

Mothers as Nutritional Gatekeepers: A Focus on Under-Five Children

Jeremie Minani^{1*}, Seif S. Khalfan^{1,2}, Intisar H. Bakar^{1,3}, Khadija K. Said¹

¹Zanzibar University, Zanzibar, Tanzania

²Southern Medical University, Guangzhou, China

³Mbuzini District Hospital, Zanzibar, Tanzania

ABSTRACT

Malnutrition is a significant public health issue in developing countries, including Tanzania, and accounts for up to 50% of under-five mortality. This descriptive cross-sectional study, conducted from June 2020 to September 2022, employed a quantitative approach to assess mothers' knowledge of balanced diets for children under five. We collected from 113 mothers attending Sebleni Reproductive Child Health (RCH) in the urban district of Unguja Zanzibar. A self-administered questionnaire was used to collect data on mothers' social demographics and dietary knowledge. Multivariate logistic regression was employed to identify factors associated with a minimum adequate diet while adjusting for confounders. The study revealed that a majority of mothers possessed a low level of knowledge regarding balanced diets, with only 12 (10.6%) having a higher level of knowledge. Notably, 45 (39.8%) mothers exhibited moderate knowledge. Factors such as maternal age (26-30 years) and education level were associated with lower knowledge levels. Maternal education emerged as a crucial determinant, with uneducated mothers having an odds ratio (OR) of 1.73 (95% CI: 1.2-2.4, $p=0.001$) for low knowledge. These findings underscore the pivotal role of maternal education in shaping mothers' knowledge about essential diets for their children. Public policies and interventions should prioritize improving access, quality, and equity in education. Bridging the digital divide is essential to ensure that uneducated mothers can access online resources. Quality education, focusing on providing relevant information and fostering critical thinking skills, is paramount in addressing this issue.

Key Words: Child Nutrition, Dietary Habits, Family Health Nutrition Education, Malnutrition

INTRODUCTION

Malnutrition is a significant public health issue in developing countries, including Tanzania, and accounts for up to 50% of under-five mortality. Good nutrition and health of children are key factors during their growth. Healthy nutrition for children is essential for brain structural development and functional capacity. Poor nutrition is the major cause of mortality rate among children under five. It is important to improve the nutritional status of children to reduce the mortality rate and increase their performance in their daily activities, which also increases their chance of survival [1, 2]. A nutritious diet is very crucial as it helps prevent children from diseases and complications such as dental caries, diarrhea, obesity, cancer, diabetes, and coronary heart disease. Parents play a crucial role in determining the nutritious diet of their children, especially mothers [3]. Maternal nutritional status can be affected

by various factors such as economic status, level of knowledge on nutrition, social factors, and maternal age. Knowledgeable mothers on nutrition requirements give their children a balanced food that contains protein, carbohydrates, vitamins, and fats [2].

Under nutrition remains a pressing issue among children under five years old in developing countries. According to UNICEF's 2011 data, approximately 80% of under-five children in 14 developing countries suffer from under nutrition. Tragically, nearly 60% of malnutrition-related deaths occur in sub-Saharan Africa as evidenced in Sudan, approximately 31%, 32%, and 14.8% of children exhibited moderate under nutrition, stunting, and wasting, respectively [4-6]. Also, data from The Uganda Demographic and Health Survey (UDHS 2016) revealed that nearly half of children under the age of five (29%) were chronically malnourished.

*Correspondence to: Jeremie Minani, Zanzibar University, Zanzibar, Tanzania. E-mail: jereminani@gmail.com

Received: 08-Feb-2024, Manuscript No. JWH-24-29548; **Editor assigned:** 12-Feb-2024, PreQC No. JWH-24-29548 (PQ); **Reviewed:** 20-Feb-2024, QC No. JWH-24-29548; **Revised:** 24-Feb-2024, Manuscript No. JWH-24-29548 (R); **Published:** 27-Feb-2024, DOI: 10.35248/2167-0420.24.13.712

Citation: Minani J, Khalfan SS, Bakar IH, Said KK (2024) Mothers as Nutritional Gatekeepers: A Focus on Under-Five Children. 13(2):712.

