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HEALTH WORKERS' PERCEIVED FACTORS INFLUENCING POOR MALNUTRITION TREATMENT OUTCOMES AMONG PRESCHOOL CHILDREN IN NORTHWESTERN NIGERIA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Malnutrition constitutes one of the leading public health issues among pre-school children in Nigeria especially in the northwestern part of Nigeria. This is due to high level of poverty, food insecurity, lack of maternal education, lack of access to quality healthcare facilities, and the prevalence of recurring infections disease which continue to compromise the wellbeing of children. The aim of the study is to identify the factors perceived affecting the treatment outcomes of malnutrition amongst preschool children in Northwestern, Nigeria. The study made use of cross-sectional survey design that focused on malnutrition in states like Kano, Katsina, and Sokoto State. The research used a multi-stage sampling technique where 370 questionnaires were distributed. However, only 352 questionnaires were completed and returned. The data gathered were analyzed using descriptive statistics like mean and standard deviation. The study revealed that the item which tested whether child neglect in the household contributes to the poor outcomes in treating malnutrition among pre-school children was the highest item accepted by the respondents. It generated a mean score of 3.29 and standard deviation of 0.999. The study further revealed that the item which tested that poor after-hour staffing contributes to poor malnutrition treatment outcomes among preschool children is the lowest item that was rejected. It has a mean score of 1.58, with a standard deviation of 0.683. The study concluded that the main enablers to this topic of discussion include neglecting children by the households, wrong diagnosis at the first stages of the treatment, dependence on alternative medication, low bed capacity in the hospitals, inadequate sources of preparing food for treatment, and lack of night duty staff. Inadequate availability of trained medical personnel and shortage of treatment resources were not perceived as organizational inefficiency that affected the treatment result of malnutrition. Therefore, the study recommended that an educational program should be initiated to enhance the awareness of the caregivers about preventing malnutrition, and awareness should be raised about the significance of adherence to treatment of malnutrition among pre-school children.

Keywords: Health workers, Malnutrition, Perception, Preschool children, Treatment.

Introduction

Malnutrition has persisted as a major public health issue among preschool children worldwide even after continuous efforts made in ensuring adequate nutrition on an international platform. The prevalence of malnutrition is particularly higher in Sub-Saharan Africa. This is because of the presence of the dual burden of malnutrition and overnutrition in this region. Malnutrition contributes over 33% to all annual deaths of children aged under five years in Nigeria. These deaths occur mostly in the northern geopolitical zones (Ezeh *et al*., 2021). This results in over 50% of preschool children suffering from growth faltering in this region (Ezeh *et al*., 2021). There are several factors that lead to the presence of malnutrition among preschool children in northern Nigeria. Some of them include the lack of health workforce capacity, food security, conflicts, and absence of healthcare and therapeutic foods (Agbo, Salibi, and Tzenios, 2024; Ilo *et al*., 2025).

Health practitioners play an essential role in managing malnutrition among children. They contributed to the delivery of clinical and community-based services in various healthcare settings (Sunguya *et al*., 2013; Yakubu *et al*., 2025). Such skills are critical in managing malnutrition among pre-school children. This involves early identification through routine screening, evidence-based treatments, and nutritional counselling to caregivers (Lopez-Ejeda, 2018; Govender *et al*., 2021; Seron-Arbeloa, 2022; Bridge and Lin, 2024). It results in timely intervention and proper feeding and hygiene practices. This is due to health practitioners playing a crucial role in avoidance of malnutrition and supporting healthy development among pre-school children (Westerbotn *et al*., 2023).

Additionally, the attitude and level of engagement of the health care providers have been found to affect the treatment outcome. Therefore, there is a need for better surveillance as well as better supply chain management and community outreach programs to solve this problem (John *et al*. 2024). Moreover, the problem of malnutrition in Northwestern Nigeria among pre-school children has been adversely affected by several other socio-economic issues such as food insecurity, inflation, lack of good health care systems, and security issues (Jeremiah, 2025).

