Household and Health-System Factors Contributing to Poor Treatment Outcomes of Malnutrition among Preschool Children: Perceptions of Nurses in General Hospitals of Northwest Nigeria

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Abstract

Background: Facility-based treatment of severe malnutrition can achieve low case-fatality when World Health Organization guidelines are followed, yet outcomes in many African hospitals remain poor. In Northwest Nigeria, where the burden of child malnutrition is the highest in the country, little is known about how frontline nurses explain suboptimal treatment results.

Objective: To describe nurses' perceptions of the proximal (facility-level) and upstream (household and system-level) factors that contribute to poor malnutrition treatment outcomes among preschool children.

Methods: A cross-sectional survey was conducted among nurses in nine state-owned general hospitals selected by multistage sampling across three Northwest states. A 10-item, 4-point Likert scale adapted from health-worker reports in comparable settings was administered to 370 nurses; 352 valid responses (95.1%) were analysed. Item means were compared with a criterion of 2.50, and the composite score was tested against the criterion with a one-sample *t* test.

Results: The composite score exceeded the criterion (M = 2.62, 95% CI [2.52, 2.71], $t(351)$ = 2.47, p = .014). Nurses most strongly endorsed household child neglect (M = 3.29), misdiagnosis at the first point of care (M = 3.21), inadequate bed capacity (M = 3.15), lack of basic resources for preparing therapeutic feeds (M = 3.12), turnover of skilled personnel (M = 2.97) and limited capacity to manage complex cases (M = 2.95). They did not endorse intermittent shortages of therapeutic supplies (M = 1.91), organisation-wide system challenges (M = 1.79), inadequate after-hours staffing (M = 1.58) or traditional medicine (M = 2.21) as contributors.

Conclusion: Nurses located the main threats to treatment success at the household interface and at the facility's front door, in diagnosis, beds, feed preparation and skills. A nurse-led management approach that strengthens triage, ward capacity, feed preparation, staff retention and caregiver engagement is likely to improve outcomes.

Keywords: severe acute malnutrition; treatment outcomes; health systems; nursing; preschool children; health workers' perceptions; Nigeria

Introduction

Severe acute malnutrition (SAM) is a life-threatening condition and significantly increases the risk of death from common childhood infections. Wasting and severe wasting contribute significantly to under-five undernutrition-related mortality in low and middle-income countries (LMICs) (Black et al., 2013), and the prevalence of wasted children continues to be high despite improvements in other nutrition outcomes (United Nations Children's Fund [UNICEF] et al., 2023; Victora et al., 2021). At the national level, Nigeria's survey data indicate that 7% of children under five are wasted and 37% are stunted, with the highest prevalence of chronic undernutrition in the Northwest zone (National Population Commission [NPC] & ICF, 2019).

Treatment for SAM is well established. According to the World Health Organization (WHO), children with SAM and medical problems or poor appetite should be stabilised in hospital following a structured protocol that includes treatment for hypoglycaemia, hypothermia, dehydration, infection, micronutrient deficiencies and cautious refeeding with therapeutic milks; for children without medical problems or poor appetite, SAM is treated as an outpatient condition with ready-to-use therapeutic food (WHO, 2013). Since the mid-2000s, community-based models have revolutionized coverage and outcomes (Collins et al., 2006) and systematic reviews have demonstrated that recovery is high when protocols are followed (Lenters et al., 2013). The community-based management of acute malnutrition (CMAM) programme has attained cure rates that align with international standards in some states in Nigeria (Chitekwe et al., 2018) and the inpatient therapeutic feeding centres in Katsina State have attained minimum standards for recovery, with children with oedematous malnutrition having poorer survival (Joseph et al., 2023).

