

## **Predictors of Quality of Life Among Patients with Diabetes-Related Lower Extremity Amputation in Selected Hospitals in Lagos State, Nigeria**

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**Abstract:** *Diabetes-related lower extremity amputation remains one of the most devastating outcomes of diabetic foot disease, often leaving patients to grapple with pain, loss of mobility, emotional distress, altered family roles, and economic strain. In Nigeria, evidence on how patients actually live through this experience and how it shapes their quality of life is still limited. This study therefore assessed quality of life of patients with diabetes-related lower extremity amputation in selected hospitals in Lagos State, with attention to coping strategies and perceived social support. The study adopted a cross-sectional descriptive design. Data were obtained from 65 patients using the WHOQOL-BREF, Brief COPE Inventory, and Multidimensional Scale of Perceived Social Support. Data were analysed using descriptive statistics and multiple regression at the 0.05 level of significance. The findings showed that participants had an overall poor quality of life, with low scores across the physical ( $14.86 \pm 6.53$ ), psychological ( $11.99 \pm 5.01$ ), social relationship ( $5.63 \pm 3.39$ ), environmental ( $16.24 \pm 7.81$ ), and general health ( $4.10 \pm 0.88$ ) domains. The most commonly used coping strategies were problem-focused coping, especially active coping and planning, alongside emotion-focused coping through religion. Perceived social support was high overall ( $6.03 \pm 1.49$ ), with support from significant others rated highest. Regression analysis showed that coping strategies significantly predicted quality of life ( $R = .478$ ,  $R^2 = .228$ ,  $F = 18.171$ ,  $p < .001$ ), while perceived social support had an even stronger influence ( $R = .684$ ,  $R^2 = .468$ ,  $F = 11.983$ ,  $p < .001$ ). The study concludes that care for these patients must move beyond surgery alone. It recommends routine psychological assessment and counselling, stronger rehabilitation services, family-centred education, and social reintegration support to improve recovery and long-term wellbeing.*

**Keywords:** amputation, coping-mechanisms, diabetes, experiences, quality-of-life

## **INTRODUCTION**

The rising prevalence of diabetes mellitus (DM) and its complications, particularly diabetic foot ulcers (DFUs) leading to lower extremity amputations (LEAs), represents a significant public health challenge both globally and in Nigeria (Oguejiofor et al., 2019). The burden of diabetes and its severe outcomes not only affects individuals' health and quality of life (QoL) but also imposes substantial socio-economic costs on families, communities, and healthcare systems (Ugwu et al., 2019). Despite the well-documented clinical aspects of diabetes-related LEAs, there remains a significant gap in understanding the lived experiences and QoL of affected patients, especially within the Nigerian context.

Lower extremity amputations are life-altering events with profound physical and psychological consequences (Clegg et al., 2023). Patients often face severe mobility limitations, increased dependency, and significant psychological distress, including depression and anxiety (Rümenapf et al., 2024). Understanding these impacts is crucial for developing targeted interventions that can help mitigate these adverse outcomes (Kim et al., 2023). By exploring how LEAs affect patients' daily lives and well-being, this study aims to provide a comprehensive understanding of the challenges they face, thus informing the design of better support systems and rehabilitation programs.

Despite the growing recognition of diabetes as a global health concern, limited attention has been paid to the lived experiences and quality of life of patients in low-resource settings, particularly in Nigeria. While high-income countries have advanced healthcare systems and comprehensive diabetes management strategies, developing nations often struggle with systemic challenges, including limited resources, inadequate healthcare infrastructure, and delayed diagnosis (Moxey et al., 2011). These disparities contribute to higher rates of complications such as DFUs and LEAs (Lam et al., 2021), yet research addressing the multidimensional impacts of these complications within these contexts remains scarce.

Diabetes mellitus (DM) can be effectively managed with early intervention, proper treatment, and specialized care, preventing complications such as diabetic foot ulcers (DFUs) and lower extremity amputations (LEAs). In high-resource settings, comprehensive healthcare systems, well-established foot care services, and rehabilitation programs have significantly reduced the incidence of DFUs and LEAs, ultimately improving the quality of life (QoL) of affected patients (Clegg et al., 2023). However, in low-resource settings such as Nigeria, diabetes management is fraught with several challenges, including delayed diagnosis, poor glycemic control, and limited access to specialized foot care, leading to adverse health outcomes and significant socio-economic burdens (Ugwu et al., 2019; Iregbu et al., 2022).