This fact is evident since there have been several studies conducted that have identified some of the socioeconomic, maternal, and other factors that contribute to malnutrition among children in Northern Nigeria. These include stunting, wasting, and inadequate access to treatments for the affected populations (Ezeh *et al*., 2021; Babatunde *et al*., 2022; Mela *et al*., 2021). Notwithstanding this, there remains a significant gap in research concerning the perspective of health care providers, particularly in Northwestern Nigeria. This is essential in ensuring an evidence-based intervention.

This study is quite significant, considering the role played by health workers as the first-line health care professionals responsible for treating cases of malnutrition. They have significant perceptions about the factors determining whether the treatment is successful or not. Since they interact directly with the children, health workers have more knowledge of the problems making it easy or hard to treat the condition. This means that a study of the perceptions of health workers about the factors affecting treatment outcomes of malnutrition among preschool children can help to address the deficiencies in the present nutrition programs. The specific aim of this study is to examine the perceived factors influencing poor treatment outcomes of malnutrition among preschool children in Northwestern Nigeria. Consequently, the study assesses the socio-demographic characteristics of the respondents with a keen focus on perceived factors leading to poor treatment of malnutrition outcomes among preschool children in the study area.

Materials and Methods

1 Study Design

The present research work was cross-sectional survey which aimed to evaluate the perceptions of health care workers about various factors affecting poor treatment of malnutrition in preschool children in Northwestern part of Nigeria. The study was carried out amongst health care workers in three (Kano, Katsina and Sokoto) of the seven states comprising Northwestern Nigeria.

2. Study Area and Study Population

The states that composed the study area include Kano, Sokoto and Katsina State. The sample included healthcare workers who were employed in general hospitals in North-western Nigeria. These healthcare workers were chosen using certain selection criteria like being registered professionals and above the age of twenty years. They were also actively involved in the treatment of malnourished children admitted in the hospitals selected for the study.

3 Sample Size Determination and Sampling Techniques

Three hundred and seventy respondents made up the health workers who were selected from the larger population of 8,988 registered health workers engaged in the management of malnutrition in preschool children in general hospitals and two primary health care centres in Katsina north where the numbers of general hospitals were not up to the require numbers needed for the sampling size. The sample size estimation was carried out based on the 2006 Research Advisor sample size table. Multi-stage sampling technique was used in the selection of respondents for the study, this involved five stages. The first stage involved the selection of three states (Kano, Katsina and Sokoto) from the seven states located in the North West geopolitical region. This was achieved through the use of the balloting method. In the second stage, one senatorial district was selected from each of the three states selected above by using the stratified random sampling method. These senatorial districts are Kano Central in (Kano state), Katsina North in (Katsina State) and Sokoto South in (Sokoto State).

In the fourth stage of the sampling, a proportionate allocation technique of stratified random sampling was applied to allocate 370 total sample sizes among the three senatorial zones that represented the three states selected for the study. This was done through the consideration of the number of health workers who take care of malnutrition cases in the chosen hospitals in the states. This yielded 162 respondents from Kano State, 96 from Katsina State, and 112 from Sokoto State totalling 370 respondents.

Systematic sampling technique was adopted at the fifth stage. This was accomplished by the utilization of the register or list of staff from the selected hospitals. In the process of the sampling process, health workers who are engaged in the management of malnutrition among preschool children were sampled. This was achieved through the selection of every fifth person listed. However, in case where the fifth person listed is unavailable or not engaged in the management of malnutrition, then the next available staff involved in the management of malnutrion would be selected.

4 Data Collection Techniques

The data was gathered through questionnaires administered by interviewers who distributed questionnaires to health workers within general hospitals within the selected states. Questionnaire was designed based on a 4-point Likert scale (Strongly Agree, Agree, Disagree, and Strongly Disagree). This was done to gather the data on perceived factors influencing treatment outcomes of malnutrition among preschool children. The development of the instrument was performed through expert consultation on paediatric nutrition and translated into Hausa language to allow understanding of questionnaire content. Pilot test was conducted prior to the actual data gathering to identify any problems or concerns through the

use of health workers not included in the sample group. Cronbach's alpha was employed to measure the reliability of the tool; the result obtained was 0.75, showing acceptable internal consistency for the instrument. The questionnaires, totalling 370 were handed out to the respondents. However, 352 were retrieved; this gave a response rate of 95.1 per cent. The other 18 questionnaires were excluded from the analysis because they were either filled out incorrectly or could not be retrieved due to the respondents' absence.