However, good protocols do not equal good results. Twenty years ago, Schofield and Ashworth (1996) demonstrated that the case fatality rate for severe malnutrition was 20%–30% in many hospitals, and that this was due to poor case management and not due to the severity of the illness. Implementation studies in rural hospitals in South Africa then showed that the application of the WHO guidelines could make a significant contribution to reducing mortality, although this would be dependent on operational issues like leadership, staff training, supplies and organisation of care (Ashworth et al., 2004; Puoane et al., 2008). Otherwise, staff numbers, workload and the availability of feeds and equipment have been a limiting factor in the feasibility of the guidelines in rural African hospitals (Karaolis et al., 2007). An analysis of the evidence base and how it is being translated into practice in

resource-limited settings for the WHO inpatient guidelines also revealed evidence gaps (Tickell & Denno, 2016).

Things outside the hospital also influence outcomes. Studies from Ethiopia and Uganda show that mortality and delayed recovery are associated with late presentation, comorbid infections, oedema and the clinical condition at admission (Girum et al., 2017; Kabalo& Seifu, 2017; Nduhukire et al., 2020; Wagnew et al., 2019). Qualitative studies in Pakistan, Ethiopia, Kenya and India have identified distance, opportunity cost, stigma, caregivers' beliefs about the causes of illness and traditional healers as barriers to timely treatment and completion (Bliss et al., 2016; Burtscher & Burza, 2015; Puett & Guerrero, 2015). In 21 countries, the coverage of CMAM programmes has often been below international targets for a mix of household, community and service level barriers (Rogers et al., 2015). The data from Sokoto State, Nigeria, shows that a large number of children discharged from SAM treatment suffered a second episode within a few months after discharge, highlighting the importance of the household environment after treatment (Adegoke et al., 2021).

Hospital based evidence in Nigeria is in the same direction. An overall case-fatality rate of 40.1% was reported for children under five admitted with protein-energy malnutrition in a teaching hospital in Enugu, over a 10-year period, with diarrhoea and malaria being the most common co-morbidities and the majority of the children coming from lower socio-economic status (Ubesie et al., 2012). The result is from a tertiary centre in the south of the country, and it is likely that it will be tougher in secondary centres in the north where caseloads are higher and resources are lower. However, published assessments in the Northwest have been of programme indicators like cure, default, and time to recovery (Chitekwe et al., 2018; Joseph et al., 2023), and less about the understanding of the people providing care of the reasons for treatment failure.

These influences can be categorised into proximal factors, which are within the facility and directly impact the quality of care a child receives, and upstream factors, which occur in the household, community or broader health system and are likely to influence whether a child enters care and in what condition (Muzigaba et al., 2018). This distinction aligns with the UNICEF conceptual framework, which includes immediate determinants of nutritional status within underlying determinants at the household and service level, and enabling determinants at the Governance and Resources level (UNICEF, 2020), and to the WHO health-system building blocks of service delivery, workforce, medical products, information, financing and leadership (WHO, 2007). Health workers in two rural hospitals in South Africa identified

misdiagnosis, lack of skills for complicated presentations, insufficient bed space, insufficient resources and insufficient after-hours staffing at the proximal level, and household neglect, traditional medicine and organisation-wide problems at the upstream level as the causes of poor SAM outcomes (Muzigaba et al., 2018).

Nurses are the cadre most consistently at the bed-side of malnourished children in general hospitals in Nigeria. They sort and weigh children when they arrive, prepare and feed therapeutic foods and check for danger signs and counsel caregivers. What they think hinders treatment is therefore a valuable source of data for the development of a nursing management approach. However, studies that have explored nurses' perspectives on malnutrition care in West Africa have focused on knowledge of treatment processes (Mogre et al., 2017), and there is no evidence of studies exploring the perspectives of Nigerian hospital nurses on the broader determinants of treatment failure. Labour-intensive inpatient protocols may also be impacted by Nigeria's health workforce which is also reported to be poorly distributed and experiencing high attrition rates especially in the north (Adeloye et al., 2017).

