

Knowledge, Attitude and Practice Regarding Malnutrition among Parents of Under-Five Children with Disabilities in Rwanda

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Abstract

Background

Growth-related problems and malnutrition are common in children with disabilities. Malnutrition increases childhood morbidity and mortality, impairs intellectual development, and raises the risk of developing diseases later in life. However, information is limited for children with disabilities.

Objectives

To assess the knowledge, attitudes and practices towards malnutrition among parents of under-five children with disabilities in HVP Gatagara Hospital.

Methods

Using a non-probability census sampling, 130 parents of disabled children under five years of age participated in the cross-sectional study. Information was gathered using a structured questionnaire, and it was analysed descriptively and by binomial logistic regression.

Results

According to the results, 61.54% of parents had moderate knowledge, while 7.69% and 69.2% had poor knowledge and positive attitude, respectively. In addition, 16.9% had insufficient practice, but most parents (70.3%) had moderate practice. Those with high knowledge (>70%) had 3.6-fold higher odds of good practices [OR=3.61; 95% CI=1.22 - 5.99; p=0.003]. Furthermore, being female was associated with increased odds of having adequate nutritional practice [OR=1.77; 95% CI=2.22 -3.24; p=0.019].

Conclusion

High knowledge of malnutrition led to adequate nutritional practice. Therefore, to improve best practices regarding malnutrition, it is necessary to focus on health education interventions that will raise parents' knowledge and positive attitudes about the condition of their children with disabilities.

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Keywords: Malnutrition, Disability, Parent, Caregivers, knowledge, attitude, Practice

Introduction

Around the world, about 291 million children under the age of 20 live with mild to severe disabilities.[1] About 47 million children under 5 years of age suffer from wasting, among whom are children living with disabilities.[1]

Parents' knowledge is crucial for maintaining children's nutritional status and safeguarding their nutritional requirements to establish a solid foundation and preserve the future of any healthy community.[2] Accurate information and knowledgeable assistance from the community, family, and medical system are essential for proper feeding of the child.[3] For instance, in Namibia, 51.8% of the mothers had nutritional knowledge about breastfeeding for six months before giving other food, while 35.6% fed their children appropriately.[4] and in East Africa, 55.9% of the mothers had practiced exclusive breastfeeding for at least six months.[5] Broad cultural variables, such as food taboos and health beliefs, can either restrict food intake or suggest alternative behaviours during illnesses, both of which have an impact on health.[6]

General cultural factors such as health beliefs and food taboos may limit feeding or prescribe alternate practices during illnesses, affecting health.[6] In addition, inadequate knowledge about appropriate foods and feeding practices is often a greater determinant of malnutrition than the lack of food. Adequate knowledge of mothers regarding the dietary patterns of under-five children will enhance the attitude and practice to prevent malnutrition.[7]

An Indonesian study discovered that adequate supplemental feeding and breastfeeding education programs are necessary to improve existing infant feeding practices and reduce the risk of malnutrition in early childhood.[8] Studies examining the association between a mother's education and her child's nutritional status demonstrate that mothers' education strongly predicts

their children's nutritional health even after accounting for other variables.[9,10] Children with disabilities include cerebral palsy, craniofacial deformities [cleft lip and/or palate), and several genetic diseases (Pierre Robin Sequence) that cause oral motor feeding and swallowing issues have lower food intake.[11] In Japan,[12] 90% of disabled children have trouble feeding, typically leading to malnutrition, poor health, and, in some cases, premature mortality. Nutrient malabsorption is frequent among disabled children, particularly those with cystic fibrosis, who suffer from micro and macronutrient malnutrition.