5 Ethical Consideration and Consent

In this process, approval for ethical consideration was given by the health research ethics committee (HREC) in each of the general hospital chosen for the study. The approval numbers for each of the selected general hospital in each of the senatorial district are shown in Table 1.

Table 1: Hospitals Selected from the three States.

Name of General Hospitals	**Approval Number**
Kano Central Senatorial Districts	**Approval Number**
Sir Muhammed Sunusi Hospital	HREC/MSH/2024/010
Dawakin Kudu General Hospital	HREC/DKGH/2024/001
General Hospital Gezawa	HREC/GHG/2024/003
Minjibir General Hospital	HREC/MGH/2024/009
Kura General Hospital	HREC/KGH/2024/006
Muhammad Muritala Hospital	HREC/MMH/2024/012
Katsina North Senatorial Districts	**Approval Number**
Baure Primary Health Care	HREC/BPHC/2024/003
Daura General Hospital	HREC/DGH/2024/015
Ingawa General Hospital	HREC/IGH/2024/002
Kankiya General Hospital	HREC/KGH/2024/005
Mani General Hospital	HREC/MGH/2024/004
Sandamu Primary Health Care	HREC/SPHC/2024/001
Sokoto South Senatorial Districts	**Approval Number**
Dange Shuni General Hospital	HREC/DSGH/2024/001
Kebbe General Hospital	HREC/KGH/2024/001
Shagari General Hospital	HREC/SGH/2024/013
Tambuwal General Hospital	HREC/TGH/2024/009
Tureta General Hospital	HREC/TGH/2024/004
Dongon-Daji General Hospital	HREC/DGH/2024/002

Source: Fieldwork, 2024.

Furthermore, the consent of the participants who are involved in this study was obtained before the data collection. During the entire study, privacy and confidentiality of the data collected were kept by the researcher.

2.6 Data Analysis

The data analysis for the present study was done through use of descriptive statistics such as mean, standard deviation, frequency, and percentage. It was done with the aid of Statistical Package for Social Science (SPSS) software version 23.0. This study employed the use of 4-point likert scale in which the first part of the questionnaire that deals with the socio-demographic characteristics of the respondents were analysed through the use of frequency and percentage, while the second part that is concerned with health workers' perceived factors influencing poor malnutrition treatment outcomes among preschool children was analyzed by the use of mean, and standard deviation via a theoretical mid-point of 2.5 Thus, the mean of 2.5 and above were regarded as having positive or accepting attitudes whereas mean of below 2.5 were viewed as negative or rejecting attitudes. The cut-off point used for

the present study is in line with other health studies like Hadera *et al*., (2019) and Al Eker and Imam, (2025).

Results and Discussion

Socio-Demographic Characteristics of the Respondents

As shown in Table 2, 38.6% of the respondents were males while 62.4% were females. This shows that the majority of the respondents in this study were females. This large proportion of female respondents in this study agrees with the worldwide trend where the female population is usually higher among health professionals worldwide. This finding is consistent with the findings of Ugwuegbulam *et al*. (2020) who reported that in Nigeria, the general health worker's population comprises of a high percentage of female workers. Similarly, from the report by USAID (2021) on human resource for health in regional training centers, more females have registered in health related courses compared to their male counterparts. Also across the globe, the finding of this present study agrees with those reported by WHO (2019) where almost 70% of the health professional workforce comprised of women. However, this study's finding is contrarily to the view of Ruwan-Doruwa (2025) who noted that in the North West geopolitical region, there are more male practitioners who account for more than 53%. This has been linked to social, cultural and institutional needs for same-gender healthcare in regional training centers.

Furthermore Table 2 indicates the age distribution of the respondents. The majority (63.6%) of the respondents fall in the age range of 41–50 years. This followed by the category of respondents aged between 31–40 years (21.9%), 20–30 years (9.1%), and finally those aged from 51 years or more (5.4%). This finding suggests that the majority of the respondents belong to the 41–50 age groups. From this finding, it can be inferred that the healthcare professionals who majorly attend to the malnourished children belong to the 41–50 age category.

