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Social Support and its Association to Self-Efficacy among Users of Prostheses after Lower Limb Amputation

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ABSTRACT

Aims This research investigated the relationships between self-efficacy and social support among users of prostheses post-lower limb amputation. Understanding these relationships is crucial for comprehending how individuals adapt to life post-amputation and how their perceived capabilities and social interactions influence their rehabilitation and overall well-being.
Instrument & Methods This descriptive correlational study was conducted in Baghdad City at the Rusafa Health Department from October 1, 2023, to March 24, 2024. The study sample comprised 200 patients selected through the non-probability sampling method. The used questionnaire was validated by experts, and its reliability was confirmed through a pilot study. Data were gathered through interviews and analyzed using descriptive and inferential statistics.
Findings A notable percentage of lower limb amputees utilizing prostheses exhibited low self-efficacy (60%) and moderate social support (40.5%). Furthermore, a positive correlation was observed between social support and self-efficacy, particularly in managing fatigue (r=0.133), coping with pain (r=0.198), handling emotional distress (r=0.172), addressing other symptoms (r=0.180) and health issues, and overall self-efficacy (r=0.173).
Conclusion Interventions focused on enhancing social support networks significantly enhance self-efficacy and overall well-being in this demographic, ultimately fostering improved adjustment and quality of life post-amputation.

Keywords Social Support; Self-Efficacy; Prosthetic Limb; Amputation

CITATION LINKS

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Introduction

Amputation is the removal of all or part of a limb from the body because of medical reasons. After amputation, people have severe mental problems, like introversion, helplessness, anger, and decreased self-esteem. Amputations adversely affect the lives of individuals and lead to a reduction in their quality of life. Lower limb amputations constitute 76% to 80% of all amputations [1]. Lower limb amputation represents one of the most severe traumatic experiences that an individual may endure, as it brings about physical, psychological, and social challenges. Also, the effect on the whole life will have a negative effect on the mental health of the individual. Following losing the basic physical functions in a short time after the amputation, the individual feels like his/her life goals are under threat and can experience various complex and intense emotions, like the anxiety of being dependent on an instrument, sadness, fear of death, helplessness, anger, remorse, despair, and guilt. What is lost is not just a limb but also a sense or a series of senses. The loss of a body part can lead to psychological, physical, and social disturbances. Also, when compared to normal people, these people are mostly experiencing social isolation.

Social support plays a crucial role in aiding amputees to adapt to their lives following amputation [2]. Social support can be considered a protective factor, which is linked to better mental health [3]. Research has shown that social support plays an important role in adaptation and coping with diseases, such as amputation. It is known as the most powerful force to deal with stressful situations and makes patients able to withstand challenges. Social support encompasses emotional, material, informational, and evaluative aid received or perceived from individuals within our social circle [4]. Individuals living with lower limb amputations typically necessitate a multi-modal support system to navigate the complexities of prosthetic utilization and the endeavor to return to their regular routines [5]. It mitigates negative outcomes and has been positively correlated with resilience—the ability to cope with and overcome a traumatic event [6]. Social support encompasses assistance from family, friends, and fellow amputee patients. Specifically, peer support enabled them to engage in comparisons, establish clearer and more realistic expectations regarding amputation [7], and establish practical and attainable objectives, aiding in the acceptance of their altered circumstances [8]. These observations suggest the significance of a global approach to patient care, including attention to the social network and those being able to help the amputee deal with the novel health status. These findings also highlight the significance of a biopsychosocial approach focusing not only on rehabilitation and medical needs but also on social and psychological needs. Social support can be provided in the form of information, psychological-emotional, social, and tangible support. Family members, friends, relatives, doctors, healthcare workers, and support associations can be a source of support and the patients can understand the provided support, and understanding the support is more important than receiving it.

Self-efficacy is a person's belief in his/her ability to perform a certain task. Developing self-efficacy can be obtained via observing successful peers or verbal persuasion from credible people, like physicians. Greater self-efficacy and social support are related to lower disability after Lower limb amputations. Self-efficacy interventions decrease disability for people living with chronic disease. Möller *et al.* [9] in a study on 42 individuals using the General Self-Efficacy (GSE) Scale, reported that individuals with high self-efficacy use their prosthesis to a higher degree, and high self-efficacy is associated with higher level of mobility, global scores, and fewer problems linked to the amputation in individuals undergoing a lower-limb amputation and were using a non-microprocessor-controlled prosthetic knee joint (MPK) or MPK knee. They also reported that perceived self-efficacy is related to prosthetic mobility, quality of life, capability, and social activities in daily life. Self-efficacy stands out as a pivotal component in rehabilitation, influencing individuals' perseverance, endeavors, and resilience towards challenges associated with prosthetic usage. Establishing a connection between social support and self-efficacy will be instrumental in attaining optimal rehabilitation outcomes and enhancing the quality of life for amputee patients [10]. While it is acknowledged that social support and self-efficacy are crucial in maintaining health across various contexts, the intricate relationship between the two concerning prostheses for lower limb amputation remains largely unexplored [11, 12]. Delving into the interconnectedness of social support and self-efficacy within this demographic is essential to implement more effective interventions aimed at improving rehabilitation outcomes and fostering long-term adjustment [13]. This can be achieved by further elucidating how social support influences self-efficacy, enabling healthcare professionals to devise targeted interventions that enhance individuals' capacity to adapt to prosthetic use and carry on with their lives post-amputation [13, 14]. In the literature, it has been reported that more attention should be paid to the relationship between self-efficacy and prosthetic-related outcomes during prosthetic rehabilitation following a lower-limb amputation.

