Questionnaire-Based Assessment of the Impact of Lower Limb Amputation on Community Reintegration in Kamrup Metro

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ABSTRACT:

Purpose: The impact of non-traumatic lower limb amputation on participants during their reintegration into the community in Kamrup Metro is unknown. To explore the experiences and perceptions of people with lower limb amputations from the Kamrup metropolitan area on the impact that their amputations had on their lives and their Return to their communities.

Methods: Semi-structured questionnaire were used to collect data on 50 purposively selected participants. A General Inductive Approach was used to generate or discover themes within the data using systematic coding.

Results: Psychological, social, and religious themes emerged from the qualitative data. Suicidal thoughts, dependence, poor acceptance, public perception of body image, phantom limb-related falls, and hopes of obtaining prostheses were reported. Some reported poor social involvement due to mobility problems and employment concerns, while their families and friends were found to be supportive. The participants had faith in God.

Conclusion: Generally, most participants had come to terms with the amputation and were managing well, while some expressed that they were struggling with reintegration into their communities of origin three months postoperatively, with both functional and psychosocial challenges..

Keywords:Lower Limb Amputation, Experiences, Outcome, Feelings

Introduction

Amputations refers to removal of body parts and they are a chief source of permanent and functional limitation among individuals of all ages[1]. The most common signs for amputation vary from study to study. Amputation are mostly suggested in cases of Peripheral vascular disease(PVD), injury, complications related to diabetes mellitus[2].Trans-tibial amputation (TTA), also referred to as below-knee amputation (BKA), is a surgical procedure involving the removal of the distal portions of the tibia and fibula along with the surrounding soft tissues, including the ankle and foot[3]The prevalence of lower limb amputation among American veterans increased from 12.89 to 18.12 per 10,000 individuals between 2008 and 2018. Among all lower limb amputations, below-knee amputations (BKAs) accounted for the majority (57%).[4]. The underlying causes of lower limb amputation differ geographically. Common etiological factors include diabetes mellitus, peripheral vascular disease, trauma, and tumors, while peripheral vascular disease is the leading cause in developed nations.[5].A 2024 study conducted at a tertiary care hospital in North India reported that nearly 30% of limb amputations were attributed to diabetes mellitus and its associated complications, underscoring the increasing impact of diabetic foot disease.[6]

Limb amputation is a significant yet largely preventable cause of disability and a major public health concern. It has far-reaching economic, social, and psychological consequences for affected individuals as well as their families. Globally, approximately 10% of the population lives with some form of disability or functional impairment.[6]Among the various types of amputation, lower limb amputation(LLA)is executed at the level of ankle joint or above. The indications for LLA could be vary in across the globe but PVD, major injuries, and diabetic food are the common causes of LLA [2]. After lower limb amputation (LLA) individuals experience noteworthy and life-long complicationsacross multiple domains of lifesuch as career, personal life, social functioning.Therefore, its required comprehensive approaches from different health care professionals to achieve individuals needs and to promote successful rehabilitation and community reintegration[7]

Community integration is a key objective and outcome of rehabilitation, as the primary aim of rehabilitation is to help individuals regain meaningful participation in their everyday life roles. It refers to the process of re-engaging in age-, gender-, and culturally appropriate roles, activities, and social responsibilities. This includes achievingappropriate interdependence in decision-making, participating in productive activities, and maintaining meaningful relationships with family, friends, and the wider community within natural living environments[8] Individuals with amputations experiences various difficulties while performing activities of daily living that comprising of domestic duties, participation in community-based leisure activities and return to work. In addition, impairments in social functioning may also adversely affect their social networks and interpersonal relationships[9]. LLA can negatively impact on psychological health associated with functional limitations, altered body image and difficulty in accepting the residual limb. These challenges may emerge during hospitalization and persist over time, with some individuals never fully acknowledging or accepting their new condition.Consequently, in most of the cases individuals experiences psychological disturbances that may results in depression and elevated anxiety levels [10],[11]

So, the aim of the study is to investigate the causes, types, rehabilitation, psychosocial challenges, and support system associated with amputation-related disabilities and to identify strategies for improving social integration and quality of life among amputees

Objectives of the Study:

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Theoretical Perspective:

This study is grounded in interdisciplinary theories of rehabilitation, disability, and psychosocial adjustment to understand the impact of lower limb amputation on community integration and quality of life.(12,13)

The Biopsychosocial Model of Disability provides the primary framework, emphasizing that recovery and adaptation are influenced by the interaction of physical, psychological, and social factors.(12) The Social Model of Disability complements this perspective by highlighting how environmental barriers, social attitudes, and limited accessibility contribute to disability beyond the physical impairment itself(13).