This study therefore aimed to describe nurses' perceptions of the proximal and upstream factors that contribute to poor treatment outcomes of malnutrition among preschool children in general hospitals of Northwest Nigeria, and to draw on these perceptions to outline priorities for nurse-led management.

Methods

Design

The study used a cross-sectional descriptive survey design and is reported following the STROBE statement (von Elm et al., 2007). It forms one component of a larger doctoral project on the nursing management of childhood malnutrition in the zone; findings on nurses' views of parental education and diagnostic criteria, drawn from other sections of the same questionnaire, are reported in a separate article.

Setting

Northwest Nigeria comprises seven states (Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara) and is the most populous of the country's six geopolitical zones. State-owned general hospitals provide secondary care and admit children with complicated malnutrition, many of whom are referred from community outpatient programmes. Fieldwork took place in 2022.

Participants and Sampling

The target population consisted of 8,988 nurses working in state-owned general hospitals in the zone. Eligible participants were registered nurses aged at least 20 years who had been involved in caring for children admitted with malnutrition; nurses without such experience were not eligible. A sample of 370 was set using the Research Advisors table, which applies the Krejcie and Morgan (1970) formula, at 95% confidence and a 5% margin of error.

Participants were selected through a multistage procedure. Three of the zone's states were chosen by balloting. Within each chosen state, the three senatorial districts formed strata, and one general hospital was drawn at random from each district, yielding nine hospitals. The number of questionnaires for each hospital was allocated proportionally to its nursing workforce, and individual nurses were then selected from the staff register by systematic sampling, taking every fifth name after a randomly chosen starting point.

Measures

Nurses' perceptions were measured with a 10-item scale forming Part III of a structured questionnaire. Items were adapted from the proximal and upstream factors reported by health workers managing SAM in comparable settings (Muzigaba et al., 2018). Seven items addressed proximal, facility-level factors: misdiagnosis at the first point of care, lack of bed capacity, intermittent shortage of therapeutic supplies, lack of basic resources for preparing feeds, turnover of skilled personnel, limited human-resource capacity for complex presentations, and inadequate staffing after normal working hours. Three items addressed upstream factors: household child neglect, organisation and system-wide challenges, and the role of traditional medicine. Each item was rated on a 4-point scale from strongly disagree (1) to strongly agree (4). The questionnaire also recorded gender, age, years of practice and highest qualification.

Four experts in nursing, medicine and health education, together with the project supervisor, reviewed the questionnaire for face and content validity, and their suggestions were incorporated. Cronbach's alpha for the full questionnaire was .974, indicating high internal consistency, although values of this magnitude may also reflect overlap among items (Taber, 2018).

Procedure

Research assistants were briefed on the study objectives, the questionnaire and consent procedures before distributing questionnaires in the selected hospitals. Completed forms were

retrieved in person. A total of 358 of 370 questionnaires (96.8%) were returned; six were incorrectly completed and were excluded, giving an analytic sample of 352 (95.1%).

Ethics

The study received ethical approval from the research ethics committees of the relevant state Ministries of Health and Hospitals Management Boards [approval reference numbers to be inserted], and hospital managements granted permission to conduct the survey. All participants gave written informed consent, participation was voluntary, and respondents were free to withdraw at any point. Questionnaires were anonymous. The study adhered to the principles of the Declaration of Helsinki (World Medical Association, 2013).

Analysis

Analyses were performed in IBM SPSS Statistics version 23. Frequencies and percentages described the sample, and means and standard deviations summarised each item. An item mean of 2.50 or higher was interpreted as agreement that the factor contributes to poor outcomes, and a mean below 2.50 as disagreement. To summarise the two levels of influence, the mean of item means was calculated separately for proximal and upstream items. The overall composite (mean of the 10 items) was compared with the criterion value of 2.50 using a one-sample *t* test, with a 95% confidence interval. Significance was set at $p < .05$.