Lagos State, Nigeria's commercial hub, is grappling with an increasing burden of diabetes and its complications, driven by rapid urbanization, lifestyle changes, and a growing prevalence of obesity. The International Diabetes Federation (IDF) estimates that Nigeria has over 3.6 million adults living with diabetes, with a prevalence rate of approximately 5.77%, and Lagos State accounts for a significant proportion of these cases due to its large population and urbanization trends (IDF, 2021). Healthcare institutions such as the Lagos State University Teaching

Hospital (LASUTH) Ikeja and General Hospital Lagos (GHL) Odan Lagos Island, play critical roles in managing DFUs and preventing diabetes-related amputations. Despite these institutions' efforts, a significant proportion of diabetic patients in Lagos present late with DFUs, often at advanced stages where limb salvage is difficult. Many of these patients face barriers to timely care due to financial constraints, lack of specialized diabetic foot care units, and inadequate healthcare personnel trained in DFU management (Danmusa et al., 2016; Soyoye et al., 2021). As a result, the prevalence of LEAs remains high, with DFUs accounting for over 60% of all non-traumatic amputations in tertiary hospitals across Nigeria (Ugwu et al., 2019). Additionally, a recent study conducted at LASUTH reported that over 25% of diabetic patients admitted with foot ulcers eventually required amputation due to delayed presentation and infection complications (Olawoye et al., 2020).

The consequences of DFUs progressing to LEAs extend beyond the physical loss of limbs, affecting patients' psychological well-being and socio-economic stability. Amputees often experience a significant decline in mobility, dependency on caregivers, and reduced employment opportunities, leading to financial distress and diminished QoL. Studies show that more than 70% of individuals with diabetes-related amputations in Nigeria face economic hardship due to job loss and high medical expenses (McMaughan et al., 2020). In Lagos, where healthcare financing is largely out-of-pocket, many patients struggle to afford the cost of prolonged hospital stays, wound care, and rehabilitation services, further exacerbating their socio-economic vulnerabilities (Ogunlana et al., 2022). Additionally, mental health support and post-amputation rehabilitation services remain inadequate, leaving many amputees to cope with depression, anxiety, and social isolation with little professional assistance (Akkus et al., 2022). Without targeted interventions, these challenges will continue to contribute to high mortality rates among diabetic amputees in Lagos.

Given these challenges, there is an urgent need to assess the lived experiences of diabetic amputees in Lagos State, with a focus on their physical, psychological, and socio-economic well-being. This study will explore the factors contributing to the high prevalence of DFUs and LEAs at LASUTH and GHL while examining the effectiveness of existing diabetes management strategies and post-amputation care. Despite the high prevalence of diabetes-related amputations in Nigeria, limited studies have explored the lived experiences and quality of life of amputees in Lagos State.

### **Research Hypotheses**

H<sub>0</sub>1: There is no significant influence of coping strategies on the quality of life of patients with lower extremity amputation.

H<sub>0</sub>2: There is no significant influence of perceived social support on the quality of life of patients with lower extremity amputation.

## METHODOLOGY

**Research design:** This research adopted a quantitative cross-sectional survey research design. This research design is considered appropriate for this study because it allows the researcher to collect data from selected respondents and the data gotten can help find solution to significant problem in this study.

**Population:** The population of this study were patients who have undergone lower extremity amputations due to diabetic foot ulcers. This included those who are receiving ongoing care for their amputations and those who have been discharged but are still under outpatient follow-up care at Lagos State University Teaching Hospital (LASUTH) and General Hospital Odan (GHL) Lagos Island LGA, Lagos State, Nigeria.

### Sample and Sampling Technique

The sample size for this research was calculated using Cochran's (1997) Formula for Proportions. A prevalence (p) of 0.06 (6%) was adapted from the study of (Danmusa et al., 2016), a significance level ( $\alpha$ ) of 0.05, and a margin of error (d) of 0.05, the sample size calculated 95 participants.

This study employed a purposive sampling technique (non-probability sampling technique). Purposive sampling was used because s due to diabetic foot ulcers constitute a specialized population. This allows the researcher to focus on unique cases that provided detailed perspectives, and studying specific phenomena as rightly observed by Garrad and Attlee (2020). This involved the selection of all eligible (LEA) due to diabetic foot ulcers (DFUs) from LASUTH Ikeja LGA and GHL Lagos Island LGA, Lagos State, Nigeria.

