

## Health Literacy and Dietary Decision-Making Process among Families in Ondo State Nigeria

### BSTRACT

**Background and Objectives:** This study examined the relationship between families' nutritional decision-making processes at home and their level of health literacy in Ondo State, Nigeria.

**Materials and Methods:** A cross-sectional study was conducted on Eight hundred and twenty-two (822) respondents from 274 families. Study participants were selected from those who fulfilled the selection criteria for participating in the study from six Local Government Areas of Ondo State, Nigeria. In this study, questionnaires of Health Literacy Survey European Union (HLS-EU-Q16) and dietary decision-making were used. Data was obtained using a computer-assisted personal interview (CAPI). Data was analyzed using descriptive statistics and a chi-square test,  $p < 0.05$  at level of significance.

**Results:** The average age of respondents was  $53 \pm 6.9$ ,  $44 \pm 8.5$  and  $19 \pm 4.7$  years for fathers, mothers and children, respectively. 303(67.5), 225(63.7) and 6(30.0%) for father, mother and children respectively revealed an inadequate level of health literacy. The study also revealed that 234(74.5), 283(59.0) and 17(60.7%) of fathers, mothers and children respectively who had inadequate health literacy were the ones who made dietary decisions. There was a significant association between the level of health literacy and the dietary decision-making process of family members at ( $p < 0.05$ ) as revealed by Chi-Square results.

**Conclusion:** Results revealed that it can be concluded that more men who made dietary decisions have inadequate health literacy, it is therefore recommended that attention be paid to this group in the community and to design and implement appropriate training programs to increase their level of health literacy.

**Paper Type:** Research Article

**Keywords:** Health Literacy, Family, Decision-Making Process, Ondo, Nigeria.

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## Introduction

The concept of health literacy is used in various definitions and has been measured with numerous instruments including the family dietary-decision making process (1). There is an agreement, however, that poorer health literacy is associated with poorer health knowledge, more problematic health behavior, worse health outcomes, inadequate use of health services, and increased healthcare costs (2). Parents (father, and mother) represent a critical subgroup among the general adult population since they are not only responsible for their own life and health but also responsible for the health and wellbeing of their children and by extension the larger society. Children depend on their parents for their feeding and wellness. They may therefore suffer when their parent's knowledge and skills to fulfill these tasks is insufficient (3). Therefore, parental literacy has been adjudged as an important moderator of child health disparities and childhood nutrition (4). Parental health literacy has also been found to be associated with child (ren) health in areas of preventive care, acute care, and chronic diseases (5;6). Improving family health literacy is a key factor in the dietary decision-making process to enhance the health status of the homes because personal dietary habits start at home (7). The decision of which food to buy to satisfy daily dietary needs varies and is influenced by many factors, such as family income, geographic location, or food preference (8;9). Within the constraints of the family's finances, and level of health literacy, each member of the family has a part to play in the process of preparing a

nutritious, delectable, and economical dinner (10). As the world's population grows, one of the many challenges that the world faces are the dietary decision-making process (11; 12). The long-term viability of dietary choice has been a key source of concern (13; 14). Family dietary intake particularly that of the household's decision-maker, has an impact on every family member because it is a major factor in determining each person's nutritional status (15). According to studies, women are in charge of the family diet since they are responsible for grocery shopping, meal preparation, and cooking (16; 17). Accordingly, it is thought that women have a significant influence on how their family members eat, and as a result, programs to encourage better eating habits are frequently aimed at women in households (18).

Even though women are typically the ones who shop and prepare meals, they could feel pressured to cater to their husband's or children's preferences (19). In conclusion, there is no agreement in the research regarding who makes decisions about what the family eats (20). Ondo State people are culturally sensitive. They believe in the husband's dominance and preference in all home affairs including the family dietary-decision-making process, irrespective of the husband's informed or uninformed knowledge. No doubt, therefore, that there is a paucity of information about this topic in Ondo State, Nigeria. The study therefore would help to confirm earlier findings about the connection between parental health literacy, and the process of making food decisions.

## Materials and Methods

Six Local Government Areas in Ondo State such as Owo, Akoko South East, Akure South, Idanre, Okitipupa, and Ilaje were the subjects of a cross-sectional study design as described by (21). The Father, mother, and one child from each family made up the respondents from each local government area. The Ethics Committee of the Ministry of Health in Ondo State (OSHREC06/07/22/457) gave its approval to the study.

### Sample size and sampling

The sample size for this study was calculated using a precision rate of 0.035 as contained in Morgan's table of attrition rate using the Cochran formula (22).

The Cochran formular:

$$n = \frac{p(1-p)z^2}{e^2}$$

$p = 0.465$  Health literacy Score among men in Zambia "developing country like Nigeria" (23).

Where  $n$  = sample size;  $p$  = the expected prevalence; and  $e$  = acceptable sampling error  
Based on the formula, the required size was estimated at 781, which was then increased to 822 based on the probability of 5% attrition.