Results

Sample Characteristics

Women made up 61.4% of the 352 respondents. Nearly two-thirds (63.6%) were aged 41–50 years and 61.4% had practised for more than 20 years, while 26.7% had 16–20 years of experience. Almost half (48.9%) held a diploma in nursing as their highest qualification, 29.0% a bachelor's degree, 9.4% a postgraduate degree and 12.8% a certificate or other qualification (Table 1).

Table 1: Profile of Participating Nurses (N = 352)

Variable	Category	n (%)
Gender	Female / Male	216 (61.4) / 136 (38.6)
Age (years)	≤ 40	109 (31.0)
	41–50	224 (63.6)
	≥ 51	19 (5.4)
Years of practice	≤ 15	42 (11.9)
	16–20	94 (26.7)

Variable	Category	n (%)
	> 20	216 (61.4)
Highest qualification	Postgraduate or bachelor's degree	135 (38.4)
	Diploma	172 (48.9)
	Certificate or other	45 (12.8)

Note. Categories have been collapsed from the original questionnaire response options.

Perceived Contributors to Poor Treatment Outcomes

Nurses agreed that six of the 10 factors contribute to poor treatment outcomes (Table 2). Household child neglect received the highest rating (M = 3.29, SD = 1.00), followed by misdiagnosis at the first point of care (M = 3.21, SD = 1.04), lack of hospital bed capacity (M = 3.15, SD = 1.06) and lack of basic resources for preparing therapeutic feeds (M = 3.12, SD = 1.07). Turnover of skilled personnel (M = 2.97) and limited capacity to manage complex presentations with a high risk of death (M = 2.95) were also endorsed.

Four factors were not endorsed. Nurses disagreed that inadequate staffing after normal working hours (M = 1.58, SD = 0.68), organisation and system-wide challenges (M = 1.79, SD = 1.01), intermittent shortages of therapeutic supplies (M = 1.91, SD = 1.15) and the use of traditional medicine (M = 2.21, SD = 0.90) contributed to poor outcomes. Standard deviations above 1.0 for several items indicate considerable variation in views across respondents.

Table 2: Nurses' Perceptions of Factors Contributing to Poor Malnutrition Treatment Outcomes (N = 352)

Factor	Level	M	SD	Decision
Household child neglect	Upstream	3.29	1.00	Accepted
Misdiagnosis at the first point of care	Proximal	3.21	1.04	Accepted
Lack of hospital bed capacity for diagnosed cases	Proximal	3.15	1.06	Accepted
Lack of basic resources for preparing feeds	Proximal	3.12	1.07	Accepted
Turnover of skilled personnel affecting quality of care	Proximal	2.97	0.96	Accepted
Limited capacity to manage complex, high-risk presentations	Proximal	2.95	1.07	Accepted
Role of traditional medicine	Upstream	2.21	0.90	Rejected
Intermittent shortage of therapeutic supplies	Proximal	1.91	1.15	Rejected
Organisation and system-wide challenges	Upstream	1.79	1.01	Rejected
Inadequate staffing after normal working hours	Proximal	1.58	0.68	Rejected

Note. Items are ordered by mean score. Responses scored 1 (strongly disagree) to 4 (strongly agree). Accepted = mean ≥ 2.50.

Summary by Level of Influence

The overall composite exceeded the criterion, $M = 2.62$, $SD = 0.63$, 95% CI [2.52, 2.71], $t(351) = 2.47$, $p = .014$, indicating that, taken together, nurses regarded the listed factors as contributing to poor outcomes. Five of the seven proximal items were endorsed, compared with one of the three upstream items. The mean of item means was 2.70 for proximal factors and 2.43 for upstream factors (Table 3).

Table 3: Summary of Perceived Contributors by Level of Influence

Level	Items (n)	Items endorsed (n)	Mean of item means
Proximal (facility-level)	7	5	2.70
Upstream (household and system)	3	1	2.43
All factors (composite)	10	6	2.62

Note. Composite compared with criterion 2.50: t(351) = 2.47, p = .014, 95% CI [2.52, 2.71]. Level-specific values are descriptive.