### Instrumentation

**Section A:** Socio-Demographic data: This part contained 10-items on the socio-demographic variables of the respondents, such as age, gender, religion, level of education, employment status, monthly income, ethnicity, marital status, and duration of diabetes.

**Section B:** Participants' Quality of Life (WHOQOL-BREF): The World Health Organization Quality of Life (WHOQOL-BREF) instrument was used to measure the quality of life (QoL) of patients. This tool comprises 26 items items and provides a measurement on five dimensions: physical function (seven items), psychological function (six items), social functions (three items), environmental roles (eight items), and general health (two items). Each domain is designed to capture different dimensions of QoL. Physical health focuses on mobility, pain, and energy levels, while psychological health assesses emotions, self-esteem, and cognition. Social relationships evaluate personal connections, social support, and sexual activity, whereas the environment domain covers aspects like financial resources, home environment, access to care, and safety.

Participants rated each item on a 5-point Likert scale, where responses range from 1 (very dissatisfied or very poor) to 5 (very satisfied or very good), indicating the extent to which they

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experience certain feelings or behaviours related to their QoL. This instrument provides a comprehensive and standardised approach to assessing the multifaceted nature of QoL in s, ensuring a thorough understanding of their well-being across these key areas.

**Section C: Participants' Coping Strategies (Brief COPE Inventory):** The Brief COPE Inventory (Carver, 1997) was utilised to assess the coping strategies employed by patients to manage the stress and emotional challenges associated with lower extremity amputation (LEA) due to diabetic foot ulcers. This inventory consists of 28 items that evaluate a broad range of coping mechanisms, categorised into three major types. The three common functional groupings are 1) Problem-Focused Coping (Active coping, planning, use of instrumental support), 2) Emotion-Focused Coping (Positive reframing, acceptance, humor, religion, use of emotional support), and 3) Dysfunctional/Avoidant Coping: Denial, substance use, behavioral disengagement, venting, self-blame. Patients will rate the frequency of each coping strategy on a 4-point Likert scale, ranging from "I haven't been doing this at all" (1) to "I've been doing this a lot" (4).

**Section D: Participants' Perceived Social Support (Multidimensional Scale of Perceived Social Support (MSPSS)):** The Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988) was employed to assess the perceived social support among patients who have undergone lower extremity amputation (LEA) due to diabetic foot ulcers. The scale consists of 12 items that evaluate the perceived availability and adequacy of support from three distinct sources: family, friends, and significant others. These categories allow for a comprehensive analysis of the various dimensions of social support that influence patients' psychological well-being and coping mechanisms post-amputation. Patients will rate each item on a 7-point Likert scale, ranging from "Very strongly disagree" (1) to "Very strongly agree" (7), reflecting the extent of their perceived social support. By categorising the support sources into family, friends, and significant others, the MSPSS provides nuanced insights into which aspects of social support are most prominent or lacking in the patients' lives.

### **Data collection Procedure**

Research Assistants (RA) were recruited and trained to help in the data collection exercise. A letter of introduction from the Babcock University School of Nursing Science and a clearance letter from Babcock University Health Research Ethics Committee (BUHREC) was obtained for this study. This was presented to the Chief Medical Director of General Hospital, Odan, Lagos Island and LASUTH, Ikeja, Lagos State. Also, a clearance letter was obtained from the Health Research Ethics Committee (HREC) of the Lasuth Ikeja LGA and GHJ Lagos Island LGA after several corrections would had been effected on the proposal submitted.

The researcher also visited the consultant Orthopedic/Endocrinologist and the Chief Nursing Officer (CNO) in-charge of the General Outpatient Department (Gopd) to inform them about the study, including the commencement date, time, and closing date. The complete detail of the aims and implications of the study was explained to the participants. They were informed that there is no remuneration, and every respondent willing to participate in the study must sign the informed consent after reading through it. Questionnaires were distributed to the respondents

willing to participate in the study. The researcher and the research assistants retrieve all the questionnaires from the respondents. This study lasted for about 12 weeks.