Copyright: © 2024 Minani J, Khalfan SS, Bakar IH, Said KK. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Major factors contributing to stunting in Africa include poverty, lack of information due to traditional beliefs, inadequate health and sanitation, improper child feeding practices, limited access to essential health and nutrition knowledge, socioeconomic variables related to food access, employment type, healthcare availability, proximity to main roads and markets, housing conditions, income patterns, and the timing of introducing complementary foods [7].

The nutritional status of children in Tanzania has improved since 1991-92, when half of children were stunted, compared to 34% in 2015-16. This indicates that malnutrition is still a public health problem. According to the Tanzania Health and Demographic Survey (THDS) of 2016, 34% of Tanzanian children under five years of age are stunted, and this makes Tanzania one of the 10 worst affected countries in the world. A study conducted by [8] revealed that children under two years have stunting and severe stunting at 35% and 14.4%, respectively and Children under five years have stunting and severe stunting at about 41% and 16.1%, respectively [8]. In a survey conducted in the western part of Tanzania in Mwanza, moderate and severe malnutrition prevalence is 3.9% and 1.3% respectively [9].

Malnutrition in Zanzibar is also the biggest health challenge; 30% of under-five age children are under nutrition, this varies according to region; north Unguja and north Pemba is 40%, south Unguja is 29.1%, and urban west is 19.6%. Poor feeding practice is the major cause of under nutrition in Zanzibar, which leads to delays in growth, poor performance of children in schools, and reduced creativity in later life [10]. Knowledge of mothers on a nutritious diet is the main thing that can improve the nutritional status of their children. The influence of media and technology, social demographic factors, and traditional health education may be crucial in increasing mothers' knowledge level [11]. Our study aimed to mothers' knowledge regarding balanced diet for under five years children in selected area of Sebleni RCH urban Unguja Zanzibar.

METHODS

We conducted a cross-sectional study using a quantitative approach focusing on the assessment of the knowledge of mothers regarding a balanced diet for children under five years of age. The data was collected from June 2020 to December 2020. among 113 mothers attending Sebleni Reproductive Child Health (RCH) urban district, Unguja Zanzibar, who had children under five years old. Ethical clearance was obtained from Zanzibar Health Research Institute ref: ZAHREC/03/ST/JUNE/2020/55. A self-administered questionnaire designed in Kiswahili, which contains closed-ended and open-ended questions, was used to gather data on mothers' social demographic data and knowledge aspects regarding essential diet for children under five years of age. Consent was obtained from each respondent and allowed them to sign a written informed consent form and participate voluntarily. Respondents were assured of the confidentiality of the information to be provided during the study and that their names remained anonymous throughout the study. The results were obtained following the appropriate ethical procedure without infringing the rights of the subject. We analyzed the data using the Statistical Package for the Social Sciences software (SPSS version 26). To evaluate the association both univariate and multivariate tests were performed. A p-value of 0.05 was considered significant at a 95% confidence interval.

RESULTS

Description Study Participants

Table 1 below shows the social demographic characteristics of the 113 respondents. The majority of mothers were aged 26–30 years, which is 39.8% of all participants. Also, most of the mothers were Muslims (91.2%), and most mothers were married (89.4%). The mothers who completed secondary education made up about 54.9% of the entire participant. The most economic activity of the mothers was business, which is 46%. Many mothers live near the health center; also, the majority of them have children aged three years and above.

Distribution of mothers' knowledge

Figure 1 shows the distribution of knowledge of the study participants. Out of 113 mothers who were studied, 56 (49 %) had low knowledge regarding a balanced diet, 45 (39.8%) had moderate knowledge, and 12 (10.6%) mothers had higher knowledge of a balanced diet. Therefore, the distribution shows that most mothers have low knowledge regarding a balanced diet for children under five years of age.

Association of Knowledge of Mothers and Demographic Factors

The association between knowledge and demographic information is a multifaceted relationship that underscores the intricate interplay between individual characteristics and cognitive abilities. Demographic factors such as age, education level, occupation, and marital status significantly influence an individual's acquisition, retention, and application of knowledge [Table 2].