Multistage sampling was purposively used as the sampling methodology with the sample size of 274 families. First taken into consideration were Ondo State's three senatorial districts. From each of the Senatorial Districts, two Local Government Areas were chosen for the second phase using balloting as a simple random sampling procedure. The third stage involved using a straightforward random technique to choose one-third of the wards in each chosen Local Government Areas. The number of samples in

each stratum and a list of homes (used as the sampling unit of analysis) were estimated during the fourth step using systematic sampling. Participants between the ages of 15 and 65 (including a monogamous family which includes a father, mother, and the eldest child who was at least 15 years old at the time of study) and Ondo State residency of a minimum of six (6) months during the research period met the inclusion criteria. Adults with dietary limitations as a result of disease conditions and refusal to provide informed permissions and families with more than one wives were excluded from the study.

### Instruments

Data were collected using a standardized questionnaire that was both independently structured and modified. For this study, a total of three (3) instruments were used. The first piece of equipment was a 10-item, self-administered structured sociodemographic questionnaire. The second test was created using the HLS-EU-Q16 from a prior study (24; 25). The HLS-EU-16 was scored on a 5-points Liker scale, with the scores ranging from 0 to 4, and the question items utilizing "very easy = 4," "fairly easy = 3," "fairly difficult = 2," "very difficult = 2," and "I don't know = 0".

Higher scores imply a higher level of health literacy according to the health literacy test items. The third section was a questionnaire adapted from an earlier study by Mapis (26).

This comprises 8 items that assessed how the family makes nutritional decisions. The evaluation was based on four scales: father, mother, children, and I'm not sure. The family member who made food decisions most frequently was identified.

## Data collection

The information was gathered by a group of skilled interviewers. All interviews took place at the residences of the participants. An anonymous was in charge of keeping an eye on the data-gathering procedures to ensure that the information collected was accurate and entered into the database correctly. Using the open data kit, the data were validated. Data were analyzed using chi-square, frequency, and percentage

descriptive statistics, on the household health literacy and dietary decision-making process. The statistical significance was at 5% level.

## Results

The sociodemographic details of the respondents are displayed in Table 1. Eight hundred and twenty-two family members, including 274 fathers, 274 mothers, and 274 children, were chosen for this study.

Table 1. Sociodemographic characteristics of respondents

Variable		Family role			Total N=822 (%)	
		Father n=274 (%)	Mother n=274 (%)	Child n=274 (%)		
Age (in years)	15 – 19	2 (0.7)	2 (0.7)	172 (62.8)	176 (21.4)	
	20 – 29	3 (1.1)	9 (3.3)	88 (32.1)	100 (12.2)	
	30 – 39	11 (4.0)	55 (20.1)	11 (4.0)	77 (9.4)	
	40 – 49	63 (23.0)	140 (51.1)	3 (1.1)	206 (25.1)	
	50 – 59	122 (44.5)	54 (19.7)	0 (0.0)	176 (21.4)	
	60 and above	73 (26.6)	14 (5.1)	0 (0.0)	87 (10.6)	
	Mean $\pm$ SD	53.3 $\pm$ 9.9	44.4 $\pm$ 8.3	19.5 $\pm$ 5.0	39.1 $\pm$ 16.4	
Gender	Male	274 (100.0)	0 (0.0)	134 (48.9)	408 (49.6)	
	Female	0 (0.0)	274 (100.0)	140 (51.1)	414 (50.4)	
Education	No formal education	22 (8.0)	5 (1.8)	2 (0.7)	29 (3.5)	
	Primary	22 (8.0)	21 (7.7)	9 (3.3)	52 (6.3)	
	Secondary	136 (49.6)	154 (56.2)	224 (81.8)	514 (62.5)	
	Tertiary	94 (34.3)	94 (34.3)	39 (14.2)	227 (27.6)	
Ethnicity	Yoruba	219 (79.9)	213 (77.7)	227 (82.8)	659 (80.2)	
	Igbo	39 (14.2)	50 (18.2)	37 (13.5)	126 (15.3)	
	Hausa	3 (1.1)	2 (0.7)	2 (0.7)	7 (0.9)	
	Religion	Christianity	213 (77.7)	220 (80.3)	218 (79.6)	651 (79.2)
		Islam	52 (19.0)	43 (15.7)	47 (17.2)	142 (17.3)
Traditionalist		8 (2.9)	8 (2.9)	8 (2.9)	24 (2.9)	
Others		1 (0.4)	3 (1.1)	1 (0.4)	5 (0.6)	
Place of residence	Urban	123 (44.9)	123 (44.9)	123 (44.9)	369 (44.9)	
	Rural	151 (55.1)	151 (55.1)	151 (55.1)	453 (55.1)	
Occupation	Student	8 (2.9)	8 (2.9)	241 (88.0)	257 (31.3)	
	Employed	214 (78.1)	240 (87.6)	20 (7.3)	474 (57.7)	
	Unemployed	29 (10.6)	22 (8.0)	13 (4.7)	64 (7.8)	
	Retired	23 (8.4)	4 (1.5)	0 (0.0)	27 (3.3)	
Monthly income (N=548)	Less than 30,000	48 (17.5)	52 (18.9)	-	100 (18.3)	
	30,000 – 70,000	182 (66.4)	195 (71.2)	-	377 (68.8)	
	71,000 – 100,000	24 (8.8)	10 (3.7)	-	34 (6.2)	
	100,000 and above	20 (7.3)	17 (6.2)	-	37 (6.8)	
	Median (IQR)	45000	45000	-	45000	
Amount spent on food per month (N=548)		(25000)	(20000)	-	(27500)	

