability to practice healthy eating, and ability to select healthy food, with the questions in the sections both positive and negative. The positive questions were scored Yes=2, No=1 while the negative questions scores were reversed.

2.6. DATA ANALYSIS TECHNIQUE

The data collected were analyzed using descriptive statistics; frequency, percentage, means, and standard deviations and inferential statistics; Pearson’s correlations, Chi-square test, and Logistics regression in the statistical software package IBM SPSS, version 22. Differences between the two groups were tested using an independent t-test for continuous variables and chi-square tests for dichotomous variables. Relationships between two variables were tested using correlation analysis (r). The association between socio-demographic characteristics and food literacy, nutritional knowledge and other food literacy skill sets was analysed using binary logistic regression. The odd ratios and 95% confidence interval were used to predict the probability of the likelihood of having high food literacy. Data were disaggregated by gender. A p-value of <0.05 was considered statistically significant.

3. RESULTS AND DISCUSSION

3.1. Results

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3.1.1. Characteristics

The study included 203 staff. The mean age was 45.38±10.98 with those greater than 45 years being a little above half (56.2%). More males (113) than females (90) consented to participate in the study, out of which, 57.6% were academic staff and 67.0% were from science-oriented faculties. Majority (96.1%) had monogamous household type and 91.6% had nucleus family type. Those who earned income above the poverty threshold of $57 (~50,000 naira) per month was 84.3%. (Table 1).

Table 1: Logistic regression analyses of factors associated with food literacy among OAU Staff

Characteristics	n (%)	OR	95%CI for Exp. B		*P*-value
			Lower	Upper	
Age (years)					
≤45	89 (43.8)	0.384	0.206	0.714	0.002**
>45 (RC)	114 (56.2)	-	-	-	-
Sex					
Male	113 (55.7)	0.483	0.260	0.898	0.021**
Female (RC)	90 (44.3))	-	-	-	-
Work Sector					
Academic	117 (57.6)	1.978	1.045	3.744	0.036**
Non-Academic (RC)	86 (42.4)	-	-	-	-
Faculty orientation					
Science-oriented	136 (67.0)	1.103	0.579	2.101	0.766
Non-science-oriented (RC)	67 (33.0)	-	-	-	-
Household type					
Monogamy	195 (96.1)	2.052	0.415	10.137	0.378
Polygamy (RC)	8 (3.9)	-	-	-	-
Family type					

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Nuclear	186 (91.6)	1.586	0.522	4.815	0.416
Extended (RC)	17 (8.4)	-	-	-	-
Household size					
Large (>5)	127 (62.6)	1.615	0.908	2.873	0.103
Not Large (≤5) (RC)	76 (37.4)	-	-	-	-
Income/month (naira) ($)					
≤50,000 ($57)	32 (15.7)	0.568	0.266	1.214	0.145
>50,000 ($57)	171(84.3)	-	-	-	-

***Significant at P<0.05; Mean age = 45.38±10.98; Mean household size = 5.12±1.65*

3.1.2. Food Literacy

Food literacy was measured using five skill sets which were nutrition knowledge, food preparation skills, daily meal planning, healthy eating practice, and healthy food selection (Table 2, 3 & 4). More than half of the respondents (58.1%) had low nutrition knowledge with a mean ± SD of 39.62±4.13 (Figure 1, Table 2). Food preparation skills (81.3%), healthy eating practices (64.0%), and healthy food selection (60.1%) were rated low. About 45.0% were rated low in daily meal planning (Figure 1). There was a significant relationship at p <0.05 between food preparation skill (r = 0.294), daily food planning (r = 0.202), ability to practice healthy eating (r = 0.232), ability to select healthy foods (r = 0.206) and nutritional knowledge (Tables 3 and 4). In all, only about 20% were rated low and high in food literacy (Figure 2)

Table 2: Nutritional Knowledge of Staff of OAU

n =203

	SA %	**A %**	**D %**	**S %**	**Mean ± SD**
Nutritional Knowledge Statements					
Diet does not affect human health	8.4	5.4	13.3	72.9	3.51±0.93
There are six classes of nutrients	8.9	8.9	45.8	36.5	3.10±0.896
A balanced meal has appropriate nutrient distribution	0.5	3.0	30.0	66.5	3.63±0.57
Lots of fresh fruit and vegetable is good for health	0.5	0.5	24.1	74.9	3.73±0.486
Lot of sugar is good for health	1.5	3.4	29.6	65.5	3.59±0.633

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Variety food is good for health	3.4	0.8	48.8	36.9	3.19±0.763
A high fat diet is good for health	3.4	8.4	43.3	44.8	3.30±0.765
Lot of grains and legumes is not good for health	5.4	27.6	44.3	22.7	2.84±0.835
Daily lean protein consumption is good for health	3.9	11.8	58.1	26.1	3.06±0.732
Animal fat reduction is good for health	5.9	7.4	41.4	45.3	3.26±0.836
Milk and dairy products are good for health	3.9	13.3	58.6	24.1	3.03±0.731
Consuming beans and beans products is good for one's health	1.5	4.4	49.3	44.8	3.37±0.643