The results indicate that there is an association of low knowledge observed among mothers aged between 26 and 30 years (OR 1.53:95% CI, (1.1-2.14), P= 0.05). The results also show that there is a significant association between the level of education and the low knowledge of mothers on a balanced diet. Mothers who are uneducated have a higher likelihood of having low knowledge compared with those with higher levels of education (OR 1.73: 95% CI, 1.2-2.4, p=0.001). The findings also prove that there is an association between marital status and the low knowledge of mothers on a balanced diet. Specifically, unmarried mothers have a higher likelihood of low knowledge than married mothers, with an odds ratio (OR) of 2.90 and a 95% confidence interval (CI) of 1.8-4.6 (pp<0.001) [8]. This indicates that unmarried mothers may require additional support and education to improve their knowledge of a balanced diet for their children.

The results indicate that there is an association between the level of education and low knowledge of mothers on a balanced diet. Uneducated mothers have a higher likelihood of having low knowledge compared with those with primary, secondary, or university education. The odds ratio (OR) for uneducated mothers was 1.73 with a 95% confidence interval (CI) of 1.2-2.40 (p=0.001). This demonstrates that higher levels of education are associated with better knowledge of a balanced diet for children. It is also found that there is an association between occupation and low knowledge of mothers on a balanced diet. Government employees have a lower likelihood of low knowledge than non-government employees, businesswomen, and housewives. The odds ratio (OR) for government employees is 0.916 with a 95% confidence interval (CI) of 0.216-1.104 (p=0.033) [2]. This indicates that occupation may play a role in the knowledge level of mothers, with government employees potentially having better knowledge of a balanced diet.

Table 1: Description of the demographic characteristics of mothers of under-five children.

Characteristics	Frequency	Percentage %
Age of the mother		
15-20	7	6.2
21-25	38	33.6
26-30	45	39.8
>30	23	20.4
Religion of the mother		
Muslim	103	91.2
Christian	10	8.8
Marital status		
Married	101	89.4
Unmarried	6	5.3
Divorced	3	2.7
Widow	2	1.8
Single mother	1	0.9
Level of education		
Uneducated	2	1.8
Primary	24	21.2
Secondary	62	54.9
University	25	22.1
Occupation		
Government employee	17	15
Non-government employee	26	23
Businesswoman	52	46
Housewife	18	15.9
How far do you live from the health care center?		
0-5 km	94	83.2
6-10 km	17	15
11-15 km	2	1.8
How many children do you have?		
One	28	24.8
Two	25	22.1
Three	30	26.5
Four and above	30	26.5

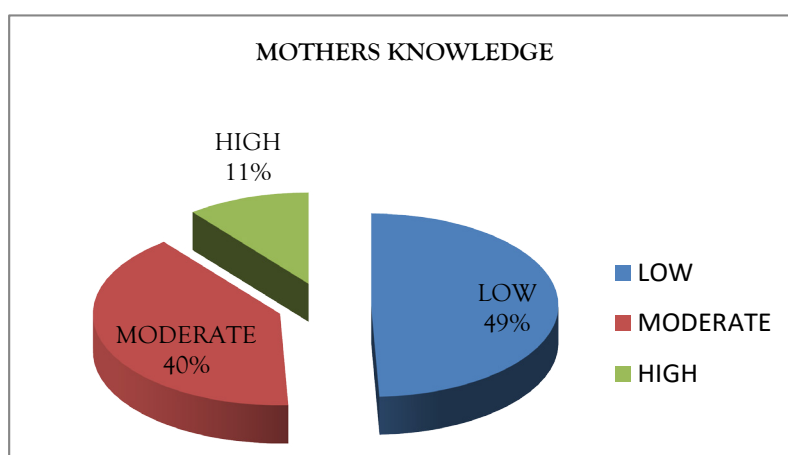


Figure 1. Distribution of Mothers' Level of Knowledge.

Table 2: Association of socio demographic factors with low knowledge of mothers on a balanced diet.