In accordance with the findings, 44.5% of fathers were between the ages of 50 and 59, with an average age of 53.3 years; 51.1% of mothers were between the ages of 40 and 49, with an average age of 44.4 years; and 62.8% of children were between the ages of 15 and 19, with an average age of 19.5 years. According to the ethnic breakdown, 79.9% of the fathers and 77.7% of the mothers were of Yoruba descent while 55.1% of the

respondents lived in urban areas. Also, 77.7% of the fathers and 80.3% of the mothers identified as Christians. Despite the fact that 78.1% of fathers and 87.6% of mothers were working, fathers had higher incomes than mothers. The respondents' literacy levels are displayed in Figure 1. The findings showed that 62.9% of children, 63.9% of mothers, and 67.1% of fathers had inadequate health literacy.

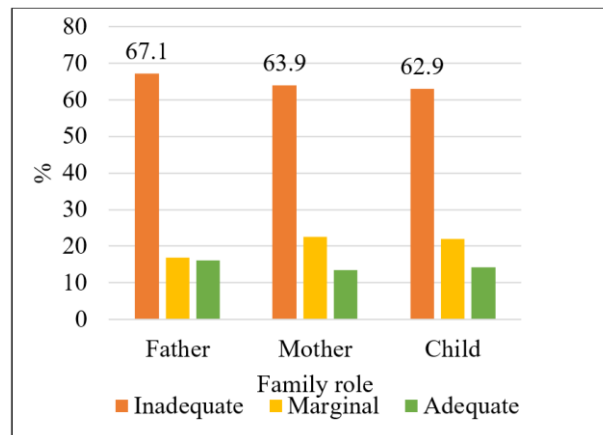


Figure 1. Distribution of health literacy level of family members

**Table 2**, shows that Overall, 173 (64) of the household members had poor health literacy. The family's procedure for making food decisions is shown in **figure 2**, The results of the decision-making process show that 58.4% of the family members named mothers as the person who chose the type of food to be prepared for the family, while 54.6% of the family members reported that fathers chose the type of food to be purchased for the home. Although 77.7% of respondents said

that fathers pay for the family's food purchases. Mothers shop for groceries, according to 75.8% of respondents, but 55% of father determined type of food bought for family and 62.8% of family members said mothers prepared the meals. The mother decides what the family eats with husband consideration every day, according to 46.9% of family members, while the father's income influences the family's food choices, according to 76.2% of respondents.

Table 2. Distribution of Health literacy level by Household and Residence

Level of health literacy	Household			$\chi^2$	p-value
	Urban n=123 (%)	Rural n=151 (%)	Total N=274 (%)		
Adequate	26 (21.0)	30 (20.0)	56 (20.4)		
Marginal	20 (16.0)	25 (16.6)	45 (16.4)	3.665	0.352
Inadequate	77 (62.5)	96 (63.5)	173 (64)		