Considering the experience of the health workers who handle malnutrition in pre-school aged children in the study setting as indicated in Table 1, there were 4.0% of the respondents with experience of 1 to 5 years, 7.1% with experience of 6 to 10 years, 0.9% had experience of 11 to 15 years, and 26.7% had 16 to 20 years of experience. It further revealed in Table 2 that the majority of the participants (55.1%) had an experience of 21 to 30 years, while 6.3% had 31 to 35 years. The findings obtained from this study which showed that the respondents are mainly health workers who are experience corroborates with the findings of similar researches conducted by Ojo and Akanni (2021). These researchers noted that there is usually a high prevalence of senior and long-term nursing cadre in pediatric settings and specialized nutrition departments in Nigerian public hospitals. The predominance of experienced health workers among the respondents is an indication of significant exposure to challenges within healthcare institutions. This finding is consistent with the views held by Mogre *et al*. (2017). According to these researchers, the more years nursing practitioners spend practicing, the better their clinical skills and ability to manage child malnutrition through the application of stringent guidelines.

Table 2: Socio-Demographic Characteristics of the Respondents (n = 352)

Variables	Category	Frequency (n)	Percentage (%)
Gender	Male	136	38.6
	Female	216	61.4
	Total	**352**	**100.0**
Age (years)	20–30	32	9.1
	31–40	77	21.9
	41–50	224	63.6
	≥51	19	5.4
	Total	**352**	**100.0**
Years of Working Experience	1–5	14	4.0
	6–10	25	7.1
	11–15	3	0.9
	16–20	94	26.7
	21–30	194	55.1
	31–35	22	6.2
	Total	**352**	**100.0**
Educational Qualification	Postgraduate	33	9.4
	Degree	140	39.7
	Diploma	134	38.1
	Certificate	37	10.5
	Others	8	2.2
	Total	**352**	**100.0**
Cadre	Medical officer	18	5.1
	Paediatricians	24	6.8
	Nurses	41	11.6
	Pharmacists	23	6.5
	Dieticians	29	8.2
	Health educators	37	10.5
	Health assistants	74	21.0
	Auxiliary nurses	45	12.9
	Community health workers	36	10.2
	Junior community health workers	25	7.1
	Total	**352**	**100**

Source: Field Work, 2024

On educational qualifications of the respondents (Table 2), 9.4% had attained the level of postgraduate degrees qualification, 39.7.0% of the respondents had attained the bachelor's degree qualification, 38.1% of the respondents held diplomas qualification, and 10.5% had attained a certificate qualification. The rest of the 2.3% of the respondents had attained other qualifications like the trade test certificate and the Senior School Certificate Examination (SSCE). This mean that the majority of the respondents were either health worker's with certified or degree qualifications. The respondents' qualification status also implies that they possess the necessary knowledge regarding childhood malnutrition. The findings are similar to those reported by Mogree *et al*. (2017) who reported that respondents with significant higher knowledge posses the necessary knowledge require for malnutrition treatment in preschool children. The results from this study support the work of Oparachi (2024), who reported on a study done on female nurses in two Nigerian tertiary hospitals in 2023. The

result showed that 15.9% were diploma holders, 62.0% of the respondents were bachelor's degree holders, 13.0% of the respondents were postgraduate holders, and 9.1% of the respondents were O level certificate holders. In line with this, results from the study are similar to that of Ope-Babadele *et al*. (2025) in which 22.7% were diploma holders, 63.9% were bachelor's degree holders, and 11.3% were postgraduate degree holders.

As further illustrated in Table 2, it shows that he larger proportion of health workers involved in malnutrition treatment in the area were drawn from the lower cadre and auxiliary level. The health assistants form the largest single group of respondents at 21.0%. This was followed by auxiliary nurses forming 12.9% of the respondents. The health educators were 10.5% of the respondents, community health workers were 10.2%, and junior community health workers were 7.1%. These cadres of health workers made up 61.6% of the total health workers that are involved in malnutrition treatment in the three senatorial districts that formed the three states used in the research study. Again, Table 2 illustrates that the mid-level clinicians form the nurses at 11.6% of the respondents, dieticians 8.2% of the respondents, and pharmacists at 6.5% of the respondents. They make up 26.4% of the respondents involved in the study. Lastly, Table 2 indicates that the senior clinicians (Medical Officers and Paediatricians) formed only 11.9%.