Parents' knowledge is essential to protect their children's nutritional needs and preserve their nutritional status.[2] Appropriate feeding practices and parenting styles positively impact the development of infants and young children.[7] Appropriate child feeding methods and parental behaviours positively impact infant and early child development. Mothers' knowledge, attitude, and practice (KAP) regarding feeding infants and young children is essential for the best nutritional status.[13] A study carried out at the Nutrition Rehabilitation Centre in India found that, respectively, 33.3% (n=40), 51.6% (n=62), and 15% (n=18) of respondents had adequate knowledge, attitudes, and practices regarding feeding patterns.[14] A study conducted in Pakistan also revealed that only 39.5% (n=152) of parents followed best practices, 54.3% (n=209) of parents had a positive attitude, and 59.2% (n=228) of parents had adequate knowledge.[15] Different studies have been conducted regarding the knowledge, attitudes, and practices (KAPs) of mothers of under-five children;[16–18] however, there is insufficient information about the KAPs of parents of children with disabilities. Thus, this study aimed to determine the knowledge, attitude, and practice towards malnutrition among parents of under-five children with disabilities in HVP Gatagara Orthopedics and Rehabilitation Hospital.

Methods

Study Design

This quantitative cross-sectional design study was conducted from September 2022 to July 2023 among mothers/caregivers of children under 5 with disability at HVP Gatagara Orthopaedics and Rehabilitation Hospital.

Study Setting

The study was conducted at HVP Gatagara Orthopaedics and Rehabilitation Hospital. The hospital began operating at Gatagara, the "Hill of Hope," in 1960 in the current Southern Province, Nyanza District. The hospital receives annually more than 4000 patients with disabilities, including at least 300 children given a residential status in the facility. The hospital has 180 beds for inpatients.

Study Population and Sample Size

The study targeted all parents/caregivers of children with disabilities aged 0 to 5 years who attended the hospital during the study period. All were inpatients because they had to stay in the hospital for at least two months for rehabilitation treatment. The study sample size consisted of 130 parents of under-five children with disabilities hospitalized in HVP Gatagara Orthopaedics and Rehabilitation Hospital from 1 September to 30 September 2022. All available parents and their children were included in the study.

Sampling Technique

The non-probability census technique was used in determining the study's participants to allow the researcher to reach all available parents during the study period, which means that all the respondents from parents of Gatagara Orthopaedics and Rehabilitation Hospital who have children with disability participated in the study considering the inclusion and exclusion criteria.

The Inclusion Criteria

Parents/caregivers with children under five years of age with disabilities were admitted

to HVP Gatagara Orthopaedics and Rehabilitation Hospital during the study period and willingly consented to participate in the study.

The exclusion Criteria

Parents/caregivers who declined to sign the consent, but no parent was excluded due to mental incapacity.

Data Collection Instrument and Procedure

This study adapted a structured questionnaire from the United Nations Food and Agriculture Organization (FAO).[19] To gather data, the questionnaire was translated into Kinyarwanda. After completion, the questionnaire was translated into English while maintaining the necessary level of quality control. The questionnaire comprised four sections, the first of which asked about sociodemographic traits such as age, gender, social class, and level of education. Multiple-choice questions about parents' knowledge of malnutrition's signs, causes, and prevention, sources of information, awareness of their child's growth-monitoring behaviours, and information about a healthy diet are found in Section B. Regarding the attitude assessment (section C); the parent indicated whether they strongly agreed, agreed, disagreed, or disagreed strongly with the statements, which were formulated on a Likert scale. The topics covered in the attitude part included the introduction of supplemental feeding and the significance of exclusive breastfeeding for infants younger than six months.

Different questions about practice (section D) were asked, including when to start breastfeeding, how to position the feeding, how to clean and sanitize the water, whether to use complementary feeding, how long to exclusively breastfeed, how often to eat, and whether to continue breastfeeding. To ensure the reliability of the tool, a pre-test was conducted at the HPV Gatagara Gikondo branch on 10 participants with the same characteristics as the study population. The Cronbach Alpha was 0.84, showing a high reliability.