\*Significant when  $p < 0.05$  at 95% confidence level

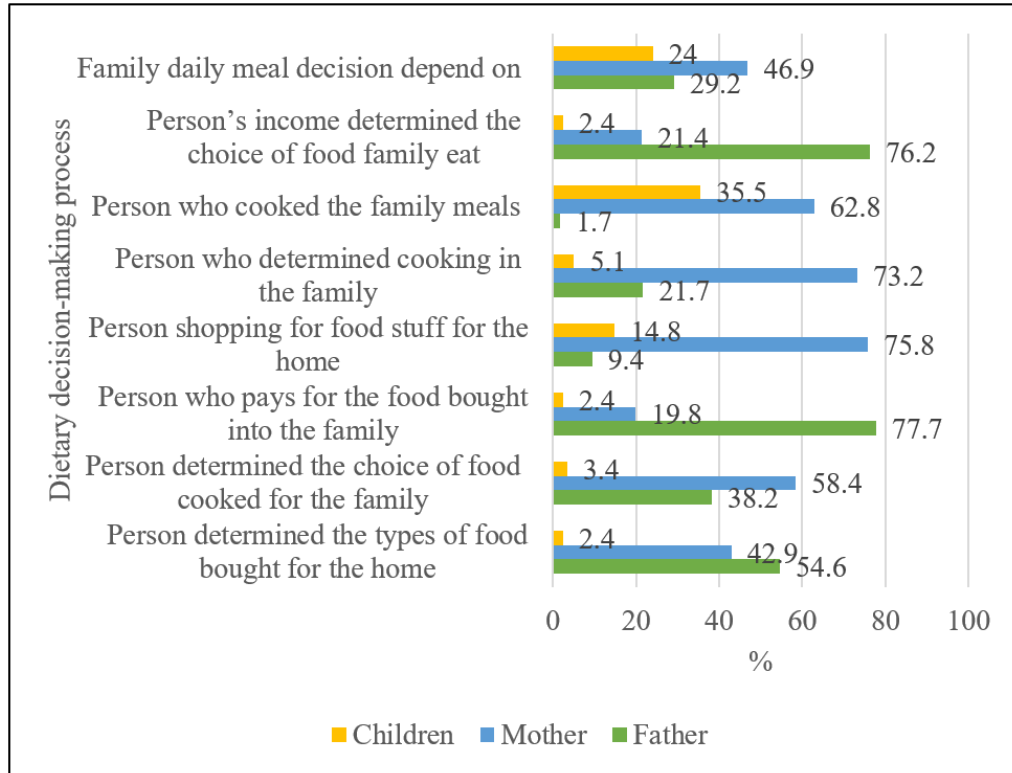


Figure 1. Distribution of health literacy level of family members

**Table 3** displays the relationship between family member sociodemographic variables and health literacy. The results showed that the level of health literacy was significantly ( $p < 0.001$ ) correlated with the educational status, age, and place of residence of family members. According to the descriptive statistics, 70.1% of family members who are 60 years of age and older and 91.0% of those between the ages of 20 and 29 had

inadequate levels of health literacy. Family members with university education made up the majority (77.5%) of individuals with inadequate health literacy, followed by those with secondary education at 62.6%. Regarding residence, 88.9% of families in rural areas and 45.5% of families living in urban centers, had members with inadequate health literacy. Additionally, it was found that

57.8% of the unemployed, 66.2% of those students, and 70.4% of family members who who are employed, 63.8% of those who are are retirees had inadequate health literacy.

Table 3. Association of health literacy by sociodemographic characteristics of family members.

Variable		Level health literacy			Total N=822 (%)	χ <sup>2</sup>	p-value
		Adequate n=120 (%)	Marginal n=168 (%)	Inadequate n=534 (%)			
Age (in years)	15 – 19	40 (21.1)	52 (27.4)	98 (51.6)	190 (100)		
	20 – 29	1 (1.0)	8 (8.0)	91 (91.0)	100 (100)		
	30 – 39	17 (25.8)	18 (27.3)	31 (47.0)	66 (100)	58.472	†<0.001*
	40 – 49	25 (12.3)	42 (20.7)	136 (67.0)	203 (100)		
	50 – 59	25 (14.2)	34 (19.3)	117 (66.5)	176 (100)		
	60 and above	12 (13.8)	14 (16.1)	61 (70.1)	87 (100)		
Educational status	No formal education	8 (27.6)	6 (20.7)	15 (51.7)	29 (100)		
	Primary	12 (23.1)	19 (36.5)	21 (40.4)	52 (100)	35.216	<0.001*
	Secondary	78 (15.2)	114 (22.2)	322 (62.6)	514 (100)		
	Tertiary	22 (9.7)	29 (12.8)	176 (77.5)	227 (100)		
Place of residence	Rural	2 (0.5)	39 (10.6)	328 (88.9)	369 (100)	181.532	†<0.001*
	Urban	118 (26)	129 (28.5)	206 (45.5)	453 (100)		
Occupation	Student	36 (14)	57 (22.2)	164 (63.8)	257 (100)		
	Employed	67 (14.1)	93 (19.6)	314 (66.2)	474 (100)	5.978	†0.426
	Unemployed	15 (23.4)	12 (18.8)	37 (57.8)	64 (100)		
	Retired	2 (7.4)	6 (22.2)	19 (70.4)	27 (100)		

\*Significant when  $p < 0.05$  at 95% confidence level; †likelihood-ratio p-value

The relationship between a family member's nutritional decision-making process and level of health literacy is shown in Table 4. The findings indicated that the person responsible for deciding the types of food purchased for the home, the person who chose the food cooked for the family, the person who paid for the food purchased for the family, the person who goes grocery shopping for the home, the person who decides to cook for the family, the person whose income determines cooking in the family, and the person who decides the type of food the family consumes

were statistically different ( $p < 0.05$ ) among the family members. The level of inadequate health literacy for fathers was 67.5% of those who decide what kinds of food are purchased for the household, 74.5% of those who decide what food is prepared for the family, 68.1% of those who pay for the food purchased for the family, 87.0% of those who shop for food, 81.5% of those who decide what is cooked for the family, 85.7% of those who prepare the family meal, and 66.8% of those whose earnings determine what is cooked for the family.



