

Health-related quality of life among parents of malnourished children under five in Herat, Afghanistan: A cross-sectional study

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World Journal of Biology Pharmacy and Health Sciences, 2026, 25(03), 006-013

Publication history: Received on 14 November 2025; revised on 22 February 2026; accepted on 25 February 2026

Article DOI: <https://doi.org/10.30574/wjbphs.2026.25.3.0119>

Abstract

Background: Malnutrition in children under five remains a major public health problem in Afghanistan, driven by poverty, conflict, food insecurity, and limited health services. Although child outcomes are widely studied, the health-related quality of life (HRQoL) of caregivers has received less attention. This study evaluated HRQoL among parents of malnourished under-five children in Herat and identified socio-demographic factors associated with physical and mental health outcomes.

Methods: A cross-sectional study was conducted among 531 parents/caregivers attending nutrition and child health services in Herat. Eligible participants were adults (≥ 18 years) accompanying children diagnosed with acute malnutrition using MUAC criteria. Data were collected using a structured questionnaire and the validated Dari version of the SF-36. Domain scores were transformed to a 0–100 scale (higher scores indicate better HRQoL). Physical Component Summary (PCS) and Mental Component Summary (MCS) were examined using multiple linear regression in SPSS v27, with significance set at $p < 0.05$.

Results: Participants were predominantly female (61.0%), illiterate (87.6%), unemployed (69.5%), and from poor households (70.1%). HRQoL was generally low across SF-36 domains. Social functioning had the highest mean score (47.81; 95% CI: 46.10–49.53), followed by bodily pain (46.16; 95% CI: 44.25–48.07) and physical functioning (41.07; 95% CI: 38.07–44.08). The lowest scores were observed for role-emotional (19.77; 95% CI: 16.38–23.17), general health (23.16; 95% CI: 22.31–24.02), and role-physical (24.86; 95% CI: 21.17–28.55). Fair economic status predicted higher PCS ($\beta = 3.99$, $p = 0.031$), rural residence predicted lower PCS ($\beta = -4.98$, $p = 0.006$), and school/university education predicted higher MCS ($\beta = 7.10$, $p = 0.031$).

Conclusion: Parents of malnourished children in Herat experience substantial impairment in HRQoL, especially in emotional and general health domains. Integrating caregiver-focused psychosocial support, education, and socioeconomic assistance into nutrition programs may improve parental well-being and child recovery outcomes.

Keywords: Quality of Life; Parents; Malnourished; Children; Afghanistan

1. Introduction

Malnutrition among children under five remains one of the most pressing public health challenges globally, particularly in low-income and conflict-affected settings. Worldwide, undernutrition—including stunting, wasting, and micronutrient deficiencies—continues to affect millions of children and contributes substantially to child morbidity and

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mortality [1,2]. Children under five are especially vulnerable, as this period is critical for physical growth, brain development, and immune function [3,4]. Malnutrition not only impairs cognitive and behavioral development but also increases susceptibility to infections and long-term health complications [5,6].

In low- and middle-income countries (LMICs), structural factors such as poverty, food insecurity, poor sanitation, and limited parental education significantly contribute to child malnutrition [7,8]. Maternal nutritional status and body mass index are also strongly associated with child stunting and growth outcomes [9]. Evidence from Bangladesh further highlights that lower maternal education, poorer household wealth, and rural residence increase the likelihood of coexisting forms of malnutrition among children [10]. These findings demonstrate that child malnutrition is deeply embedded in socioeconomic and environmental contexts, placing considerable strain not only on children but also on their families.

Afghanistan faces a particularly severe burden of child malnutrition due to prolonged conflict, economic instability, and weak health systems. A study in Faryab province reported that 35% of under-five children were acutely malnourished, with strong associations to low parental education, poor income, and inadequate water and sanitation conditions [11]. Such conditions are likely similar in other provinces, including Herat, where families face ongoing humanitarian challenges.