**Method of Data Analysis:** The paper surveys will be imported and analyzed with the use of the IBM Statistical Package for the Social Sciences (IBM SPSS version 25). Multiple procedures were deployed to answer the research questions and explore potential relationships between the dependent variable (health-related quality of life), and independent variables (Coping Mechanisms, and Perceived Social Support). The imported data were reviewed for data integrity before conducting any statistical analysis. These include data cleaning using frequency procedures to identify missing responses, calculate the proportion of missing data, and evaluate missing data patterns (Bannon, 2013). The analysis of data for the quantitative study was descriptive statistics such as simple frequency distribution and percentages for demographic variables, while mean and standard deviations was employed to examine health-related quality of life, Coping Mechanisms, and Perceived Social Support. Simple linear regression was used to analyse hypothesis 1 and 2 to predict the relative influence of the independent variables (Coping Mechanisms, and Perceived Social Support) on the dependent variable (health-related quality of life) at 0.05 level of significance.

## RESULTS

**Table 1: Overall quality of life results as measured by the WHOQoL-BREF**

Domain	Domain Scores		
	Items	Mean $\pm$ SD	Min-Max (%)
Physical Health	7	14.86 $\pm$ 6.53	0.0 – 69.48
Psychological Health	6	11.99 $\pm$ 5.01	13.0 -75.20
Social Relationships	3	5.63 $\pm$ 3.39	0.0 – 88.88
Environment	8	16.24 $\pm$ 7.81	38.00 -100.0
General Health	2	4.10 $\pm$ 0.88	25.0 -89.00

Table 1 shows the WHOQoL-BREF sub-dimensions average points, which are 14.86  $\pm$  6.53 (42.5%) for physical function, 11.99  $\pm$  5.01 (40%) for psychological function, 5.63  $\pm$  3.39 (37.5%) for relational function or social relationship, 16.24  $\pm$  7.81 (40.6%) for environmental roles/functions, and 4.10  $\pm$  0.88 (41.7%) for general health. The categorization results based on WHO, the results show that lower extremity amputees in this study had a poor overall quality of life.

**Table 2: Coping mechanisms employed by the patients according to Brief COPE inventory**

Coping Strategy	I haven't been doing this at all	I've been doing this a little bit	I've been doing this a medium amount	I've been doing this a lot	Mean ± SD
<b>Problem Focused Coping (Mean ± SD = 2.740±0.65)</b>					
Active Coping	2 (4)	10 (14.5)	21 (32.3)	32 (49.2)	3.28±0.51
Planning	12 (18.5)	20 (30.8)	17 (26.2)	16 (24.6)	2.57±0.69
Instrumental support	15 (22.8)	22 (33.8)	12 (18,5)	16 (24.6)	2.37±0.60
<b>Emotion Focused Coping (Mean ± SD = 2.732±0.69)</b>					
Emotional support	17 (25.2)	20 (30.8)	15 (23.1)	13 (20.0)	2.37±0.61
Positive reframing	17 (25.2)	35 (53.8)	5 (7.7)	8 (12.3)	2.06±0.83
Acceptance	8 (12.3)	17 (26.2)	15 (23.1)	25 (38.5)	2.88±0.49
Humor	15 (21.0)	7(10.8)	17 (26.2)	26 (40.0)	2.83±0.73
Religion	3 (5.1)	6 (9.3)	10 (15.4)	46 (70.8)	3.52±0.48
<b>Dysfunctional/Avoidant Coping (Mean ± SD = 2.712±0.70)</b>					
Self-distraction	20 (30.8)	20 (30.8)	12 (18.5)	13 (20.3)	2.28±0.59
Denial	10 (15.4)	11 (16.5)	19 (38.5)	25 (38.5)	2.91±0.70
Venting	7 (10.8)	10 (15.4)	15 (23.1)	33 (50.8)	3.14±0.53
Behavioural disengagement	12 (18.5)	13 (20.0)	12 (18.5)	28 (43.1)	2.86±0.49
Substance use	15 (23.1)	23 (35.4)	15 (23.1)	12 (18.5)	2.37±0.61

**Decision rule: 0-1.49 (Very low usage), 1.5- 2.49 (low usage), 2.5-3.49 (moderate usage), 3.5-4.0 (high usage)**

The outcome of the question on “What coping mechanisms do patients employ to manage the emotional and practical challenges of living with lower extremity amputations caused by diabetic mellitus” as revealed in Table 2 show that problem-focused coping (Mean ± SD = 2.740 ± 0.65) was moderately and mostly used among the participants. This is followed by emotion focused coping (Mean ± SD = 2.732 ± 0.69) and dysfunctional/avoidant coping (Mean ± SD = 2.712 ± 0.70).