Table 4. Association between level of health literacy and dietary decision-making process of family members

Variable		Level health literacy			Total N=822 (%)	$\chi^2$	p-value
		Adequate n=120 (%)	Marginal n=168 (%)	Inadequate n=534 (%)			
Person determined types of food bought for the home	Father	50 (11.1)	96 (21.4)	303 (67.5)	449 (100.0)		
	Mother	62 (17.6)	66 (18.7)	225 (63.7)	353 (100.0)	20.551	<0.001*
	Children	8 (40.0)	6 (30.0)	6 (30.0)	20 (100.0)		
Person determined the choice of food cooked for the family	Father	17 (5.4)	63 (20.1)	234 (74.5)	314 (100.0)		
	Mother	97 (20.2)	100 (20.8)	283 (59.0)	480 (100.0)	36.694	<0.001*
	Children	6 (21.4)	5 (17.9)	17 (60.7)	28 (100.0)		
Person who pays for the food bought into the family	Father	84 (13.1)	120 (18.8)	435 (68.1)	639 (100.0)		
	Mother	28 (17.2)	41 (25.2)	94 (57.7)	163 (100.0)	22.420	<0.001*
	Children	8 (40.0)	7 (35.0)	5 (25.0)	20 (100.0)		
Shopping for food stuff for the home	Father	2 (2.6)	8 (10.4)	67 (87.0)	77 (100.0)		
	Mother	97 (156)	145 (23.3)	381 (61.2)	623 (100.0)	26.512	<0.001*
	Children	21 (17.2)	15 (12.3)	86 (70.5)	122 (100.0)		
Person who determined cooking in the family	Father	5 (2.8)	28 (15.7)	145 (81.5)	178 (100.0)		
	Mother	107 (17.8)	134 (22.3)	361 (60.0)	602 (100.0)	35.149	<0.001*
	Children	8 (19)	6 (14.3)	28 (66.7)	42 (100.0)		
Person cooked the family meals	Father	1 (7.1)	1 (7.1)	12 (85.7)	14 (100.0)		
	Mother	95 (18.4)	142 (27.5)	279 (54.1)	516 (100.0)	73.167	†<0.001*
	Children	24 (8.2)	25 (8.6)	243 (83.2)	292 (100.0)		
Person's income determined the choice of food family eat	Father	90 (14.4)	118 (18.8)	418 (66.8)	626 (100.0)		
	Mother	25 (14.2)	42 (23.9)	109 (61.9)	176 (100.0)	10.378	0.035*
	Children	5 (25.0)	8 (40.0)	7 (35.0)	20 (100.0)		
Family daily meal decision depend on	Father	9 (3.8)	42 (17.5)	189 (78.8)	240 (100.0)		
	Mother	99 (25.7)	114 (29.6)	172 (44.7)	385 (100.0)	145.656	<0.001*
	Children	12 (6.1)	12 (6.1)	173 (87.8)	197 (100.0)		

\*Significant when  $p < 0.05$  at 95% confidence level; †likelihood-ratio p-value

## Discussion

### Sociodemographic details of respondents

The socio-demographic data revealed that the majority of respondents were of Yoruba ancestry. The fact that the study was

conducted in Ondo state, a South-West Nigerian state with a large Yoruba population, maybe the reason why so many respondents identified as Yoruba. The respondents' residences were split between urban and rural areas. Since rural areas, in particular,



have less access to health resources, which may have an impact on their health literacy level and, in turn, their dietary decision-making process, the urban-rural disparity in the current study is particularly important. The results further showed that the children's religious affiliations generally followed the same pattern as their parents, with the majority identifying as Christians, followed by Muslims, traditionalists, and a small percentage associating with other religions. This pattern of religious identification is consistent with prior studies (27; 28). Another important factor is that the majority of fathers and mothers worked, with only a small percentage being jobless or retired. Conversely, persons with lesser socio-economic positions can encounter greater obstacles to accessing these resources. Other health-focused research carried out in Nigeria has similarly found similar patterns of residential locations and work status (29; 30). On health literacy, the findings in this study showed that a sizable percentage of the family members (65.0%) lacked appropriate health literacy. These findings were consistent with the findings of (31; 32; 33) in the United Kingdom. Individuals' health outcomes may suffer as a result of inadequate health literacy, which can also raise healthcare expenses and lower quality of life.

### **Determinant of food choices among the family members related to level of health literacy**

The study found that both fathers and mothers played significant roles in determining the types of food bought and cooked for the family and that the father's income had a significant influence on the

choice of food eaten by the family. These findings are consistent with (34) who asserted that mothers' participation in the dietary decision-making process at home approaches equality to fathers' participation. The small role of children in this study corroborates (35) who found that parents set food rules for adolescent children. In line with the findings of (36; 37), younger people in this study, between the ages of 20 and 29, had better health literacy than older people. This conclusion might be explained by the fact that younger people are more likely to have access to digital health information and might feel more at ease utilizing technology to look up health information than older people do. Contrarily, (38) found that elderly persons often have greater health literacy skills than younger people.