Social demographics	Total	Low knowledge	Moderate knowledge	High knowledge	COR (95% C.I)	x ²	p-value
Age of the mother							
15-20	7	3(2.7%)	2(1.8%)	2(1.8%)			
21-25	38	19(16.8%)	14(12.4%)	5(4.4%)			
26-30	45	21(18.6%)	20(17.7%)	4(3.5%)	1.53(1.1-2.14)	0.916	0.005
31 and above	23	13(11.5%)	9(8%)	1(0.9%)			
Total	113						
Religion of the mother							
Muslim	103	50(44.2%)	41(36.3%)	12(10.6%)	1.1(0.216-1.104)	0.033	0.863
Christian	10	6(5.3%)	4(3.5)	N/A			
Total	113						
Marital status							
Married	101	49(43.4%)	40(35.4%)	12(10.6%)	1.73(1.2-2.40)	1.062	0.001
Unmarried	6	3(2.7%)	3(2.7%)	N/A			
Divorced	3	2(1.8%)	1(0.9%)	N/A			
Widow	2	1(0.9%)	1(0.9%)	N/A			
Single mother	1	1(0.9%)	0	N/A			
Total	113						
Level of education							
Uneducated	2	1(0.9%)	1(0.9%)	N/A			
Primary	21	10(8.9%)	8(7.1%)	6(5.3%)			
Secondary	62	26(23%)	30(26.5%)	6(5.3%)	1.82(1.4-2.6)	5.018	0.002
University	15	19(16.8%)	6(5.3%)	N/A			
Total	113						
Occupation							
Government employee	17	12(10.6%)	5(4.4%)	N/A			
Nongovernment employee	26	17(15%)	7(6.2%)	2(1.8%)			
Businesswoman	52						
Housewife	18	20(17.7%)	25(22.1%)	7(6.2%)	0.451(0.268-0.770)	4.213	0.003
Total	113	7(6.2%)	8(7.1%)	3(2.7%)			
How many children do you have?							
One	28						
Two	15	13(11.5%)	11(9.7%)	4(3.5%)			
Three	30	10(8.9%)	12(10.6%)	3(2.7%)			
Four and above	30	16(14.2%)	10(8.9%)	4(3.5%)			
Total	113	17(15%)	12(10.6%)	1(0.9%)	2.90(1.8-4.6)	1.229	0.0001

DISCUSSION

Overall results from our study demonstrate that the majority of mothers in this study have a low level of knowledge about 56 (49.6%), 45 (39.8%) have moderate knowledge, and only 12 (10.6%) have high knowledge. This outcome is similar to other studies that were performed by Gichana (2013) under the title Nutritional Knowledge of Mothers and the Nutritional Status of their Children at 6–59 months. The results of the study showed that 78.9% of the mothers interviewed knew a balanced diet, whereas the rest (21.1%) did not have any knowledge. The result also is parallel to a study conducted in the Ileje District Council, Songwe Region by Mary (2018) which concluded that mothers' knowledge regarding nutritional diet was moderate to low due to the lack of nutritional education in their community.

In addition, in another study conducted by Abera et al. (2013) in Mekele Ethiopia, the result of the study shows that most mothers have low knowledge regarding the nutritional requirements of their children, which is due to their low level of education, early marriage, and low income. Our finding compares favorably with

Deshmukh (2018), who reported that most mothers in their study had poor scores in various aspects of nutrition knowledge. These findings collectively show that maternal education plays a crucial role in determining the knowledge level of mothers regarding the essential diet for children under five years of age.

This lack of knowledge can have significant consequences for the health and development of both mothers and their children. Mothers may struggle to provide their children with a balanced diet without a proper understanding of nutritional requirements, leading to malnutrition and related health issues. Additionally, the lack of education and low income mentioned in the study further exacerbate the problem, as these factors can limit access to nutritious food options and resources for learning about proper nutrition [12-14].