The domination of lower cadres and auxiliary health professionals in the treatment of malnutrition recorded in this study (61.6%) conforms to the task-shifting and task-sharing approaches as described in Nigerian health policies and recent literature. The implication of this is that the domination of lower cadres mostly by auxiliary health professionals could consequently lead to an erroneous identification of malnutrition since their ability to identify cases of malnutrition among the children is not very high. According to Yakubu *et al*., (2025), inadequate training and the absence of standardized capacity development were the major barriers to the effective management of cases of SAM in northern Ghana. However, the National Guideline for Inpatient Management of Severe Acute Malnutrition (SAM) in Nigeria provides roles for Community Health Officers, Community Health Extension Workers, and other allied health professionals besides doctors and nurses to treat malnutrition cases (Federal Ministry of Health, 2016). This study equally follow suit the study carried out by Adesoro *et al*. (2021) in Niger State showed that community health care providers with no knowledge whatsoever on the clinical side were able to treat uncomplicated SAM using simple instructions and guidance, and the cure rates achieved were the same as those in the clinics. Secondly, task-shifting the SAM management to community health volunteers was found to increase the rates of recovery and decrease the number of defaults in comparison with the prevailing facility-based management approach (Pierre Donfouet *et al*., 2024) in northern Kenya. All this information is consistent with the findings of this present study as regards to the pyramid-shaped staffing model in the present study.

Healthcare Workers' Perception about Factors that Contributes to Poor Treatment Outcomes for Malnutrition among Pre-school Children in the Area

1 Child Neglect in the Household Contributes to Poor Outcomes in Treating Malnutrition in Preschool Children.

As seen in Table 3 below, it is evident that the first research question focused on the assumption that child neglect within the family setting leads to the poor results in malnutrition management for pre-school children. The mean score from the first question is 3.29 (SD = 0.999). This score is above the cut-off point of 2.50 and therefore considered an acceptable item. The results of this research show that healthcare professionals view parents'/caregivers' negligence as the most important factor contributing to treatment failure. This could possibly mean that healthcare professionals feel that regardless of good medical care, success is not achieved if the caregivers are not following the feeding procedures, follow-ups check, and instructions given to them. This finding supports existing literature

which indicated that caregiver negligence as one of the major upstream factors that hinder malnutrition therapy in preschoolers. This was in agreement with Burford *et al*., (2019) and Black and Drennen (2014) in their assertion that neglect through missing of treatments, appointments, and neglect in adhering to the nutritional procedures greatly reduces the chances of healing. Additionally, successful treatment also requires adherence by caregivers to the feeding instructions, proper nutrition for the child and early recognition of the problem. It therefore follows that if the caregivers are unable to do this, then the child experiences chronic under-nutrition, stunted growth and poor development.

2 Incorrect Diagnosis in First Aid Results in Poor Malnutrition Treatment Outcomes in Preschool Children.

As shown in Table 3, the second item was analyzed for the effect of wrong diagnosis during first aid care leading to ineffective treatment of malnutrition in preschoolers. The response to the above-mentioned item had a mean score of 3.21 (SD = 1.043), above the decision point of 2.50 and hence is accepted. The findings of this study revealed that health care professionals in the area have recognized that medical mistakes made at the initial encounter significantly impact the effectiveness of treatment. This could possibly result in delayed or inaccurate interventions, which puts children on a course towards deterioration of their health before being taken to specialized treatment centers. The importance of accurate and timely diagnosis in the process of treatment cannot be underestimated. It is done to ensure that children receive the right interventions in time. The importance of avoiding misdiagnosis of early diagnosis is supported by Muzigaba *et al*. (2018), who stated that failure to diagnose malnutrition leads to late treatment, poor health status, and increased risks of treatment failure. Hence, increasing diagnostic accuracy at the first point of contact with the healthcare professionals becomes imperative for improving the recovery rate of such children. This will help reduced their mortality rate due to illnesses associated with malnutrition. It is important to emphasize the significance of better education of healthcare providers in this context.