### **Distribution of Health literacy level by Household and Residence**

In terms of domicile, the current study discovered that people in urban regions were more likely to have strong health literacy than those in rural areas. This conclusion may be explained by the fact that people who live in metropolitan regions may have better access to health resources and knowledge than people who live in rural areas, where access to healthcare services may be more constrained. The results of this study also, showed that mothers were in charge of preparing meals at home and to a large extent showed decision-making power over food-related activities in the family. According to Fernandez (39;40), who discovered a strong association between household health literacy and the diet quality of household food purchases, it positively influences the health outcomes of the

household when the person in charge of purchasing food for the home, choosing the food cooked for the family, and paying for the food makes healthier choices. Similarly, to this it helps the family's health when the individual in charge of food buying and meal planning chooses healthier selections. The individual's income also has an impact because people with higher incomes may be able to obtain healthier eating options. The general state of health of the family members also improves when the designated family member in charge of meal decisions makes healthier choices (40).

### Conclusion

The results of this study demonstrated that even though, men are not well aware nor do they have the necessary health literacy abilities to take control of the family's dietary decisions, they are the family's dietary decision-makers. Thus, the Yoruba adage that "whatever soup the husband/father does not eat, the mother/woman should not prepare it" is upheld.

To avert the unpleasant health consequences on the family members, public health campaigners like Nurses and other related professionals should design health literacy and dietary decision-making enlightenment programs in such a way that will specifically reach out to fathers since they are the ones identified as dietary decision-makers in the family, without leaving out the other members of the family.

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**Consent for publication:** The authors hereby give consent for publication of the manuscript.

**Ethical approval and consent to participate:** Ethical approval was obtained from the Ethical Research Committees at the Ministry of Health Ondo State and Afe Babalola University. Ado. Ekiti State (NHREC/18/08/2016 and ABUADHREC/02/08/2022/192). To ensure ethical considerations were met, the study complied with the 7th revision of the Declaration of Helsinki.

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**Author contributions:** MGE conceived the study, performed the statistical analysis, and drafted the manuscript. CBB participated in reviewing both the proposal and the final report. KA, ODA, and JGO participated in data acquisition, analysis, interpretation, and manuscript revision. All authors collaborated in supervising and reviewing the paper and preparations of the manuscript. All the authors read and approved the final manuscript.

### References

1. Berkman N. D., Sheridan S. L., Donahue K. E., Halpern D. J., Crotty K. "Low health literacy and health outcomes: an updated systematic review," *Annals of internal medicine*, vol. 155, no. 2, pp. 97-107, 2011.