The study also draws on the Theory of Adaptation and Adjustment to Disability (Livneh & Antonak, 1997), which explains the emotional and psychological processes individuals undergo following amputation, including coping, adjustment, and acceptance(14). In addition, the WHO Community-Based Rehabilitation (CBR) Framework (2010) guides the understanding of rehabilitation as a multidimensional process encompassing health, education, livelihood, social participation, and empowerment.(15,16)

Finally, the WHO Quality of Life (QoL) Theory (1997) provides a framework for assessing well-being across physical, psychological, social, and environmental domains(17). Together, these perspectives offer a comprehensive understanding of the challenges, rehabilitation experiences, and quality of life of individuals with lower limb amputation.

Hypothesis

H_0: There is no significant association between lower limb amputation and the level of community reintegration among adults in Kamrup Metro.

H_1: There is a significant association between lower limb amputation and the level of community reintegration among adults in Kamrup Metro.

The framework assumes that amputation has significant effects on physical mobility, emotional well-being, social participation, occupational opportunities, and activities of daily living. These impacts collectively shape individuals' quality of life, social interactions, and level of community integration.

Methodology:

This study employed a descriptive and analytical research design to examine the impact of lower limb amputation on community reintegration and quality of life among adults in Kamrup Metro District, Assam(18,19). The study population comprised individuals with lower limb amputation (LLA), and a purposive sampling technique was used to select 50 respondents who met the inclusion criteria(20). Data were collected from both primary and secondary sources. Primary data were obtained through a structured questionnaire, while secondary data were gathered from relevant literature, academic journals, reports of the Department of Social Welfare, Government of Assam, and records from the Artificial Limb Manufacturing and Rehabilitation Centre (ALIMCO), Guwahati(21). The study was conducted over a period of six months(22). Quantitative data were analyzed using descriptive statistical methods, including frequencies, percentages, and graphical representations(23). Participants included adults aged 18 years and above who had undergone unilateral or bilateral lower limb amputation, had resided in Kamrup Metro District for at least one year, had completed a minimum of three months of rehabilitation or prosthetic fitting, and were physically and cognitively capable of participating in the study(24,25). Individuals with only upper limb amputations, severe cognitive or communication impairments, multiple disabilities, serious psychiatric or medical conditions, recent amputations of less than three months, or those unwilling to provide informed consent were excluded(26). This quantitative study formed part of a broader investigation into the rehabilitation experiences, community reintegration, and quality of life of individuals with lower limb amputation(27).

Participants were recruited from individuals scheduled to undergo their first major lower limb amputation in Kamrup Metro District.

Three months following amputation, participants were followed up, and purposive sampling was used to select respondents for in-depth interviews (n = 50).Participants were eligible if they had undergone their first unilateral or bilateral lower limb amputation. Individuals with congenital limb deficiencies, pre-existing functional impairments, or other conditions that could influence functional outcomes before surgery were excluded. Written informed consent was obtained from all participants before data collection.

Data were collected using a demographic questionnaire, field observations, and semi-structured interviews. Interviews continued until data saturation was achieved, indicating that no new themes or information emerged from subsequent interviews.All interviews were audio-recorded, transcribed verbatim, and translated into English where necessary. Thematic analysis was employed to identify, code, and categorize recurring patterns and themes within the data.