We observed that mothers who are uneducated have a higher likelihood of having low knowledge than those with higher levels of education. This finding was supported by previous studies that have shown a positive correlation between maternal education and child nutritional status. Education equips individuals with

knowledge and critical thinking skills, which can influence their understanding and decision-making regarding nutrition and health practices for their children [15]. This finding is similar to the results from a study conducted by Sarialioğlu et al., 2021, which demonstrated a clear association between the level of education and the knowledge of mothers on a balanced diet. Mothers with higher levels of education are more likely to have a better understanding and knowledge of what constitutes a balanced diet for their children [13]. This association may stem from the fact that education provides individuals with access to information and resources, allowing them to make informed decisions about their health and nutrition.

Furthermore, educated mothers are more likely to have been exposed to nutrition education and information during their schooling years, which can contribute to their knowledge about the significance of a balanced diet for their children [14]. Additionally, occupation was found to be associated with mothers' knowledge of a balanced diet. Mothers who are government employees were found to have a lower likelihood of low knowledge compared with non-government employees, businesswomen, and housewives. This association suggests that the type of occupation one holds may impact their exposure to information and resources related to nutrition. These findings highlight the importance of education and occupation in shaping mothers' knowledge of a balanced diet for their children [12].

The association between maternal education level and knowledge of a balanced diet for children has been well-established in several studies. Mothers with higher education levels are more likely to have a better understanding and knowledge of what constitutes a balanced diet for their children. Furthermore, the association between occupation and maternal knowledge of a balanced diet is also evident. This demonstrates that education level and occupation have a significant impact on mothers' knowledge regarding a balanced diet for their children. Mothers with higher education levels, particularly those with highly educated mothers and government employees, were found to have a greater knowledge of what constitutes a balanced diet for their children. This knowledge is likely because education provides individuals with access to information and resources, allowing them to make informed decisions about their health and nutrition and apply this knowledge to their children's diets [14].

Furthermore, occupation also plays a role in shaping maternal knowledge of a balanced diet. In this study Mothers who are government employees were found to have a greater knowledge of a balanced diet compared with non-government employees, businesswomen, and housewives. Also, Abubakari et al., 2023 reported that time spent at work by mothers could influence the nutritional status of their children. Mothers who spent more hours at their workplaces were more likely to have wasted and underweight children [16]. This proves that occupation may provide opportunities for exposure to nutrition education and information, potentially through workplace wellness programs or access to professional resources. The education level and occupation of mothers significantly influence their knowledge of a balanced diet for children [12]. It was identified by [17] that mothers' knowledge was affected by mothers' age, husbands' education status, marital status, household income, and source of health information. Mothers' dietary diversity practice was also found to be affected by different sociodemographic and economic factors such as the mother's age, marital status, and seasonal availability

of all food groups and strongly associated with the source of health information [18].

CONCLUSION AND RECOMMENDATIONS

Education is a vital tool for acquiring knowledge, offering critical thinking skills, structured learning, and information processing. As a result, mothers with higher education levels tend to possess more knowledge. Socioeconomic factors significantly contribute to knowledge disparities, with uneducated mothers facing barriers such as limited access to quality education and economic constraints.

While there is a strong correlation between education and knowledge, causality can operate in both directions, necessitating longitudinal studies for a complete understanding. Low knowledge levels among uneducated mothers have profound implications for maternal and child health, emphasizing the urgent need to address this gap.

Public policies and interventions should acknowledge the pivotal role of education in knowledge disparities and focus on improving access, quality, and equity in education. Bridging the digital divide is crucial in the internet age, ensuring that uneducated mothers can benefit from online resources. Quality education matters and educational systems must provide relevant information and foster critical thinking skills. Health sector needs to design a community-based nutrition focused behavioral change communication at a community level to equip and enhance community knowledge and to change knowledge into practice of proper dietary for 6-59-month-old children.