To determine the content validity of the tools developed for this study, literature and public health professionals were contacted to ensure that the instrument addressed all construct facets. The tool was modified and finalised according to professionals' suggestions and recommendations. Based on Sharma et al,[20] the scores were interpreted as follows: overall knowledge was classified as inadequate if it fell below (<50%) score, as moderate if it fell between (50–69%) score, and as adequate if it was equal to or higher than (≥70%) score. If the overall attitude score was equal to or higher than (≥70%) score, it was considered favourable, as unfavourable if the score was less than fifty percent (<50%) score, and as moderate if it fell between fifty and sixty-nine percent (50–69%) score. The overall practice was classified as moderate if the score fell between fifty and sixty percent (50–69%), inadequate if it fell below 50 percent (<50%) score, and adequate if it was equal to or higher than seventy percent (≥70%) score.

Data Analysis

IBM SPSS Statistics for Windows version 21 (IBM Corp, Armonk, NY, USA). IBM SPSS version was used for data entry, cleaning, and analysis. The demographic characteristics of the individuals were compiled using descriptive statistics, including frequency and proportions. The relationship between sociodemographic factors and malnutrition prevention practices was determined using the chi-square test. Binomial logistic regression was employed to identify the variables connected to the practice of preventing malnutrition. A p-value of less than 0.05 was set as the significance level in each study. The 95% confidence intervals and the p-value were shown with the odds ratios. Indicate what the independent and dependent variables.

Ethical Consideration

The Mount Kenya University Ethical Review Board granted ethical clearance for this study (reference number MKU/ETHICS/28/8/2022(1); the Hospital Management authorized the study. The study population was informed about the study purpose and procedures

and the features of risks and benefits. Before participating in the study, each research participant signed a consent form voluntarily after answering the questions. The researcher was the only one with access to the data, and study participants' privacy and anonymity were guaranteed. The researcher alone had access to the lockable, secure location where completed questionnaires were kept. During data collection, analysis, and presentation, codes were utilized in place of respondents' names to guarantee anonymity.

Results

Socio-Demographic Characteristics

Table 1. Socio-Demographic Characteristics of the Respondents (N=130)

Variables	Frequency (n)	Percentage (%)
Age (years)		
≤24	24	18.5
25-34	55	42.3
35-44	35	26.9
≥45	16	12.3
Gender		
Male	18	13.8
Female	112	86.2
Marital status		
Single	28	21.5
Married	84	64.6
Divorced	11	8.5
Widowed	7	5.4
Religious status		
Catholic	63	48.5
Muslim	9	6.9
Protestant	58	44.6
Education		
No formal education	15	11.5
Primary	67	51.5
Secondary	34	26.2
Higher	14	10.8
Employment status		
Unemployed	97	74.6
Business	11	8.5
Employed informally	21	16.1
Employed formally	1	0.8
Income category (Ubudehe)		
Category 1	21	16.2
Category 2	71	54.6
Category 3	38	29.2
Category 4	0	0
Source of income		
Farming	30	23.1
Casual non-farm labour	68	52.3
Family business	3	2.3
Casual farm labour	12	9.2
Salary	15	11.6
Remittances	2	1.5

A total of 130 parents with under-five children with disabilities underwent examination. Most responders (42%) were female and between the ages of 25 and 34. About half (49%) of the respondents were Catholic, and the majority (65%) were married. About half (52%) of the respondents reported having primary education in Ubudehe category 2 (55%) and having casual off-farm labour as an income source. Most respondents (74.92%) were unemployed (Table 1).

Supplementary file 1 shows that nearly half of the participants (47.7%), knew that malnutrition is defined as deficiencies, excesses, or imbalances in a person's energy and nutritional consumption. By contrast, 10.7% of respondents needed to be aware of the accurate definition of malnutrition. Regarding signs of malnutrition, 33.9% said it is a lack of energy/weakness, 32.3% loss of weight/thinness, while 6.9% and 2.3% said it was vomiting and coughing, respectively. Concerning the causes of malnutrition, 45.4% of respondents stated that it was due to a lack of food, and 36.9% claimed that food was too nutrient-poor and watery.