While the physical consequences of child malnutrition are well documented, growing evidence suggests that caregivers—especially mothers—experience significant psychological distress and reduced well-being. Studies from Ethiopia found high rates of depression among caregivers of malnourished children, with factors such as unemployment, low education, poor social support, stigma, and child stunting increasing the risk [12,13]. Similarly, research in Nepal reported that a proportion of mothers of malnourished children experienced anxiety and depression, and maternal depression was linked to poorer nutritional recovery outcomes [14].

Beyond clinical depression, mothers of malnourished or stunted children often experience self-stigma, guilt, and social isolation, which negatively affect their psychological well-being and health-seeking behaviors [15]. Caregiver quality of life can also be influenced by the severity of the child's condition and the burden of care [16]. Although therapeutic and community-based nutritional programs are critical for improving child outcomes [17,18], less attention has been paid to the broader health-related quality of life (HRQoL) of parents caring for malnourished children.

Given the high prevalence of child malnutrition in Afghanistan and the documented psychological and socioeconomic burdens faced by caregivers in similar contexts, understanding HRQoL among parents of malnourished children in Herat is essential. Assessing parental HRQoL can provide insight into emotional, social, and functional challenges, inform integrated interventions, and ultimately contribute to improved outcomes for both children and families.

2. Methods

2.1. Study Design and Setting

This cross-sectional study was conducted to assess the health-related quality of life among parents of malnourished children under five years of age in Herat, Afghanistan. The study was carried out among parents attending nutrition and child health services in Herat during the study period. The main objective was to evaluate physical and mental health-related quality of life using a standardized instrument and to identify socio-demographic factors associated with quality-of-life outcomes.

2.2. Study Participants

The study population consisted of parents or primary caregivers of children aged less than five years who were diagnosed with acute malnutrition based on mid-upper arm circumference (MUAC) criteria. Eligible participants were adults aged 18 years or older who accompanied their children for nutritional assessment or treatment and were able to provide informed consent. Participation was voluntary, and confidentiality was maintained throughout the research process.

2.3. Sample Size Determination

The required sample size was calculated using Cochran's formula for single population proportion:

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

where $Z = 1.96$ for a 95% confidence level, p represented the assumed prevalence (50% was used to maximize sample size in the absence of precise local estimates), and $e = 0.05$ margin of error. After accounting for a 10% potential non-response rate, the final target sample size exceeded 500 participants, and a total of 531 parents were included in the final analysis.

2.4. Sampling Technique

A convenience sampling approach was used to recruit participants from caregivers attending nutrition services. Parents who met the eligibility criteria and were available during the data collection period were invited to participate until the required sample size was reached.

2.5. Data Collection Procedure

Data were collected using a structured questionnaire that included socio-demographic characteristics of parents and clinical information related to the children's nutritional status. For literate participants, questionnaires were self-administered, whereas trained interviewers conducted face-to-face interviews for participants with limited literacy. Standardized training was provided to data collectors to ensure consistency, and privacy was maintained during interviews.

2.6. Instrument (SF-36)

Health-related quality of life was assessed using the validated Dari version of the Short Form-36 (SF-36) questionnaire. The instrument consists of 36 items evaluating eight domains: physical functioning, role limitations due to physical problems, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems, and mental health. Scores for each domain were transformed to a 0–100 scale, with higher scores indicating better perceived health. Two summary measures—the Physical Component Summary (PCS) and Mental Component Summary (MCS)—were calculated according to the standard SF-36 scoring manual.

2.7. Inclusion and Exclusion Criteria

Participants were included if they were parents of children under five years of age diagnosed with malnutrition, were aged 18 years or older, and provided informed consent. Parents who were unable to respond reliably, had incomplete questionnaires, or declined participation were excluded from the study.