Specifically, active coping (3.28±0.51) under problem focused coping strategy, religion (3.52±0.48) under emotional coping strategy, and venting (M = 3.14, SD = 0.53) under avoidant strategy suggesting that some of the participants use it as a coping technique moderately. These results are not too surprising as more than two-third of the respondents claimed they have been using their religious belief a lot, and more than half said they used active coping a lot. This suggests that participants mostly rely on their own efforts and faith-based problem-solving strategies to deal with their challenges.

The Table revealed further that individuals with lower extremity amputations moderately used denial (2.91±0.70), acceptance (2.88±0.49), behavioural disengagement (2.86±0.49), humour (2.83±0.73), and planning (2.57±0.69) as their coping mechanism. It could be said that these coping mechanisms were done in form of "surrender" where they draw back from daily activities, rehabilitation, or social interaction. However, the study revealed further that emotional support (2.37±0.61), instrumental support (2.37±0.60), substance use (2.37±0.61), and self-distraction (2.28±0.59) and positive reframing (2.06±0.83) are the least common coping mechanisms used by patients with lower extremity amputations. \*

**Table 3: Respondents perception of availability and adequacy of social support**

<b>Social Support</b>	<b>Mean ± SD</b>	<b>Percent (%)</b>
Family support	5.91±1.53	84.4
Friend Support	5.98±1.45	85.4
Significant other support	6.21±0.92	88.7
Overall score	6.03±1.49	86.1

**Decision rule: 0-2.9 (low support), 3.0-4.9 (Moderate support), 5.0-7.0 (High support)**

On the patients' perception of availability and adequacy of social support after their lower extremity amputations, it was observed on Table 3 that the social support received after the lower extremity amputations was high (6.03±1.49, which is equivalent to about 86.1% overall support). However, significant other support is the subscale with the highest mean score (6.21±0.92), suggesting that they feel a particular person in their life provides the strongest and most reliable assistance. This is followed by friend support (5.98±1.45) indicating that friendships are also essential for offering both practical and emotional help; family support (5.91±1.53) suggesting that although families are still a valuable source of support they might not be seen as trustworthy as friends and significant others.

**Table 4: Model Summary of the Regression Analysis for the influence of coping strategies on the quality of life of patients with lower extremity amputation**

Model	Unstandardized Coefficients		Standardized Coefficients	T	p-value
	B	Std. Error	Beta		
(Constant)	31.476	8.142		17.432	.000
Emotion-focused	.348	.057	.298	6.089	.000
Problem-focused	.552	.056	.480	9.803	.000
Avoidant-focused	.257	.033	.165	3.147	.000
Source of variation	Sum of Squares	Df	Mean Square	F-Ratio	P
Regression	987.591	3	329.197	18.171	.000 <sup>b</sup>
Residual	1123.254	62	18.117		
Total	2110.845	65			

R = 0.478; R<sup>2</sup> = .228; R<sup>2</sup> (Adjusted) = .224; Stand error estimate = 1.057

Results of the multiple regression analysis showed that coping strategies jointly and significantly predicted quality of life among patients with lower extremity amputation, R = .478, R<sup>2</sup> = .228, Adjusted R<sup>2</sup> = .224, F<sub>(3, 62)</sub> = 18.171, p < .001. The model explained 22.8% of the variance in quality of life. At the predictor level, problem-focused coping ( $\beta = .480$ , t = 9.803, p < .001) made the strongest positive contribution, followed by emotion-focused coping ( $\beta = .298$ , t = 6.089, p < .001) and avoidant coping ( $\beta = .165$ , t = 3.147, p < .001). Therefore, the null hypothesis was rejected, indicating that coping strategies significantly influenced the quality of life of patients with lower extremity amputation.