Discussion

This survey of hospital nurses in Northwest Nigeria found that nurses attributed poor malnutrition treatment outcomes chiefly to household neglect and to a cluster of facility-level problems: misdiagnosis at first contact, insufficient beds, lack of resources for preparing feeds, turnover of skilled staff and limited capacity to manage complex cases. Nurses did not regard after-hours staffing, intermittent shortages of therapeutic supplies, organisation-wide challenges or traditional medicine as important contributors. The pattern both overlaps with and departs from the views of health workers in other African settings, and it has practical implications for designing a nurse-led approach to management.

Household Neglect

Household child neglect was the most strongly endorsed factor. This aligns with the experiences of South African health workers of children arriving late and in poor condition due to the lack of adequate care at home (Muzigaba et al., 2018), as well as studies which showed that children who are delivered late and in poor condition at hospital are more likely to die or to take longer to recover (Girum et al., 2017; Nduhukire et al., 2020). The nursing challenge of a child who is late and has complications which may have been prevented is far more difficult than that of a child who is caught early. Neglect is also important post-discharge: gains from treatment are often lost as the home environment is the setting for repeat SAM episodes, as observed in Sokoto.

The word neglect, however, must be understood in a particular manner. Under the UNICEF umbrella, poverty, maternal workload, food insecurity and social norms also influence inadequate care practices (UNICEF, 2020). Qualitative research indicates that care may be postponed or foregone due to distance, opportunity costs and stigma, but not for lack of interest (Bliss et al., 2016; Puett & Guerrero, 2015). Framing these barriers as neglect may put the responsibility of the caregivers for factors that are out of their control. A nurse-led response should therefore also include counselling and practical aspects, including accommodation for family members during admission, follow-up arrangements and linkage to community programmes and social protection.

Facility-Level Factors

The second most endorsed factor was misdiagnosis at the first point of care and was also a strong factor among South African health workers (Muzigaba et al., 2018). Children with SAM frequently have infections, diarrhoea or other problems that may obscure the malnutrition and, if anthropometric assessment is not routine, the chance for early and appropriate treatment is missed. Historical analyses found that a failure to identify and treat hypoglycaemia, hypothermia and infection were significant contributors to avoidable deaths (Schofield & Ashworth, 1996). Simple, but important nursing safeguards are the routine measurement of MUAC and weight for height and the assessment for oedema at every paediatric contact (WHO, 2013).

Lack of bed space and lack of basic facilities to prepare feeds were both highly endorsed. Space for caregivers and children, working kitchens, clean water, measuring tools and therapeutic milks made to specific recipes are all necessary for inpatient stabilisation. After implementation of WHO guidelines, benefits in South African hospitals were dependent on these operational supports, and were only continued if hospitals continued to implement these supports (Ashworth et al., 2004; Puoane et al., 2008). Overall in rural African hospitals, guidelines are not feasible due to lack of feed-preparation resources and equipment (Karaolis et al., 2007). These items are highlighted by the nurses, who typically prepare the feeds, indicating that resource gaps directly impact on their ability to provide protocol-based care.

Changing of skilled staff and inadequate ability to handle complex presentations were also affirmed. Skills in the management of SAM are labour intensive and need to be acquired, such as recognising danger signs, avoiding fluid overload and managing refeeding, which are lost when trained staff move on. Nigeria has a problem of health workforce shortage and

maldistribution particularly in the north, migration and poor retention (Adeloye et al., 2017). Nurses with training and refresher courses in Ghana had a greater knowledge of malnutrition management (Mogre et al., 2017). These findings highlight the importance of ongoing, in-situ training and mentoring, and not just one-off training events, to ensure that skills are ongoing and sustainable across wards despite staff turnover.