2.8. Statistical Analysis

Data were entered and analyzed using SPSS version 27 (IBM Corp., Armonk, NY, USA). Descriptive statistics (frequencies, percentages, means, and 95% confidence intervals) were used to summarize socio-demographic characteristics and SF-36 domain scores. Multiple linear regression analyses were performed to identify factors independently associated with PCS and MCS scores. Assumptions of linear regression were assessed prior to analysis. Normality of residuals was evaluated using normal probability (P-P) plots, and homoscedasticity was examined through scatterplots of standardized residuals versus predicted values. Multicollinearity was assessed using variance inflation factor (VIF) and tolerance statistics, with VIF values below 4 indicating acceptable levels. A p -value < 0.05 was considered statistically significant, and results are presented as unstandardized β coefficients with 95% confidence intervals.

2.9. Ethics approval and consent to participate

The study protocol was reviewed and approved by the Institutional Review Boards (IRBs) Herat Regional Hospital. All procedures involving human participants were conducted in accordance with the ethical standards set by the institutional and national research committees, as well as the principles outlined in the 1964 Helsinki Declaration and its later amendments. Written informed consent was obtained from all participants prior to data collection. Participation in the study was voluntary, and the confidentiality of participants' responses was ensured throughout the research process.

3. Results

The socio-demographic characteristics of the participants are presented in Table 1. A total of 531 parents of malnourished children under five years of age were included in the study. Slightly more than half of the participants

were aged ≤ 30 years (52.5%), and females constituted the majority of respondents (61.0%). Most participants were illiterate (87.6%) and unemployed, mainly housewives or retired individuals (69.5%). The majority reported poor economic status (70.1%) and lived in urban areas (71.8%). Regarding child-related characteristics, 66.1% of children had MUAC between ≥ 11.5 cm and < 12.5 cm, while 33.9% had MUAC < 11.5 cm. Most families had fewer than five members (65.0%), and the majority of children were aged 6–36 months (91.5%).

Table 1 Socio-Demographic Characteristics of Study Participants

		Count	Table N %
Age category	≤ 30	279	52.5%
	≥ 31	252	47.5%
Sex	Male	207	39.0%
	Female	324	61.0%
Educational status	Illiterate	465	87.6%
	School/University	66	12.4%
Occupational status	Unemployed (Housewife, Retired)	369	69.5%
	Employed	162	30.5%
Economic Status	Poor	372	70.1%
	Fair	159	29.9%
Residence type	Urban	381	71.8%
	Rural	150	28.2%
MUAC of Children Diagnosed with Malnutrition	MUAC ≥ 11.5 cm and < 12.5 cm	351	66.1%
	MUAC < 11.5 cm	180	33.9%
Family Member	< 5	345	65.0%
	≥ 6	186	35.0%
Children Ages	6-36 Months	486	91.5%
	37-56 Months	45	8.5%

Table 2 Mean Scores for the SF-36 Domains and the Two Summary Measures (PCS and MCS) of the Study Participants

	Mean	95.0% Lower CL for Mean	95.0% Upper CL for Mean
Physical Functioning	41.07	38.07	44.08
Role Limitations - Physical	24.86	21.17	28.55
Role Limitations - Emotional	19.77	16.38	23.17
Energy/Fatigue (Vitality)	35.79	33.99	37.59
Emotional Well-being (Mental Health)	35.66	33.81	37.51
Social Functioning	47.81	46.10	49.53
Bodily Pain	46.16	44.25	48.07
General Health	23.16	22.31	24.02
Health Change	23.73	22.22	25.24

The mean scores of the SF-36 domains varied across different health dimensions (Table 2). Among the domains, social functioning showed the highest mean score (mean = 47.81; 95% CI: 46.10–49.53), followed by bodily pain (mean =

46.16; 95% CI: 44.25–48.07) and physical functioning (mean = 41.07; 95% CI: 38.07–44.08). Moderate scores were also observed for vitality/energy (mean = 35.79; 95% CI: 33.99–37.59) and emotional well-being (mean = 35.66; 95% CI: 33.81–37.51). The lowest mean score was observed for general health (mean = 23.16; 95% CI: 22.31–24.02), followed by health change (mean = 23.73; 95% CI: 22.22–25.24). Additionally, both role limitations due to emotional problems (mean = 19.77; 95% CI: 16.38–23.17) and role limitations due to physical health (mean = 24.86; 95% CI: 21.17–28.55) reflected substantial impairment in day-to-day functioning (Table 2).