3 Poor Hospital Capacity Limits Effective Treatment for Malnutrition in Preschool Children.

The third problem area related to low hospital capacity limits the effectiveness of treating malnutrition among preschool children was also identified through Table 3. In this regard, the problem area received the mean score of 3.15 (SD = 1.058), which is higher than the decision criterion of 2.50 and thus should be regarded as acceptable. This observation may imply that there are not enough inpatient beds, therapeutic feeding centers, or referral mechanisms for the health care system to handle the patient flows. The reason for that is that the lack of capacity limits access to necessary treatments, increases the time of stay at hospitals, and deteriorates the recovery results. Therefore, the solution of the problem is crucial for improving accessibility, efficiency, and performance of treatment programs for malnutrition among preschool children. In turn, Phelan *et al*. (2023) and Alhidary *et al*. (2025) noted that these factors could be solved by increasing bed capacity, building up supply chain capacities concerning provision of important medical and nutritional supplies, as well as providing more personnel to treat the patients.

Table 3: Health care workers' perception about factors that contributes to poor treatment outcomes for malnutrition among pre-school children

S/N	Items	N	Min.	Max.	Mean	S.D	Decision
1	Child Neglect in the Household Contributes to Poor Outcomes in Treating Malnutrition in Preschool Children.	352	1	4	3.29	0.999	Accepted
2	Incorrect Diagnosis in First Aid Results in Poor Malnutrition Treatment Outcomes in Preschool Children.	352	1	4	3.21	1.043	Accepted
3	Poor Hospital Capacity Limits Effective Treatment for Malnutrition in Preschool Children.	352	1	4	3.15	1.058	Accepted
4	Occasional Scarcity of Therapeutic Inputs Adversely Affects Malnutrition Treatment Outcomes in Preschool Children.	352	1	4	1.91	1.151	Rejected
5	Inadequacy of Basic Input to Prepare Feed Contributes to Poor Malnutrition Treatment Outcomes in Preschool Children.	352	1	4	3.12	1.073	Accepted
6	Difference in Human Input Required for Maintaining Good Clinical Practice in Malnutrition Treatment in Preschool Children.	352	1	4	2.97	0.960	Accepted
7	Poor Human Input to Handle the Complex Issues of Malnutrition Treatment Outcomes in Preschool Children.	352	1	4	2.95	1.068	Accepted
8	Poor Organization and Systems Contribute to Poor Malnutrition Treatment Outcomes in Preschool Children.	352	1	4	1.79	1.006	Rejected
9	Poor After-Hours Staffing Contributes to Poor Malnutrition Treatment Outcomes in Preschool Children.	352	1	4	1.58	0.683	Rejected
10	The Practice of Using Traditional Medicine Contributes to Poor Malnutrition Treatment Outcomes in Preschool Children.	352	1	4	2.51	0.898	Accepted

Source: Fieldwork, 2024.

4 Occasional Scarcity of Therapeutic Inputs Adversely Affects Malnutrition Treatment Outcomes in Preschool Children.

As seen from Table 3, the health professionals did not point to irregular shortages of therapeutic commodities as a problem associated with failed malnutrition treatment. The result revealed a mean score of 1.91 and a standard deviation of 1.151. The finding of this study stands opposite to numerous scientific studies about the issue of shortage or scarcity of therapeutic inputs that often negatively affect malnutrition treatment outcomes among preschool children. However, earlier studies such as Muzigaba et al. (2018); Ohanebo (2021),

Ahmed *et al*. (2023), Camacho *et al*. (2024) and Turyashemererwa *et al*. (2025) revealed that the disruption of the supply chain, shortage of stocks, and absence of resources affect the efficacy of treatment negatively. This may lead to increased death rates and patient drop out from the program due to inadequate or absence of some vital equipment. The findings of the current study differ from those in the past due to the fact that it was done in an environment where there are relative stable therapeutic commodities. This could have given the health professionals freedom to focus on problems beyond those of shortage of resources. However, previous studies could have been done in environments where there have been problems of shortage of resources.