Most of the respondents (76.2%) indicated that exclusive breastfeeding means the infants get only breast milk and no other food. Table 1 also indicates that 82.3% agreed that a baby should start eating foods in addition to breast milk after six months, while 17.7% said before six months. The table also indicates that more than half (57.7%) of the respondents reported that breastfeeding is the only way to prevent malnutrition in infants aged 0 to 6 months, and 42.3% reported visiting a health facility or hospital to ensure the child grows well. Regarding prevention of malnutrition among young children (6–23 months), 43.1% of the respondents reported frequent feeding, 22.3% reported giving attention during meals, while 3.1% said they would give a little food. The overall Knowledge levels were computed by aggregating the scores. The maximum attainable total score was 17, and the minimum was 0.

A percentage score of the respondents was computed and classified as inadequate knowledge (<50%), moderate knowledge (50–69%), and Adequate knowledge ($\geq 70\%$).

Overall, the results showed that the highest percentage, 61%, of parents had moderate knowledge regarding malnutrition. (See Figure 1).

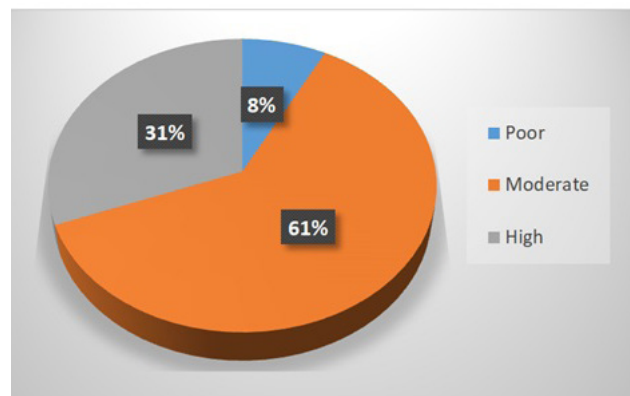


Figure 1. Level of mothers' knowledge on malnutrition (N=130)

As indicated in Supplementary file 2, the highest percentage (85.4%) strongly agreed that it is good to breastfeed their babies exclusively for six months; providing healthy food will help keep their children healthy (96.1%). In addition, 94.6% of respondents reported always taking their children to the health facility when ill, and 95.3% of parents reported being responsible for ensuring the family eats a varied and well-balanced diet. However, 63.1% of respondents strongly disagreed that certain meals, like eggs, are too heavy for kids to digest. The highest percentage (87.7%) also strongly agreed that it is a severe problem for their baby to have a low birth weight. Nonetheless, a sizable portion (89.2%) firmly rejected that witchcraft and the evil eye were the cause of malnutrition.

The overall attitude levels were computed by aggregating the scores. The maximum attainable total score was 50, and the minimum was 10. Percentage scores of the respondents were computed and classified as unfavourable attitude (<50%), moderately favourable attitude (50–69%), and favourable attitude ($\geq 70\%$). In general, 69% of parents had a favourable view regarding malnutrition (Figure 2).

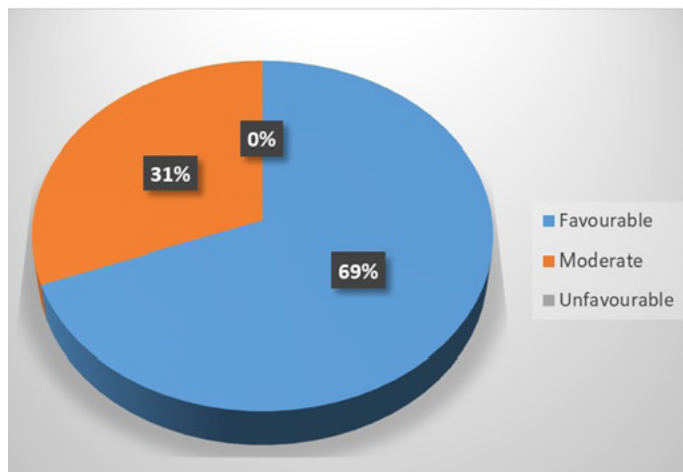


Figure 2. Level of mothers' attitude toward malnutrition (N=130)