- <https://doi.org/10.7326/0003-4819-155-2-201107190-00005> PMID: 21768583.
2. Mörelius E., Robinson S., Arabiat D. and Whitehead L. "Digital interventions to improve health literacy among parents of children aged 0 to 12 years with a health condition: systematic review," *Journal of Medical Internet Research*, vol. 23, no. 12, pp. 31665, 2021. <https://doi.org/10.2196/31665> PMID: 34941559 PMCID: PMC8734927.
  3. Johnston R., Fowler C., Wilson V. and Kelly M. "Opportunities for nurses to increase parental health literacy: a discussion paper," *Issues in comprehensive pediatric nursing*, vol. 38, no. 4, pp.266-28, 2015. <https://doi.org/10.3109/01460862.2015.1074318> PMID: 26368012.
  4. Sanders L.M., Shaw J.S., Guez G., Baur C. and Rudd R. "Health literacy and child health promotion: implications for research, clinical care, and public policy," *Pediatrics*, vol. 124, no. 3, pp. 306-5314, 2009. <https://doi.org/10.1542/peds.2009-1162G> PMID: 19861485.
  5. Morrison A.K., Glick A., and Yin S. "Health literacy: implications for child health," *Pediatr* vol. 40, no. 6, pp 263-277, 2019. <https://doi.org/10.1542/pir.2018-0027> PMID: 31152099.
  6. Fernandez M., Hogue C. M., Ruiz J. G. "The role of oral health literacy and shared decision making In Oral Health and Aging," Springer International Publishing, pp. 263-278, 2022. [https://doi.org/10.1007/978-3-030-85993-0\\_15](https://doi.org/10.1007/978-3-030-85993-0_15) PMCID: PMC8955609.
  7. Moitra P., Madan J. "Perceived barriers and facilitators of healthy eating and physical activity: focus groups with children, parents, and teachers in Mumbai, India," *Int J Community Med Public Health*, vol. 7 no. 6, pp. 2363, 2020. <https://doi.org/10.18203/2394-6040.ijcmph20202500>.
  8. Nutbeam D. "Discussion paper on promoting, measuring, and implementing health literacy implications for policy and practice in non-communicable disease prevention and control," *World Health Organ*, 2017, pp .1-29.
  9. Bertol K. E., Broilo P. L., Espartel L. B., Basso K. "Young children's influence on family consumer behavior," *Qualitative Market Research: An International Journal*, vol. 20, no. 4, pp. 452-468, 2017. <https://doi.org/10.1108/QMR-07-2016-0057>.
  10. Ripkey C., Little P. D., Dominguez-Salas P., Kinabo J., Mwanr A., Girard A. W. "Increased Climate Variability and Sedentarization in Tanzania: Health and Nutrition Implications on Pastoral Communities of Mvomero and Handeni Districts, Tanzania," *Global Food Security*, vol. 29, pp. 100516, 2021. <https://doi.org/10.1016/j.gfs.2021.100516>.
  11. Benyam A. A., Soma T., Fraser E. "Digital agricultural technologies for food loss and waste prevention and reduction: Global trends, adoption opportunities and barriers," *Journal of Cleaner Production*, vol. 323, pp.129099, 2021. <https://doi.org/10.1016/j.jclepro.2021.129099>.
  12. Springer R. A., Elliott S. J. (2020). "There's Not Really Much Consideration Given to the Effect of the Climate on NCDs"-Exploration of Knowledge and Attitudes of Health Professionals on a Climate Change-NCD Connection in Barbados," *International Journal of Environmental Research and Public Health*, vol. 17 no. 1, pp. 198, 2020. <https://doi.org/10.3390/ijerph17010198> PMID: 31892174 PMCID: PMC6982231.
  13. Bigliardi B., Filippelli, S. "A review of the literature on innovation in the agrofood industry: sustainability, smartness and health," *European Journal of Innovation Management*, vol. 25, no. 6, pp. 589-611, 2022. <https://doi.org/10.1108/EJIM-05-2021-0258>.
  14. WeberOrste L., Krumina A., Kilis E., Adamsone-Fiskovica A., Grivins M. "Individual responsibilities, collective issues: The framing of dietary practices in Latvian media," *Appetite*, vol. 164, pp. 105219, 2021. <https://doi.org/10.1016/j.appet.2021.105219> PMID: 33774136.
  15. Weber J., Skodda S., Muth T., Angerer P., & Loerbroks A. "Stressors and resources related to academic studies and improvements suggested by medical students: a qualitative study," *BMC medical education*, vol. 19, pp. 1-14, 2019. <https://doi.org/10.1186/s12909-019-1747-z> PMID: 31429744 PMCID: PMC6701044.
  16. Hassen H. M., Behera M. R., Jena P. K., Dewey R. S., Disassa G. A. "Effectiveness and Implementation Outcome Measures of Mental Health Curriculum Intervention Using Social Media to Improve the Mental Health Literacy of Adolescents," *Journal of Multidisciplinary Healthcare*, pp. 979-997, 2019. <https://doi.org/10.2147/JMDH.S361212> PMID: 35535244 PMCID: PMC9078434.
  17. de Carvalho A., Gerhard F., Ferreira de Freitas A. A. "Food experiences at home: the role of ethnic food in Brazilian family relations," *Latin American Business Review*, vol. 22, vol. 1, pp. 53-73, 2021. <https://doi.org/10.1080/10978526.2020.1812399>.
  18. Mora-Pinzon M. C., Chrischilles E. A., Greenlee R. T., Hoeth L., Hampton J. M., Smith M. A., Trentham-Dietz A. "Variation in the coordination of care reported by breast cancer patients according to health literacy," *Supportive Care in Cancer*, vol. 27, pp. 857-865. 2019. <https://doi.org/10.1007/s00520-018-4370-3> PMID: 30062586 PMCID: PMC6355372.
  19. Fox K. Potter, Sarah Everybody Else: Adoption and the Politics of Domestic Diversity in Postwar America: Athens," University of Georgia Press, vol. 264, pp. 120, 2014. <https://doi.org/10.1353/book35446>.
  20. Soar N., Birns J., Sommerville P., Lang A., Archer S. "Approaches to eating and drinking with acknowledged risk : A systematic review," *Dysphagia*, vol. 36, no. 1, pp. 54-66, 2021. <https://doi.org/10.1007/s00455-020-10107-0> PMID: 32239275.
  21. Setia M.S. "Methodology Series Module 3: Cross-sectional Studies," *Indian J Dermatol*, vol. 61, no. 3, pp. 261-4. 2016. <https://doi.org/10.4103/0019-5154.182410> PMID: 27293245 PMCID: PMC4885177.