5 Inadequacy of Basic Input to Prepare Feed Contributes to Poor Malnutrition Treatment Outcomes in Preschool Children.

As demonstrated in Table 3, there is a clear consensus among the respondents that limited availability of feed preparation materials influences malnutrition management in preschool children. It demonstrates that the mean score for the particular question is 3.12 with the standard deviation of 1.073. The obtained results exceed the critical value of 2.50; therefore, they can be considered acceptable. In other words, the findings obtained in the course of the research prove the view held by the local health care providers that lack of proper materials (water, energy source, utensils, and storage place) acts as an important obstacle in the development of malnutrition in preschool children in the area. The result of the current study is consistent with previous studies highlighting the importance of having proper feed preparation resources to facilitate therapeutic feeding programs for preschool-age children. According to Schoonees *et al*., (2019), adequate ingredients, tools, and sanitation are necessary to facilitate malnutrition management. Ilboudo *et al*. (2024) further show how disruption of the therapeutic food supply and preparation affects program effectiveness and leads to low success rates and higher risks of complications. These previous studies prove that resources are a key factor in managing malnutrition effectively. This is because the continuous availability of preparation resources is an indispensable component of success and child safety.

6 Difference in Human Input Required for Maintaining Good Clinical Practice in Malnutrition Treatment in Preschool Children.

As illustrated in Table 3, there is obvious consensus among the participants on the influence of the differences in human effort in maintenance of good practices in treatment of malnutrition in preschool children. From the results in the Table 3, it clearly shows that the mean score of the particular question is 2.97 while the standard deviation is 0.960. The result obtained is above the critical value of 2.50, therefore, it is accepted. The findings from this study show that differences or variations in the ability of trained health practitioners influence the treatment of malnutrition in preschool children in the region. This finding from the study further shows that the presence and maintenance of trained practitioners are essential in achieving good results for treatment of malnutrition in preschool children. The finding from this study agrees with the study conducted by Abate *et al*. (2020). The study found out that the outcomes of malnutrition treatment like mortality rate and recovery rates are significantly influenced by workforce factors like training of healthcare practitioners.

7 Poor Human Input to Handle the Complex Issues of Malnutrition Treatment Outcomes in Preschool Children.

Table 3 clearly indicates the existence of clear agreement amongst the respondents concerning the effects of poor manpower in dealing with the complex situation associated with malnutrition treatment in preschool children. As indicated in Table 1 above, it is clearly seen that the mean score for the question was 2.95, while the standard deviation was 1.068. This obtained result was above the critical value of 2.50, hence it is accepted. This finding could be as a result of over 66. The findings of this research show that poor manpower affects

the malnutrition treatment outcomes of preschool children in the study area. Further, the findings of this research have also shown that the reduction in manpower negatively impacts the malnutrition handling and treatment of preschool children in the study area. This may bring about some serious health challenges to the preschool children who are affected by malnutrition in the study area. There is need for serious intervention against poor manpower which may exacerbate malnutrition treatment outcomes in preschool children. This could be achieved through the improvement of manpower development and capacity building through training, recruitment, and retention of experienced staffs in malnutrition handling and management (Elhady *et al*., 2023). The results of this study coincide with those of Carboo *et al.* (2020) on the effect of differences in policy administration caused by the lack of professional health care providers, on the efficiency of treating malnutrition in most African countries.

8 Poor Organization and Systems Contribute to Poor Malnutrition Treatment Outcomes in Preschool Children.

The eight questions as shown in Table 3, assessed the extent to which organizational and systemic factors were a contributor to poor outcomes in the treatment of malnutrition in preschool-aged children. The variable had a mean score of 1.79 and a standard deviation of 1.006. As such, based on the study criterion that set the decision point at 2.50, the variable is dropped from the analysis since its mean score is less than 2.50. This indicates that organizational and systemic issues were not a significant contributor to poor outcomes in the treatment of malnutrition in preschool-aged children. This contrasts earlier findings of Elhady *et al*. (2023) and Yakubu *et al*. (2025), who found that systemic barriers including the lack of access to health care services, ineffective referral process, lack of staff training, poor coordination and delivery of services among others significantly hindered the effective management of malnutrition and resulted in poor treatment outcomes for the children. The difference in findings may be due to variations in the local service environment and the methodology used in the current study.