Table 2 shows that 56.9% of respondents frequently breastfed their children a schedule, although most mothers (69.2%) started nursing within an hour after giving birth. Of the mothers who breastfed, 42% continued for less than two years,

and 58.5% for more than two years. Most mothers (86.2%) gave their children meals to eat with the family. Concerning sources of water, 46.2% of households used piped water (tap water) for drinking, cooking, and hand washing, whereas 43.8% used tube wells or boreholes.

Most respondents (84.6%) used water and soap to clean water collection items. Regarding water treatment before drinking, 63.8% boiled it, whereas 30% did not treat their water before drinking. There was a preponderance (83.1%) of those who preferred to go to the community health worker immediately upon noticing the symptoms or signs of malnutrition. The most (42.3%) used to give semi-solid food with a spoon, and 72.3% fed their children three or more times daily.

Table 2. Practice of Parents of Under-five Children with Disabilities towards Malnutrition Prevention at HVP Gatagara in 2022 (N=130)

Variable	Frequency (n)	Percentage (%)
At what time did you initiate breastfeeding?		
Within one hour after birth	90	69.2
After one hour following birth	6	4.6
After one day after birth	34	26.2
How often do you breastfeed your baby?		
On demand	56	43.1
According to the timetable	74	56.9
For how many years did you continue breastfeeding?		
< 2 years	54	41.5
≥ 2 years	76	58.5
How is the child served food?		
Individually	18	13.8
Together with family members	112	86.2
What is the main source of water used by your household for drinking, cooking and hand washing?		
Piped water (taps)	60	46.2
Tube well/borehole	57	43.8
Dug well	12	9.2
Rainwater collection	1	0.8
Surface water (river, stream, dam, lake, pond, canal, irrigation channel)	0	0

Table 2. Continued

Variable	Frequency (n)	Percentage (%)
How do you treat items of water collection to make them clean?		
Use of water and soap (clean container)	110	84.6
water only	20	15.4
What do you do to the water before drinking?		
Boil	83	63.8
Filter	8	6.2
Use of chemicals	0	0
Nothing	39	30
What do you do immediately after you found the symptoms or signs of malnutrition?		
Go to community health worker	108	83.1
Continue breast feeding	14	10.8
Give medicines bought from pharmacy	3	2.3
Seek the services of a traditional herbalist	2	1.5
Pray for the child	3	2.3
What do you use to give semi solid food?		
With bottle (bibelot)	18	13.8
Spoon	55	42.3
Cup	49	37.7
Hand	8	6.2
How many times do you feed your child per day?		
Once a day	9	6.9
Twice a day	27	20.8
≥ 3 times and more	94	72.3

The overall practice levels were computed by aggregating the scores. The maximum attainable total score was 10, and the minimum was zero (0). Percentage scores of the respondents were generated and classified as poor practice (<50%), fair practice (50–69%), and good practice (≥70%). Generally, most parents (70.3%) had moderate practice regarding malnutrition prevention (Figure 3).

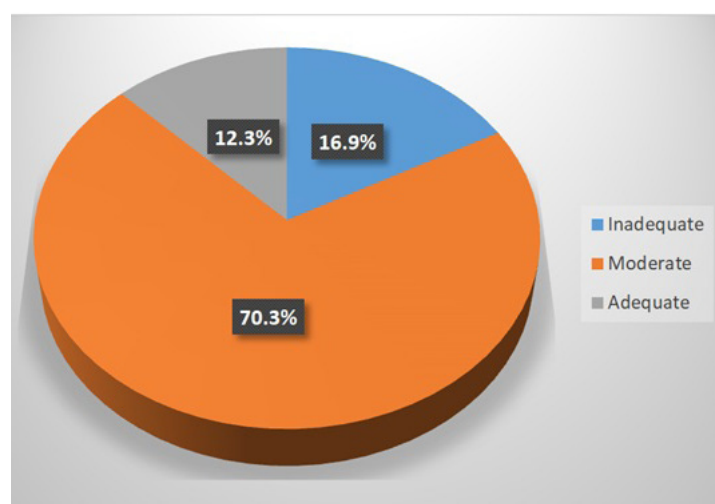
**Figure 3. Level of mothers' practice toward malnutrition (N=130)**