REFERENCES

1. Emina JB, Kandala NB, Inungu J, Yazoume Y. Maternal education and child nutritional status in the Democratic Republic of Congo. *J Public Health Epidemiol.* 2011;3(12):576-92.
2. Nath MR, Kanniammal C. Knowledge and Practice of Mothers Regarding the Prevention and Management of Malnutrition Among Preschool Children-A Cross Sectional Survey. *Int J Pharm Clin Res.* 2017;9(5).
3. Naidoo S. Paediatric Food-Based Dietary Guidelines for South Africa: Oral health and nutrition for children under five years of age. *South Afr J Clin Nutr.* 2013;26(3)..
4. Tamiru MW, Tolessa BE, Abera SF. Under nutrition and associated factors among under-five age children of Kunama ethnic groups in Tahtay Adiyabo Woreda, Tigray Regional State, Ethiopia: Community based study. *Int J Nutr Food Sci.* 2015;4(3):277-88.
5. Tamiru MW, Tolessa BE, Abera SF. Under nutrition and associated factors among under-five age children of Kunama ethnic groups in Tahtay Adiyabo Woreda, Tigray Regional State, Ethiopia: Community based study. *Int J Nutr Food Sci.* 2015;4(3):277-88.
6. Kikafunda JK, Agaba E, Bambona A. Malnutrition amidst plenty: an assessment of factors responsible for persistent high levels of childhood stunting in food secure Western Uganda. *Afr J Food Agric Nutr Dev.* 2014;14(5):2088-113.
7. Majamanda J, Maureen D, Munkhondia TM, Carrier J. The effectiveness of community-based nutrition education on the nutrition status of under-five children in developing countries. A systematic review. *Malawi Med J.* 2014;26(4):115-8.
8. Chirande L, Charwe D, Mbwana H, Victor R, Kimboka S, Issaka AI, et al. Determinants of stunting and severe stunting among under-fives in Tanzania: evidence from the 2010 cross-sectional household survey. *BMC Pediatr.* 2015 Dec;15:1-3.

9. Ahmed MM, Hokororo A, Kidenya BR, Kabyemera R, Kamugisha E. Prevalence of undernutrition and risk factors of severe undernutrition among children admitted to Bugando Medical Centre in Mwanza, Tanzania. *BMC Nutr.* 2016;2(1):1-6.
10. Kinabo J, Mamiro P, Mwanri A, Bundala N, Kulwa K, Picado J, et al. Adequacy of macro and micronutrients in infants and young children's diets in Zanzibar, Tanzania. *Afr Health Sci.* 2019;19(4):3063-77.
11. Moxley V, Graul M, Stoneking N, Hale C, Torres S, Linehan M, et al. Early childhood nutrition knowledge of caregivers in Tanzania. *Int J Environ Res Public Health.* 2019;8:43-9.
12. Bjelland M, Brantsæter AL, Haugen M, Meltzer HM, Nystad W, Andersen LF. Changes and tracking of fruit, vegetables and sugar-sweetened beverages intake from 18 months to 7 years in the Norwegian Mother and Child Cohort Study. *BMC Public Health.* 2013;13(1):1-1.
13. Sarialioglu A, Kucukoglu S, Ozdemir AA, Kose S, Celebioglu A. The effect of obesogenic environment and socio-demographic characteristics on obesity awareness levels of children.
14. de Jesus Silva N, de Cássia Ribeiro-Silva R, Rasella D, Alves FJ, Campello T, Fiaccone RL, et al. Shifts towards overweight and double burden of malnutrition among socio-economically vulnerable children: a longitudinal ecological analysis of Brazilian municipalities. *Public Health Nutr.* 2021;24(15):4908-17.
15. Emina JB, Kandala NB, Inungu J, Yazoume Y. Maternal education and child nutritional status in the Democratic Republic of Congo. *J Public Health Epidemiol.* 2011;3(12):576-92.
16. Abubakari A, Inusah AK, Latifa AA, Hakeem R, Wumbei A, Yahaya IA. Maternal Occupation And The Nutritional Status Of Children Aged 6-24 Months In The Tamale Metropolis. *UDS Int J Develop.* 2023;10(1):70-9.
17. Agize A, Jara D, Dejenu G. Level of knowledge and practice of mothers on minimum dietary diversity practices and associated factors for 6-23-month-old children in Adea Woreda, Oromia, Ethiopia. *Biomed Res Int.* 2017;2017.
18. Aguree S, Soyiri IN, Ziem JB. Maternal educational attainment is associated with child nutrition status, in northern Ghana. *Acta Sci Nutr Heal.* 2020;4:1-8.