**Table 5: Model Summary of the Regression Analysis for the impact of social support on the quality of life of patients with lower extremity amputation**

Model	Unstandardized Coefficients		Standardized Coefficients	T	p-value
	B	Std. Error	Beta		
(Constant)	61.429	.180		47.951	.000
Family	.323	.067	.276	4.387	.000
Friends	.344	.071	.288	4.883	.000
Significant others	.351	.079	.326	5.229	.000
Source of variation	Sum of Squares	Df	Mean Square	F-Ratio	P
Regression	3968.064	3	1322.688	11.983	.000 <sup>b</sup>
Residual	6843.684	62	110.382		
Total	10811.748	65			
R = 0.684; R <sup>2</sup> = .468; R <sup>2</sup> (Adjusted) = .461; Stand error estimate = 9.176					

Results of the multiple regression analysis showed that perceived social support jointly and significantly predicted quality of life among patients with lower extremity amputation,  $R = .684$ ,  $R^2 = .468$ , Adjusted  $R^2 = .461$ ,  $F_{(3, 62)} = 11.983$ ,  $p < .001$ . The model explained 46.8% of the variance in quality of life. At the predictor level, support from significant others ( $\beta = .326$ ,  $t = 5.229$ ,  $p < .001$ ) contributed most strongly, followed by support from friends ( $\beta = .288$ ,  $t = 4.883$ ,  $p < .001$ ) and support from family ( $\beta = .276$ ,  $t = 4.387$ ,  $p < .001$ ). Therefore, the null hypothesis was rejected, indicating that perceived social support significantly influenced the quality of life of patients with lower extremity amputation.

## DISCUSSION OF THE FINDINGS

Lower extremity amputations significantly reduce quality of life (QoL) below intermediate levels, heavily impacting mobility, body image, and psychological well-being. Patients face substantial physical limitations, high rates of depression, and challenges with prosthetic adaptation. The findings of this study suggest that the amputees frequently experience a poor quality of life due to the social, psychological, and physical challenges they face. Mobility impairments, chronic pain, and emotional anguish cause people who have lost limbs to have notable reductions in their overall quality of life. This is in line with the findings of Smith et al. (2020), who reported that amputees frequently experience significant and ongoing phantom limb pain that interferes with their everyday activities and mental health, leading to an overall reduction in their quality of life, much like the experiences described in this study.

Coping strategies for lower extremity amputees focus on fostering resilience through social support, emotional processing, and proactive adaptation to functional limitations. Key methods include leveraging family support, engaging in spiritual activities, setting realistic rehabilitation goals, and using peer support groups to manage body image distress. Findings of this study indicated that the most prominent coping mechanisms employed by the amputees was problem-focussed coping strategy. Coping mechanisms have a significant impact on people's emotional health and general quality of life by affecting how they adjust to life-altering situations like

losing a limb. This finding synchronises with the study by Johnson and McDonald (2023) who emphasized that it is commonly acknowledged that active coping, which includes problem-solving, enlisting social support, and adopting adaptive behaviours, is a successful tactic for people with disabilities or chronic illnesses.

The findings of this study on social support indicated that the respondents experienced a great deal of social support, especially in large part from their significant other. Despite considering social support generally as favourable, the full effect on quality of life seems to be dependent on additional variables like healthcare accessibility and resilience. Close family members, especially spouses, offer substantial emotional and practical assistance to those who undergo big life changes, such as losing a limb (Miller et al., 2021). Higher psychological well-being, better disability adaptation, and an overall higher quality of life have all been associated with social support.

## **CONCLUSION**

This study showed that patients living with diabetes-related lower extremity amputation in selected hospitals in Lagos State experience reduced quality of life across physical, psychological, and social domains. Their experiences are shaped by pain, reduced mobility, altered body image, dependency, financial strain, and disruption in family and social life. At the same time, patients draw on multiple coping resources, especially active coping, planning, religion, and support from significant others, friends, and family. Overall, the findings support the need for multidisciplinary care that combines wound and surgical care with rehabilitation, pain management, psychological support, family education, and social reintegration services.

## **Recommendations**

Based on the findings of this study, it is recommended that:

1. Hospitals should integrate structured psychological assessment and counselling into diabetic foot and post-amputation care.
2. Rehabilitation services, including prosthetic counselling, physiotherapy, and occupational therapy, should be strengthened and made more accessible.
3. Family-centred education should be incorporated into care planning because family and significant others are major support sources for patients.
4. Social welfare and vocational reintegration pathways should be developed for patients whose amputation affects employment and financial stability.
5. Future studies should use larger samples, clearly documented recruitment flow, and fully reconciled quantitative outputs to strengthen the evidence base.

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