Factors Not Endorsed

It was surprising that nurses did not agree with the idea that after hours staffing negatively affects outcomes, as after hours deterioration and low staffing are common issues in inpatient SAM care (Karaolis et al., 2007; Muzigaba et al., 2018). There are a number of possible explanations. A social desirability bias may occur whereby nurses are not willing to blame poor outcomes on their own working arrangements. Or, in general hospitals sampled, the primary constraints are earlier in the care pathway – at admission and diagnosis – and staffing after hours is not seen as the limiting factor. Likewise, the absence of reports of therapeutic food supply shortages in programme sites in the Northwest may be due to the support received by the government and development partners to CMAM and in-patient programmes, which has helped to stabilise therapeutic food supplies in programme sites (Chitekwe et al., 2018; Joseph et al., 2023). It could also be a difference in the respondents' perception between therapeutic products, which can be provided via vertical programmes, and the basic materials used to prepare feeds, which are reliant on the hospital budget and which nurses did identify as lacking.

Nurses also did not see a contribution from traditional medicine. In other contexts, caregivers' traditional healers and beliefs around the cause of illness have been attributed to delayed presentation (Burtscher & Burza, 2015; Muzigaba et al., 2018). Traditional practice is common in the Northwest and a low rating may reflect the fact that hospital nurses do not often see the effects of traditional practice directly as the child's contact with them starts when the child arrives at hospital. Like household factors, nurses' perspective may cause them to underestimate influences that are occurring prior to admission. The denial of organisation-wide system issues and the acceptance of proximal resource issues indicate that nurses are feeling health-system issues as real problems in their wards rather than as abstract issues of organisation.

Comparison with Health Workers' Views Elsewhere

The present results are compared with the South African study from which the items were adapted and show that there is a common core and a special emphasis. In both settings, health workers noted that misdiagnosis, bed shortages, and gaps in resources and skills for complex cases were threats to positive outcomes while both groups identified the household as a source for late or unsupported presentation (Muzigaba et al., 2018). The difference is the elements that Nigerian nurses de-emphasised: after-hours staffing, organisational problems and traditional medicine, all of which were present in the South African narratives. These differences could be due to actual contextual variation, as in the provision of programme support for therapeutic supplies in the north of Nigeria, but it could also be due to the different methods used. Open-ended interviews provide health workers with the opportunity to elicit and expand on sensitive issues while agreement scales may elicit more defensive responses to items that implicate the working conditions or cultural practices of those who are the subject of the interview.

The relative importance of proximal versus upstream factors is still instructive, though. There were five facility-level items endorsed, compared to one of the three household and system items, and the average rating of proximal items was higher. This implies that the nurses see the hospital environment, not the system or community, as where the outcomes can be gained or lost. This is a positive perspective from an implementation perspective, as the factors within a hospital are more easily changeable by nurse managers than are those of the household and governance of the health system, and the historical evidence suggests that much mortality due to severe malnutrition is preventable with better case management (Ashworth et al., 2004; Schofield & Ashworth, 1996).

Towards a Nurse-Led Management Approach

Nurses endorsed the factors, which are directly related to actionable components of care. Table 4 outlines a set of nurse-led responses corresponding to each endorsed factor, based on the WHO health-system building blocks (WHO, 2007) and the inpatient protocol (WHO, 2013). These are clinical practice, ward organisation and caregiver engagement responses, and are all achievable by nursing leadership in general hospitals, with some needing managerial and budgetary support.