9 Poor After-Hours Staffing Contributes to Poor Malnutrition Treatment Outcomes in Preschool Children.

As seen in Table 3, Item 9 focused on the effect of under-staffing during after work hours on malnutrition treatment outcome in preschoolers. The variable generated a mean score of 1.58 (SD = 0.683), a figure which is less than the predetermined cut-off value of 2.50 and therefore the variable is not included in further analysis. This was the least prioritized issue; this shows that the healthcare providers did not see gaps in after-hour coverage as an important barrier. There could be a number of reasons for this, which could include nutritional deficiencies in this context could be handled when it was day time; the system of on-call was working properly; and the severity of the case did not require urgent overnight attention. This means that under-staffing during after work hours were not considered by the respondents to be a significant challenge when it come to malnutrition treatment outcome in the area. This is contrary to the results found by Yimam *et al*. (2025) where poor adherence to the guidelines of treating severe acute malnutrition cases, including under-staffing, led to challenges.

10 The Practice of Using Traditional Medicine Contributes to Poor Malnutrition Treatment Outcomes in Preschool Children.

As seen in Table 3, the issue in Item 10 was how the practice of using traditional medicine impacts the poor results of malnutrition treatments among pre-school aged children. The value of the variable was 2.51 (SD = 0.898). This score is higher than the cut-off value, which is 2.50, and thus the variable should be used in the analysis. It indicates that the healthcare professionals agree that the practice of using traditional medicine is a hindrance to the biomedicine-based treatment process. In addition to this, the results of the current study

indicate that the high prevalence of the use of traditional medicine can be considered one of the important factors responsible for the poor outcomes of the treatment of malnutrition among preschool children. Indeed, the results of the study conducted by Degefa *et al*. (2022) show that people often resort to the use of traditional healing because of their fear of being stigmatized or prosecuted in view of the marks they will get from visiting the healers. Also, according to Muzigaba *et al*. (2018), children admitted to hospitals have already suffered from the negative impact of traditional healing and suffer from the adverse effects such as intoxication caused by herbs.

Conclusion and Recommendation

The study concluded that poor malnutrition treatment outcomes among pre-school children in the study area are caused by several factors or enablers. The main factors identified in influencing malnutrition in the study areas (Kano, Katsina, and Sokoto) include neglecting of children by the households, wrong diagnosis at the first stages of the treatment, dependence on alternative medication, low bed capacity in the hospitals, inadequate sources of income to prepare food for treatment, and lack of night duty staff. Inadequate availability of trained medical personnel and shortage of treatment resources were not perceived as organizational inefficiency that affected the treatment result of malnutrition. As a result of the finding of this study, the study recommended that educational program should be initiated in the study states for the promotion of awareness among the caregivers on ways to prevent malnutrition in preschool children, awareness should also be enhanced in the study states about the significance of adherence to treatment of malnutrition in preschool children, there should be regular awareness by the government of these states, individual, and non-governmental organisation on the negative effects of over reliance on traditional medication for the treatment of malnutrition in preschool children, also more malnutrition training and workshops should be attended by the health workers to avoid wrong diagnosis of malnutrition at the stage.

Limitation of the Study

Though the study produced remarkable findings, there are several limitations that need to be recognized.

i. The limitations of generalization emanate from the geographical coverage of the study. For example, the study focused on three states (Kano, Katsina, and Sokoto) in the North-West geopolitical zone of Nigeria, thus cover only three states in the seven states of the North-West geopolitical zone. Therefore, the findings may not be generalized to other states within the North-West, or even other geopolitical zones of Nigeria because they have different health systems, cultural practices, and socio-economic setting.

ii. The second limitation of the study is related to the cross-sectional design of the study which does not allow for the determination of causal relationships between the factors under investigation and the outcomes of the management of malnutrition. Though the study offers valuable information about the perspectives of health workers and constraints in the health system at a particular period, however it does not enable one to establish the temporal sequence of events or cause and effect dynamics.

iii. Since the study made use of general hospitals, and two primary health care, the views of health workers from primary healthcare centers were almost left out. These health workers may be the first point of contact for caregivers of malnourished children. Hence, their contributions in relation to the management of malnutrition might have been overlooked.

iv. The application of the Likert scale questionnaire although reliable may not have allowed for detailed responses since respondents were constrained to a set of predetermined choices. Therefore, some of the health systems factors influencing treatment outcomes of malnutrition could have been overlooked using this technique.

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