Grand Mean ± SD = 39.62±4.13

SA – Strongly agree, A – Agree, D – Disagree, SD – Strongly disagree

Table 3: Relationship between Food Preparation skills, Daily Food Planning and Nutritional Knowledge

n=203

	Yes	**Mean ± SD**	**Grand Mean ± SD**	**r (*P*-value)**
Food Preparation Skills				
I can prepare fresh vegetables in different ways	84.7	1.85±0.361	13.45±1.31	
I find it difficult to prepare a meal with more than five fresh ingredients	19.2	1.81±0.395		
I am able to prepare fresh fish in different ways	83.3	1.83±0.374		0.294 (0.000)**
I am able to prepare a meal using fresh ingredients only.	69.5	1.69±0.462		
I am able to see, smell or feel the quality of fresh foods.	89.7	1.90±0.305		

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I parboil rice and throw away the water before I complete the cooking	63.1	1.37±0.484		
I shred or cut vegetable into piece before adding hot water	82.3	1.18±0.383		
I allow vegetable to stay for a long time in hot water before I complete the cooking	17.7	1.82±0.383		
Daily Food Planning				
I take the food groups into consideration	75.9	1.76±0.429	8.31±1.33	
I take into account what I will eat later in the day when I am about to eat a particular meal	70.0	1.70±0.460		
When I have something to eat, I reflect on what I have eaten earlier that day	67.5	1.67±0.470		0.202 (0.004)**
I buy food ingredients ahead to ensure I eat what I want to eat	82.8	1.83±0.379		

Table 4: Relationship between Ability to Practice Healthy Eating, Ability to Select Healthy Foods and Nutritional Knowledge

n=203

	Yes	**Mean ± SD**	**Grand Mean ± SD**	**r (*P*-value)**
Ability to Practice Healthy Eating				
I eat breakfast every day	68.5	1.68±0.466	10.88±1.13	
I choose foods that are in line with my mood	27.1	1.73±0.446		
Fruits and vegetables are healthy snacks	92.6	1.93±0.262		0.206(0.003)**
Healthy snacks should be taken along at	92.1	1.92±0.270		

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all time				
I check the nutritional labels of products	82.3	1.82±0.383		
I compare the nutritional labels of different products	79.3	1.79±0.406		
Ability to Select Healthy Foods				
I eat deep fried products often	20.2	1.80±0.402	11.91±1.47	
I take carbonated drink regularly	18.2	1.82±0.387		
I eat flour product regularly	32.5	1.67±0.470		0.862(0.000)**
I eat fruits and vegetable every day	68.0	1.68±0.468		
I take milk and milk product every day	29.6	1.30±0.457		
I add sugar to my tea always	23.6	1.76±0.426		
I add salt to food on the table	12.3	1.88±0.329		