Additionally, fair economic status was significantly associated with higher PCS compared with poor economic status ($\beta = 3.99$; 95% CI: 0.36, 7.62; $p = 0.031$), while rural residence was significantly associated with lower PCS compared with urban residence ($\beta = -4.98$; 95% CI: -8.47, -1.49; $p = 0.006$). Regarding MCS, educational status was significantly associated with mental health-related quality of life, with participants who attended school/university having higher MCS scores than illiterate participants ($\beta = 7.10$; 95% CI: 0.67, 13.53; $p = 0.031$) (Table 3).

Table 3 Regression Coefficients of the Determinate Factors for Summary Measures of SF-36 Resulted from Multiple Linear Regressions

Variables (Reference group)	PCS				PCS			
	β	p-value	95% CI for β		β	p-value	95% CI for β	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
Age category (≤ 30)	-2.187	0.174	-5.354	0.980	0.640	0.731	-3.026	4.306
Sex (Male)	-3.072	0.288	-8.768	2.624	1.298	0.698	-5.296	7.892
Educational status (Illiterate)	-5.282	0.062	-10.836	0.271	7.097	0.031	0.669	13.525
Occupational status (Unemployed)	2.141	0.458	-3.548	7.831	6.012	0.073	-0.574	12.597
Economic Status (Poor)	3.987	0.031	0.360	7.615	1.332	0.532	-2.867	5.531
Resident type (Rural)	-4.979	0.006	-8.472	-1.485	3.734	0.070	-0.310	7.777
MUAC (MUAC ≥ 11.5 cm and < 12.5 cm)	1.127	0.510	-2.240	4.494	-2.277	0.250	-6.175	1.620
Family Member (< 5)	-1.223	0.475	-4.598	2.153	0.445	0.822	-3.463	4.352
Children Ages (6-36 Months)	-1.050	0.712	-6.649	4.550	-1.411	0.668	-7.893	5.071

4. Discussion

This study assessed the health-related quality of life (HRQoL) among parents of malnourished children under five in Herat, Afghanistan, using the SF-36 instrument. Findings demonstrated substantial impairment in multiple HRQoL domains, particularly general health, role limitations due to emotional and physical health, vitality, and emotional well-being, while social functioning was comparatively higher. These results shed light on the multidimensional toll caregiving for malnourished children exerts on parents, encompassing physical, psychological, and social dimensions of well-being.

4.1. Parental Health-Related Quality of Life and Malnutrition Context

Parental well-being is increasingly recognized as a critical determinant of both child recovery and family stability. Evidence from Sri Lanka demonstrated that caregivers of malnourished children, especially those with feeding difficulties such as cerebral palsy, exhibited significantly reduced QoL scores, particularly when education and social support were limited [16]. Similarly, in Ethiopia, caregivers of malnourished children had a high prevalence of depression, strongly associated with low socioeconomic status, unemployment, poor social support, and lack of education—factors also significant in the present study [12].

The low mean scores in vitality and emotional well-being observed in this study align with research showing that psychological distress, fatigue, and hopelessness are prevalent among caregivers of malnourished children. A study from Botswana found that caregivers of malnourished children were four times more likely to experience depression than those caring for well-nourished children [19]. This burden likely explains the reduced vitality scores observed in our sample, as chronic emotional strain affects both mental and physical energy levels.