To enhance the trustworthiness of the findings, an independent researcher conducted the initial coding process, and the resulting themes were compared with those generated by the research team. Participant quotations were used to illustrate key findings, and member checking was undertaken to verify the accuracy and credibility of the interpretations.The analysis integrated quantitative and qualitative data obtained from questionnaires and in-depth interviews with 50 participants who had undergone their first major lower limb amputation. Quantitative data were analyzed using descriptive statistics, including frequencies and percentages, while qualitative data were analyzed thematically to explore participants' experiences related to physical functioning, social participation, and community reintegration

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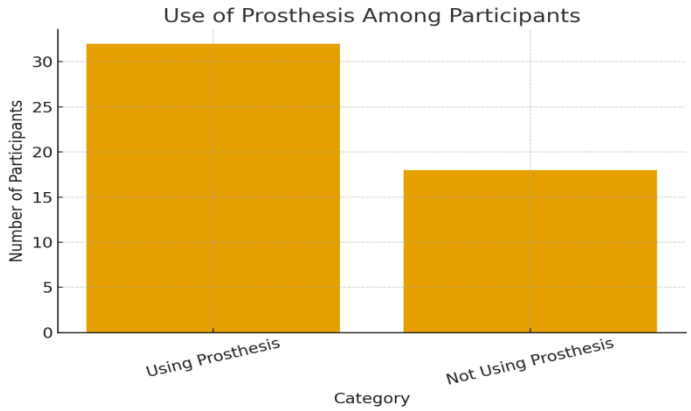

As shown in the chart, 64% of the participants reported using a prosthetic device, while 36% did not use one. The main factors contributing to non-use were financial difficulties, poor prosthetic fits, discomfort during use, and limited availability of rehabilitation services.

Table: Emerging Themes and Subthemes (Thematic Analysis)

Main Themes	Sub-Themes	Illustrative Quotes
Physical and Functional Limitations	Reduced mobility, Dependence on assistive devices, Challenges in ADLs	"I cannot walk long distances; the prosthetic leg gives me pain after some time."
Emotional and Psychological Impact	Shock and denial, Depression and anxiety, Acceptance over time	"Initially, I felt useless, but with therapy and support, I started accepting my situation."
Social Reintegration Challenges	Stigma and discrimination, Social withdrawal, Limited	"People in my neighborhood look at me differently; I avoid

	participation in community events	public gatherings now."
Economic Consequences	Job loss, Reduced earning capacity, Financial dependency	"I had to close my shop; now I depend on my family for most expenses."
Support Systems and Coping Mechanisms	Family support, Peer encouragement, Faith and positive attitude	"My wife and children motivated me to use the prosthetic leg daily."
Rehabilitation and Health Services	Access to physiotherapy, Satisfaction with assistive aids, Need for continuous follow-up	"The rehab center helped me regain confidence, but I wish there were more frequent check-ups."
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Finding & Discussion:

The findings indicate that lower limb amputation significantly affects physical mobility, psychological well-being, and social participation. Most middle-aged male participants underwent amputation due to vascular complications, which were associated with reduced functional mobility and employment opportunities [28,29]. Participants who received rehabilitation services and prosthetic training demonstrated better functional outcomes and community reintegration [30,31].

Lower limb loss often results in impaired mobility, reduced independence in activities of daily living, and increased reliance on caregivers [32]. Although prosthetic devices and rehabilitation programs can improve functional capacity, barriers such as poor prosthetic fit, residual limb pain, and limited access to physiotherapy services frequently hinder recovery [33,34]. These challenges are particularly evident in resource-constrained settings where rehabilitation infrastructure is inadequate [35].Psychological adjustment following amputation involves emotional responses including denial, anxiety, depression, and frustration [36]. Social stigma, altered body image, and perceived dependency further contribute to psychological distress and reduced self-esteem [37]. Family support and psychological counseling play a crucial role in promoting adaptation, coping, and long-term rehabilitation outcomes [38].

Social reintegration remains a major challenge for individuals with lower limb amputation. Physical limitations, workplace barriers, and discrimination often restrict employment and community participation [39]. Economic dependency and social isolation negatively affect quality of life, highlighting the need for comprehensive rehabilitation programs that incorporate medical, psychosocial, vocational, and community-based interventions [40].

Conflict of Interest Statement:

The authors declare that they have no conflicts of interest related to this study. No financial support, commercial affiliation, or personal relationship influenced the design, conduct, analysis, or reporting of this research.

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