*r = Correlation Analysis, **Significant at P <0.005*

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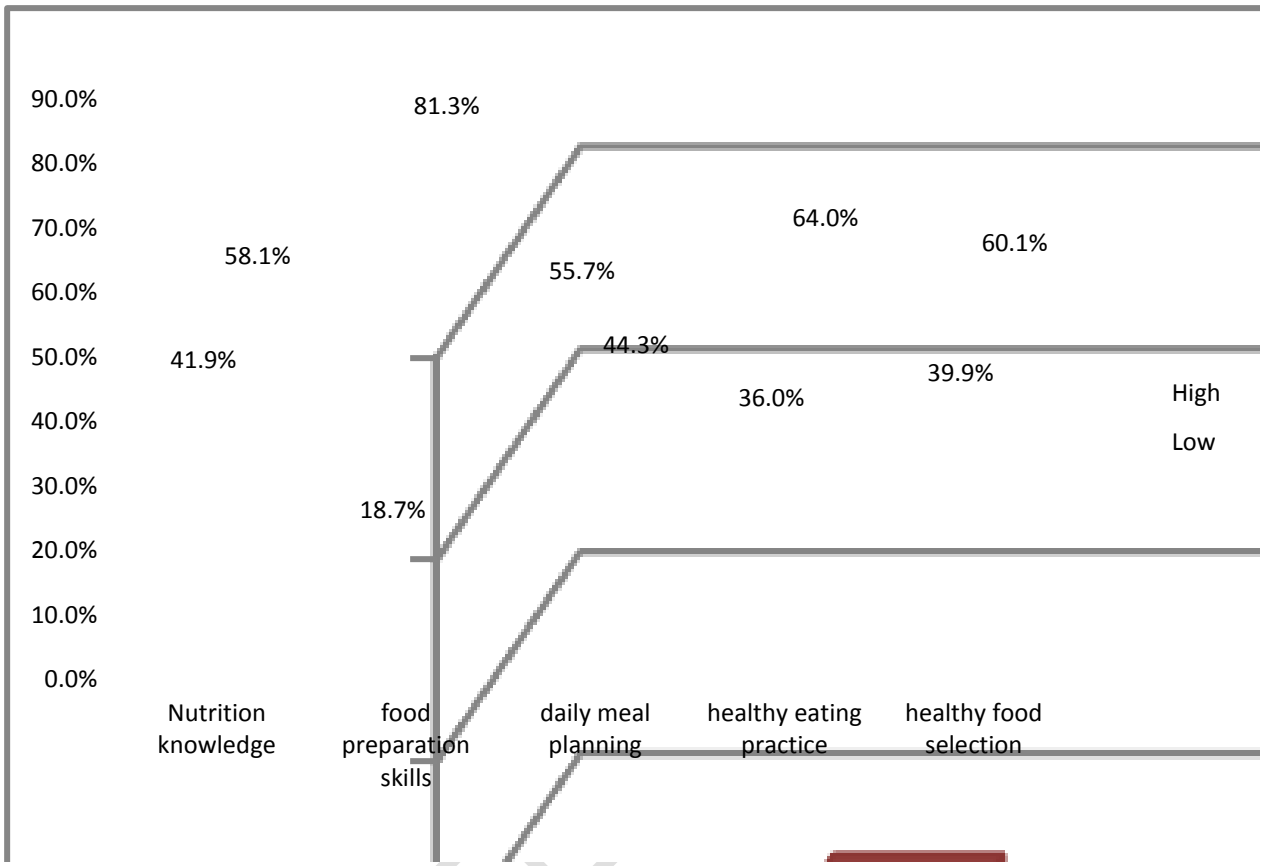

Figure 1: Food Literacy Skill Set

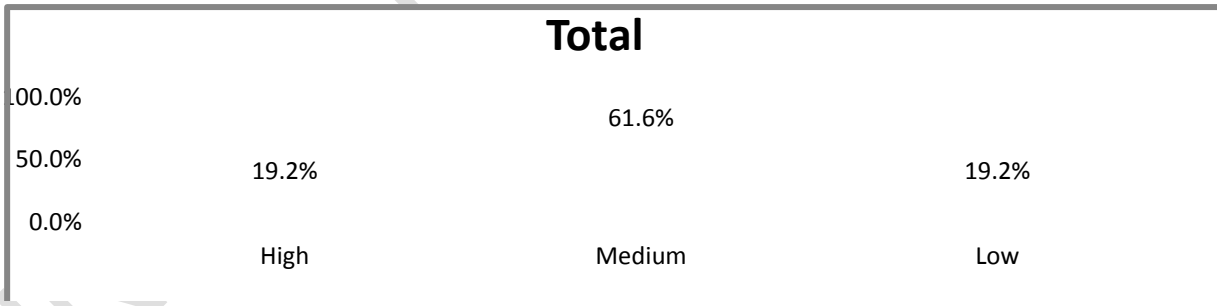

Figure 2: Food Literacy Score

Surprisingly, males (37.2%) were rated higher than females (34.4%) in the ability to practice healthy eating, although, the chi-square showed that there was no significant difference in the food literacy skill set between males and females (Table 5).

Table 5: Cross Tabulation of Food Literacy by Gender

	Male (113)	Percentage (%)	Female (90)	Percentage (%)	Chi-square (*P*-value)
Nutrition knowledge					
High	46	40.7	39	43.3	10.012(0.968)
Low	67	59.3	51	56.7	
Food preparation skills					
High	21	18.6	17	18.9	
Low	92	81.4	73	81.1	6.428(0.491)
Ability to plan daily meal					
High	62	54.9	51	56.7	8.795(0.118)
Low	51	45.1	39	43.3	
Ability to practice healthy eating					
High	42	37.2	31	34.4	4.570(0.471)
Low	71	62.8	59	65.6	
Ability to select healthy foods					
High	31	27.4	50	55.6	17.194(0.009)
Low	82	72.6	40	44.4	

The logistic regression analysis in Table 6 shows the predicted probability for high food literacy in females. For the specific food literacy skill sets, females were less likely to be rated high in nutritional knowledge (OR = 0.976), 14.4% (OR =1.144), more likely to be skillful in food preparation, 9.3% (OR = 1.093) more likely to have the ability to plan daily meals, and 39.0% (OR = 1.388, p=0.004) likelihood of the ability to select healthy foods than males. However, females were 90.5% less likely to practice healthy food than males (OR = 0.905). In all, females were 65.0% less likely to be rated high in food literacy than males (OR = 0.647, 95%CI = 0.367 – 1.143).