22. Cochran W.G. (1977). "Sampling techniques," 3rd Ed. New York: John Wiley & Sons.
23. Wynter, Karen, et al. "Health literacy among fathers and fathers-to-be: a multi-country, cross-sectional survey." *Health promotion international* vol.38 pp. 5 2023. <https://doi.org/10.1093/heapro/daad131> PMID: 37851463 PMCID: PMC10583760.
24. Pelikan J. M., Röthlin F., Ganahl K., Boltzmann L. "Measuring comprehensive health literacy in general populations: validation of instrument, indices, and scales of the HLS-EU study". In *Proceedings of the 6th Annual Health Literacy Research Conference* pp. 4-6, 2014.
25. Ghanbari S., Ramezankhani A., Montazeri A., Mehrabi Y. "Health literacy measure for adolescents (HELMA): development and psychometric properties,". *PloS one*, vol. 11 no. 2, pp. 149202, 2016. <https://doi.org/10.1371/journal.pone.0149202> PMID: 26881933 PMCID: PMC4755574.
26. Mapis G. "The dietary decision-making process of women in Nigeria," (Doctoral dissertation. Walden University, 2020).
27. Koopmans R. "Religious fundamentalism and hostility against out-groups: A comparison of Muslims and Christians in Western Europe,". *Journal of Ethnic and Migration Studies*, vol. 41, no. 1, pp. 33-57, 2015. <https://doi.org/10.1080/1369183X.2014.935307>.
28. Adaramaja T, Adaramaja S., Tijani O. "Demographic Factors as Correlates of Health - Seeking Behaviour of the People of Oyo State, Nigeria,". *Ghana Journal of Development Studies*. 2015. <https://doi.org/10.4314/gjds.v11i2.7>.
29. Latunji O. O., Akinyemi O. O. "Factors influencing health-seeking behaviour among civil servants in Ibadan, Nigeria,". *Annals of Ibadan postgraduate medicine*, vol. 16, no. 1, pp. 52-60, 2018.
30. Olasehinde N. "Healthcare Seeking Behavior in Nigeria," *Journal of Population and Social Studies*, vol. 26, no.3, pp. 207-218, 2018. <https://doi.org/10.25133/JPSSv26n3.015>.
31. Coughlin S. S., Vernon M. M., Hatzi Georgiou C., George V. "Health Literacy, Social Determinants of Health, and Disease Prevention and Control," *Journal of Environment and Health Sciences*, vol. 6, no. 1, 2020.
32. Jeong S. H., Kim H. K. "Health literacy and barriers to health information seeking: A nationwide survey in South Korea," *Patient Education and Counseling*, vol. 99, no. 11, pp. 1880-1887, 2016. <https://doi.org/10.1016/j.pec.2016.06.015> PMID: 27373962.
33. Velardo S "The nuances of health literacy, nutrition literacy, and food literacy," *Journal of nutrition education and Behavior*, vol. 47, no. 4, pp.385-389, 2015. <https://doi.org/10.1016/j.jneb.2015.04.328> PMID: 26026651.
34. Sariyev O., Loos T. K., Zeller M., Gurung T. "Women in household decision-making and implications for dietary quality in Bhutan. *Agricultural and Food Economics*," vol. 8, pp. 1-20, 2020. <https://doi.org/10.1186/s40100-020-00158-0>.
35. Orehek E., Ferrer R. "Parent instrumentality for adolescent eating and activity," *Annals of Behavioral Medicine*, vol. 53, no. 7, pp. 652-664, 2019. <https://doi.org/10.1093/abm/kay074> PMID: 30265276 PMCID: PMC6778459.
36. Hadjimina, E., & Furnham, A. "Influence of age and gender on mental health literacy of anxiety disorders. *Psychiatry Research*, vol. 251, pp. 8-13, 2017. <https://doi.org/10.1016/j.psychres.2017.01.089> PMID: 28189082
37. Begum T. "Parental knowledge, attitudes, and practices in early childhood development among low-income urban parents," *Universal Journal of public health*, vol. 7, no. 5, pp. 214-226, 2019. <https://doi.org/10.13189/ujph.2019.070504>.
38. Lee H. Y., Lee J., Kim N. K. "Gender differences in health literacy among Korean adults: do women have a higher level of health literacy than men," *American Journal of Men's Health*, vol. 9, no. 5, pp. 370-379, 2015. <https://doi.org/10.1177/1557988314545485> PMID: 25122719.
39. Fernandez M. A., Desroches S., Marquis M., Lebel A., Turcotte M., Provencher V. "Which food literacy dimensions are associated with diet quality among Canadian parents," *British Food Journal*, vol. 121, no. 8, pp. 1670-1685, 2019. <https://doi.org/10.1108/BFJ-11-2018-0724>.
40. Elemile, M. G., Bello, C. B., Ajayi, K., & Akinwale, O. D. "Health literacy and effects on household/family dietary behaviour: a systematic scoping review. *Journal of Public Health*, vol. 13, pp. 1-21, 2023. <https://doi.org/10.1007/s10389-023-02033-w>.