Table 4: Proposed Nurse-Led Responses to Factors Endorsed by Nurses

Endorsed factor	Nurse-led response	Health-system building block
Household child neglect	Caregiver counselling on danger signs and feeding; discharge planning with linkage to CMAM and community follow-up	Service delivery
Misdiagnosis at first contact	Routine MUAC, weight-for-height and oedema check at every paediatric triage; nurse-led screening log	Service delivery; information
Inadequate bed capacity	Dedicated stabilisation beds; early transfer of stable children to outpatient care	Service delivery; leadership
Lack of feed-preparation resources	Standardised feed-preparation corner with measuring tools, clean water and recipe charts	Medical products; financing
Turnover of skilled personnel	Ward-based mentoring, refresher training and job aids to retain skills during rotation	Health workforce
Limited capacity for complex cases	Danger-sign monitoring charts and clear escalation pathways to medical staff	Health workforce; service delivery

Note. CMAM = community-based management of acute malnutrition; MUAC = mid-upper arm circumference.

The suggested responses are appropriate given evidence that survival is heavily dependent on the quality of the treatment received in hospital and that relatively simple organisation changes can significantly reduce case-fatality (Ashworth et al., 2004; Tickell & Denno, 2016). They also cover the transition from hospital to community, which is important to prevent relapse (Adegoke et al., 2021). It would make sense to assess such an approach in implementation research, with patient outcomes like recovery, mortality, length of stay and relapse.

Implications for Nursing Practice and Policy

The results suggest that the greatest potential benefits for nurse managers in general hospitals are likely to be in the protection of the initial point of contact and the stabilisation phase. The implementation of anthropometric screening as a routine nursing activity at triage, designation of stabilisation beds for malnourished children and provision of wards with the appropriate equipment to prepare therapeutic feeds safely are relatively low cost interventions with strong supporting evidence (Tickell & Denno, 2016; WHO, 2013). Simple job aids and mentoring at the ward level can help to maintain skills when trained nurses are rotated or depart the service (Mogre et al., 2017).

The findings indicate that basic feed-preparation supplies and bed capacity were the most important gaps identified by nurses, and that state Ministries of Health and Hospitals Management Boards should consider incorporating the provision of inpatient malnutrition care into their hospital budgets, in addition to relying on vertical programme supplies. To

mitigate the experienced paediatric nurses' turnover in the north, workforce policies such as incentives for rural and northern postings would address this issue as nurses reported that it affects the quality of care (Adeloye et al., 2017). Lastly, better referral and follow-up systems between the hospitals and community programmes are required, to ensure that the household factors identified as key by the nurses can be addressed after discharge (Adegoke et al., 2021; Chitekwe et al., 2018).

Strengths and Limitations

This study utilized a multistage random sample of nurses in three states, had a high response rate, and included items based on health workers' reports from a similar context. Its limitations should be taken into account as well. The results are perceptions, not actual causes of poor outcomes, and were not correlated with patient-level data like recovery or death rates. The respondents were all hospital nurses, which means that factors outside the hospital, such as household and community factors, may be underrepresented. Items that would imply working conditions of nurses may not have been endorsed because of social desirability. Only three upstream items were found on the scale, comparisons of levels are descriptive. The criterion value of 2.50 is not an empirical value, but rather a conventional value. Lastly, only state owned general hospitals in three of the seven states were sampled, and thus this study is not generalizable to tertiary, private, and primary-care hospitals.

Conclusion

Nurses in general hospitals in Northwest Nigeria largely blame household neglect and hospital-level deficiencies in diagnosis, beds, feed preparation and skilled staffing as the main causes of poor treatment outcomes of malnutrition among preschool children. They did not see after-hours staffing, periodic shortages of therapeutic supplies, system-wide organisation or traditional medicine as significant factors. A structured, nurse-led management approach to strengthening first-contact screening, stabilisation capacity, feed-preparation resources, staff retention and caregiver engagement is a practical pathway to improved outcomes, and should be evaluated for its effectiveness in future studies.

Declarations

Ethical approval: Approved by the research ethics committees of the state Ministries of Health and Hospitals Management Boards. Written informed consent was obtained from all participants.

Conflict of interest: The authors declare no conflict of interest.

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Data availability: The data that support the findings of this study are available from the corresponding author upon reasonable request.

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