Table 6: Odd Ratio and 95%CI for the continuous food literacy score by gender

Food Literacy Skills		**95%CI for Exp. B**	

	OR	Lower	Upper	*P*-value
Nutrition knowledge	0.976	0.905	1.052	0.527
Food preparation skills	1.144	0.902	1.451	0.266
Ability to plan daily meals	1.093	0.858	1.394	0.471
Ability to practice healthy eating	0.905	0.686	1.195	0.483
Ability to select healthy foods	1.388	1.110	1.736	0.004**
Food Literacy Score	0.647	0.367	1.143	
Constant	0.009	-	-	0.042

*** Significant at P < 0.05,*
Note: Predicted probability of high food literacy for female

Table 1 showed that those who are younger (OR = 0.384, 95%CI = 0.206 -0.714**), and males (OR = 0.483, 95%CI = 0.260 -0.898**) were more likely to be rated high in food literacy. Academic staff members were twice more likely to be rated high in food literacy than non-academic staff (OR = 1.978, 95%CI = 1.045 -3.744**). Those from science-oriented faculties were 10.3% more likely to be rated high, monogamous families were twice more likely, nuclear families, and large household size were about 15.0% more likely to be rated high in food literacy.

3.2. DISCUSSION

Food literacy has emerged as a term to describe the everyday practicalities associated with healthy eating. The term is increasingly used in policy, practice, research, and by the public. There are five domains; planning and management; selection; preparation; and eating [13]. Nutrition knowledge forms the backbone of all nutrition decisions made by humans. The higher the nutrition knowledge, the higher the chances of making healthy food choices [18]. The nutrition knowledge of the staff in this current study reflected on other aspects of the food literacy skill set which affected the dietary practices. Even though the nutritional knowledge of those who scored high was below half, the percentage of those who scored high in food literacy was low, and lowest in food preparation skills. A similar study reported significant, positive, but weak (r< 0·5) associations between higher nutrition knowledge and dietary intake [19, 20]. Most of the time, higher nutrition knowledge does not necessarily translate to healthy dietary intake [21]. High nutrition knowledge does not necessarily translate to healthy eating practices. The gap between "knowledge" and "practice" needs to be bridged.

According to studies [22, 3], there is an association between cooking knowledge and healthier dietary practices and nutrient retention in vegetable cooking respectively. This also implies that greater cooking knowledge makes for healthier dietary practices, therefore it is of little surprise that healthy eating practices and healthy food selection were both low among the staff as their food preparation skill, which is an outcome of cooking knowledge was also low. Nutrition knowledge is also necessary for proper meal planning in households so as to meet both the nutritional and satiety needs of individuals.

The significant relationship between nutrition knowledge and other food literacy skill set showed that as nutrition knowledge increases, other food literacy attributes are also expected to increase. This is in accordance with a study in South Africa, which showed that meal procurement of households is affected by their nutrition knowledge [23]. Increasing food literacy may contribute to healthy food practice, which includes selecting and eating healthy foods.

To one's chagrin, more males practice healthy eating than females and are less likely to have low food literacy. In the African context, men dictate the food they prefer and that is what the women cook. In Nepal, calorie and micronutrient intake was higher among males, which is an indication of better healthy eating practices than among pregnant women and mothers-in-law [24]. When pregnant women earned

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more or the same as their spouses, their calorie and micronutrient intakes increase [24]. However, in this current study, there is no significant relationship between income and food literacy. In a study conducted in South Africa, young mothers relied on elderly women for the provision of childcare and nutritious foods for children; however, they demonstrated some resistance to traditionally feminized forms of food preparation [25]. Across cultural contexts, men are expected to play supportive roles especially related to financial, and logistical support [26].

In this study, some demographic characteristics such as age, sex, and work sector significantly influenced food literacy. This contradicted another study, which showed that socio-demographic characteristics such as age, level of education, and employment status did not significantly contribute to food literacy, while household size had a significant relationship with food literacy [27]. On the contrary, household size did not significantly influence food literacy in this current study. However, those with larger household size were twice more likely to have higher food literacy. This could be because the larger the household size, the higher the probability of having someone in the household who is knowledgeable.

4. CONCLUSION

In conclusion, the current study demonstrates the level of food literacy among the staff of a university community, which indicates that males are more food literate than females. Regardless of the academic qualifications of the women, men still have a level of control over what is prepared in the homes and literally dictate what they want to eat as shown in the practice of healthy food, which is higher among males.

CONSENT

Informed consent was obtained from respondents with assurance of confidentiality.

ETHICAL APPROVAL

Approval for the study was sought from the Health Research and Ethics Committee of the Institute of Public Health, Obafemi Awolowo University, Ile-Ife. Permission was also sought from the Deans of the different faculties to interview the staffs.

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