4.2. Socioeconomic and Environmental Influences

The current study's findings that poor economic status and rural residence predicted lower physical component scores mirror the findings from several regions. A cross-sectional study in South Sudan reported that caregivers faced barriers such as poverty, transportation difficulties, and family attitudes, which limited their access to child nutrition programs [20]. Moreover, low awareness and cultural misconceptions about malnutrition further exacerbated caregiver stress, leading to poorer HRQoL.

Similarly, a qualitative study in rural India revealed that many caregivers did not perceive malnutrition as a disease, resulting in delayed healthcare seeking and reinforcing emotional and social burdens [21]. In our study, parents in rural areas may face similar barriers, including limited access to nutrition services and psychological support, contributing to lower PCS and MCS scores.

4.3. Psychological and Social Dimensions

Low mental health and role-emotional domain scores highlight the emotional strain of caregiving. A literature review from Indonesia showed that mothers of malnourished or stunted children often experience self-stigma, guilt, and social shame, which amplify psychological distress and reduce their willingness to seek help [15]. This social stigma may explain the low HRQoL observed in the emotional well-being and health change domains.

Notably, education was positively associated with better mental component scores (MCS) in this study. This association aligns with findings from Uganda, where caregivers' understanding of malnutrition directly influenced their capacity to manage treatment and maintain emotional resilience [22]. Educated parents are better equipped to interpret medical advice, access services, and maintain self-efficacy, all key contributors to mental well-being.

4.4. Gender, Culture, and Caregiving

While no significant differences in HRQoL were observed by gender in this study, existing literature underscores that mothers disproportionately bear the emotional and physical caregiving load. In Ethiopia, female caregivers reported higher depression rates than males due to social expectations and domestic responsibilities [12]. This may also hold true in Afghanistan, where gendered caregiving norms and limited social mobility exacerbate women's stress levels.

4.5. Implications for Policy and Practice

The evidence strongly indicates that interventions addressing child malnutrition must include caregiver well-being as a core component. Inadequate social support, economic hardship, and stigma collectively undermine caregivers' health and, by extension, their capacity to provide effective care. Programs should therefore include mental health screening, peer support groups, and psychoeducation to enhance resilience among parents. Integrating community-based support and education, as seen in successful models like the CMAM programs in India and Uganda, could enhance both caregiver HRQoL and child recovery outcomes [21,22].

Abbreviations

- **CME:** Continuing medical education
- **CI:** Confidence interval
- **CMAM:** Community-based management of acute malnutrition
- **HRQoL:** Health-related quality of life
- **IRB:** Institutional Review Board
- **IRBs:** Institutional Review Boards
- **LMICs:** Low- and middle-income countries
- **MCS:** Mental Component Summary
- **MUAC:** Mid-upper arm circumference
- **N:** Number (sample size)
- **PCS:** Physical Component Summary
- **SD:** Standard deviation

- **SF-36:** 36-Item Short Form Health Survey
- **SPSS:** Statistical Package for the Social Sciences
- **VIF:** Variance inflation factor

5. Conclusion

In conclusion, the study demonstrates that parents of malnourished children in Herat experience marked reductions in HRQoL, driven by socioeconomic hardship, emotional strain, and rural disadvantage. The findings echo global evidence emphasizing that child malnutrition is not solely a biomedical issue but a family-centered psychosocial challenge. Strengthening economic, educational, and mental health support for caregivers is essential to improving both parental well-being and child health outcomes.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no competing interests.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Availability of data and materials

The datasets generated and/or analyzed during the current study are available from the corresponding author, Mohammad Naser Naseri (m.naseri89@gmail.com), upon reasonable request.

Authors' contributions

- **Shahnaz Shahir:** Conceptualization; Methodology; Formal analysis; Writing – original draft; Writing – review & editing.
- **Yesra Noori:** Conceptualization; Methodology; Formal analysis; Writing – original draft; Writing – review & editing.
- **Mohammad Naser Naseri:** Investigation; Data curation; Writing – review & editing.

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