Table 3 shows that being female (AOR=1.77; 95% CI=2.22–3.24; p=0.019) was independently associated with malnutrition prevention practice. Parents/caregivers with a high level of knowledge were about 3.6 times more likely to have adequate practice towards malnutrition prevention [AOR=3.61; 95% CI=1.22–5.99; p=0.003] compared to those with a low level of knowledge. Similarly, those with moderate knowledge had an increased likelihood of engaging in malnutrition prevention practices compared to individuals with low knowledge (AOR=2.20; 95% CI 0.36–4.04, p=0.019). Similarly, parents with favourable attitudes had a 1.7-fold increase in likelihood of engaging in practices to prevent malnutrition [OR=1.73; 95% CI=0.51–2.93; p=0.005] compared to those with moderate attitudes.

Table 3. Bivariate and Multivariable Logistic Regression Analysis of Knowledge and Attitude Associated with Malnutrition Prevention Practices at HVP Gatagara in 2022 (N=130)

Variables	COR	95%CI		AOR	95%CI		P-Value
		Lower	Upper		Lower	Upper	
Gender							
Male	Ref			Ref			
Female	1.41	0.32	2.5	1.77	2.22	3.24	0.019
Level of knowledge							
High Knowledge	3.5	1.46	5.53	3.61	1.22	5.99	0.003
Moderate knowl- edge	2.15	0.61	3.69	2.2	0.36	4.04	0.019
Low knowledge	Ref			Ref			
Level of Attitude							
Favorable attitude	1.8	0.72	2.87	1.73	0.51	2.93	0.005
Moderate attitude	Ref			Ref			

AOR= Adjusted odds ration COR= crude odds Ratio; CI= Confidence interval; Ref=Reference

Discussion

This study aimed to assess parents'/ caregivers' knowledge, attitudes and practices at HVP Gatagara Orthopedics and Rehabilitation Hospital regarding malnutrition prevention in children with disabilities under the age of five.

According to the current study, of the mothers and caregivers at HVP Gatagara Orthopaedics and Rehabilitation Hospital, 61% had a moderate level of knowledge, 8% had low knowledge, and 31% had high knowledge.[21] In contrast to a previous study in Kosovo, the findings showed more excellent complementary feeding knowledge, with 88.4% of mothers of infants between the ages of 6 and 24 months demonstrating good knowledge.[18] The metropolitan area in which the Kosovo study was conducted could have influenced the disparity in the findings of the two studies. However, most of the women in the current study were from rural regions. Rural women lack access to high-quality health information, while urban residents have easier access to hospitals, medical professionals, and other healthcare services. As a result, urban residents have a higher level of knowledge than rural residents.

The present study's findings indicate a statistically significant association (p=0.003) between parents' and caregivers' knowledge and their efforts to prevent malnutrition. Participants who had high knowledge (>70%) had 3.6 times higher odds of practicing malnutrition prevention (OR=3.6; 95%CI=1.22 - 5.99; p=0.003) than those who had low knowledge. This is similar to a study conducted in South Ethiopia: mothers with good knowledge of optimal breastfeeding were 5.5 times more likely to practice optimal breastfeeding than those with poor knowledge (AOR = 5.6% CI 1.6 to 18.1).[22]

In line with a study conducted in Nepal, where 87.4% of mothers had positive attitudes towards preventing malnutrition, 69.2% of respondents in the present study exhibited positive attitudes towards malnutrition prevention.[23] This is contrary to the study done in South Africa, which found that 68% of the participants practice cultural food taboos during infant feeding. [24] According to the results of the current study, 69.2% of moms nursed their babies for the first hour after delivery. The majority of parents/caregivers (83.1%) in the present study strongly agreed that taking a child to

a health centre whenever they are sick is the best course of action. Additionally, parents and caregivers who had a favourable attitude toward malnutrition prevention practices had odds that were 1.7 times higher than those who had a moderate attitude [OR=1.73; 9% CI=0.51 - 2.93; p=0.005]. A significant (p<0.001) effect of attitude on nutritional status was found in similar Indian research assessing the impact of maternal knowledge and attitudes on the nutritional status of children under five.[14]

A study on the knowledge, attitudes, and practices of nursing mothers about infant and young child feeding was carried out in rural Nanded, Maharashtra, and found that 79.4% of infants were nursed within an hour of birth. This percentage is higher than it is in the current study.[25] According to the current study, 70.3% of participants reported moderate practices for preventing malnutrition, and 12.3% of participants had adequate practices. This finding is consistent with studies conducted by the Nutrition Rehabilitation Centre, which showed that 51.6% of mothers had somewhat good feeding practices and 15% of mothers had insufficient feeding practices. [14] According to a study on complementary feeding practices and dietary diversity among mothers of small children in an urban neighbourhood in Lagos, Nigeria, supplementary feeding knowledge was poor, particularly among illiterate mothers.[26] A study conducted in Khartoum paediatric hospitals and Khartoum Cheshire Home for rehabilitation of disabled children revealed that about 3.4% of mothers were feeding their children by breastfeeding. Also, the same percentage of the bottle and the remainder, 93.2%, are fed by complementary feeding, either actively in 35.3% of them or passively in the rest 64.7%.[27] Female caregivers had a 1.7-fold higher odds of adequate malnutrition prevention practice than their male counterparts [AOR=1.77; 9% CI=2.22 -3.24; p=0.019]. This finding is similar to a study conducted in China, where healthy diet behaviours were more commonly implemented by females than males (PR = 1.42, 95% CI = 1.14–1.76).[28]

Child malnutrition is still a concern in Rwanda. According to the Rwanda Demographic and Health Surveys, 33% of Rwandan children aged 6-59 months are stunted (short for their age). HVP Gatagara Orthopaedics and Rehabilitation Hospital reports showed that 7.8% of the hospitalized children with disabilities were malnourished in 2021. Despite this concern, there is a dearth of published studies on child malnutrition among children with disability in Rwanda.

Limitations

This study was conducted in HVP Gatagara Orthopaedics and Rehabilitation Hospital. The study employed a non-probability census (total population sampling) method for data collection, and due to the small sample size, it is impossible to generalize the findings to other health facilities or the entire nation. Furthermore, because parents and caregivers might not recall answers to some of the questions regarding feeding practices, the study might be prone to recall bias. However, this study clarifies the attitudes, knowledge, and behaviors of parents with disabled children under five, which have not received much attention in Rwanda.

Conclusion

The study revealed that parents and caregivers exhibited moderate levels of knowledge, attitudes, and practices regarding malnutrition prevention. A significant positive association was found between caregivers' knowledge and their practices for preventing malnutrition. Furthermore, gender was significantly associated with malnutrition prevention practices, with female caregivers demonstrating better practices. These findings highlight the need for targeted educational interventions aimed at improving the nutrition knowledge of all caregivers, including both mothers and fathers, of children under five with disabilities. Enhanced knowledge will likely promote healthier attitudes and practices, contributing to improved nutritional outcomes for this vulnerable population.

Future programs should also address gender-specific gaps in malnutrition prevention practices and promote inclusive caregiver education strategies.

Author's Contribution

PH designed and carried out the study. PH wrote the manuscript's draft. MAG oversaw the research and helped write the manuscript. The final draft of the work has been read and approved by both writers.

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Conflict of Interest

Regarding this work, the authors have no conflicts of interest.

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