Given the limited literature on the relationship between social support and self-efficacy in prosthesis users following lower limb amputation, this study aimed to address this gap through an in-depth investigation. Employing quantitative methodologies, the research tried to elucidate the

interconnectedness of social support and self-efficacy within this specific population. The outcomes of this study are expected to significantly influence clinical practice, guiding the development of tailored interventions that enhance the rehabilitation journey and enhance the overall well-being of individuals who have recently undergone lower limb amputation.

Instrument and Methods

Study design

This descriptive correlational study involved surveying individuals within the study population and was conducted from October 1st, 2023, to March 24th, 2024.

Study setting and sample

The study was conducted at the Baghdad Health Directorate, encompassing the Al-Rusafa/Al-Salam, Al-Ghadeer, and Sadr Al-Qana, Al-Rusafa/Al-Mustafa, and Al-Hamza Centers for the Rehabilitation of the Disabled. The study sample comprised 200 patients selected through the non-probability sampling method and based on inclusion criteria, including clients utilizing prostheses, clients with lower limb amputations, and volunteers who agreed to participate in the study.

Research tools

Three questionnaires were utilized for data collection. The demographic questionnaire examined socio-demographic characteristics, encompassing the age, gender, marital status, education level, occupation, monthly income, presence of children, the reason for amputation, and the level of amputation and duration among the amputees. These demographic traits and factors linked to amputation may serve as influential factors on self-efficacy, given their variability among individuals.

The Self-Efficacy to Manage Chronic Disease Scale, comprising six items on a visual analog scale ranging from 1 (not at all confident) to 10 (totally confident), was employed to assess participants' self-efficacy. A higher average score indicates greater self-assurance. The Cronbach's alpha value in the current study was 0.89, signifying high reliability.

Additionally, the Multidimensional Scale of Perceived Social Support (MSPSS-12) was utilized to gauge subjectively assessed social support. This scale consists of 12 items measured on a five-level Likert scale (1=strongly disagree to 5=strongly agree). The Cronbach's alpha value in the current study was 0.82, indicating strong reliability.

Data collection

The researcher conducted interviews with the clients at the specified rehabilitation centers, providing instructions, addressing their form-related queries, encouraging their participation, and expressing gratitude for their cooperation. The interviews were conducted individually, lasting 15-20 minutes, following the essential steps outlined in the study design.

Statistical analysis

All statistical analyses were carried out using SPSS 20.0 software. Numbers and percentages were utilized to rank the numeric parameters, while mean and standard deviation were used to describe continuous parameters statistically. Normality was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Furthermore, Pearson's correlation coefficients were computed to examine any statistical relationships between the groups, with a significance threshold set at 0.05.

Findings

After analyzing the characteristics of the 200 individuals participating in this prosthetics study, it was found that their ages ranged from 23 to 68, with an average age of 51.11±12.77 years. The gender distribution showed a predominance of males (77%) over females (23%) among prosthetic users. Amputation levels were predominantly below the knee (70%) compared to above the knee (30%). The duration since amputation varied from 2 to 19 years, with an average duration of 12.42±9.40 years post-lower limb amputation and prosthetic limb utilization (Table 1).

Table 1. Frequency and mean values of participants' socio-demographic characteristics

Socio-demographic data	Classification	Values
Age (year)	<30	17(8.5)
	30-40	28(14.0)
	40-50	29(14.5)
	50-60	58(29.0)
	≥60	68(34.0)
Gender	Male	154(77.0)
	Female	46(23.0)
Marital status	Single	35(17.5)
	Married	123(61.5)
	Divorced	31(15.5)
	Widower	11(5.5)
Education level	Reading and writing	16(8.0)
	Primary school	84(42.0)
	Intermediate school	48(24.0)
	Secondary school	32(16.0)
	Academic	20(10.0)
Occupation	Employee	12(6.0)
	Self-employed	54(27.0)
	Retired	99(49.5)
	Unemployed	35(17.5)
Monthly income (IQD)	<300	60(30.0)
	300-600	91(45.5)
	600-900	18(9.0)
	>900	31(15.5)
Level of amputation	Upper knee	60(30.0)
	Lower knee	140(70.0)
Duration of amputation	<5	47(23.5)
	5-10	24(12.0)
	10-15	32(16.0)
	>15	97(48.5)

The results revealed that a considerable percentage (60% and 40.5%) of prosthetic users reported low self-efficacy and moderate social support following

lower limb amputations, with average scores of 22.33±12.48 and 35.9±11.294, respectively (Table 2). The results demonstrated a significant positive correlation between the social support received by prosthetic users and their self-efficacy; more specifically, in managing fatigue, coping with pain, dealing with emotional distress, addressing other symptoms and health issues, and overall self-efficacy.

Table 2. Correlation between self-efficacy of prostheses users and their social support

Parameter	8	7	6	5	4	3	2	1
1. Social support	0.173*	0.070	0.085	0.180*	0.172*	0.198**	0.113*	1
2. Managing fatigue	0.448**	0.207**	0.015	0.082	0.300**	0.261**	1	
3. Coping with pain	0.759**	0.499**	0.478**	0.337**	0.573**	1		
4. Handling emotional distress	0.879**	0.595**	0.580**	0.584**	1			
5. Addressing other symptoms	0.622**	0.319**	0.268**	1				
6. Health management tasks	0.686**	0.499**	1					
7. Beyond medication	0.754**	1						
8. Overall self-efficacy	1							

* Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed).

Discussion

This research involving 200 individuals aged between 23 and 68 years, with a mean age of 51.11±12.77 years, investigated the relationships between self-efficacy and social support among users of prostheses post-lower limb amputation.

The results align with a study conducted in outpatient clinics in Baghdad among patients with chronic diseases [15], emphasizing the importance of offering customizable prosthetic solutions tailored to different life stages to meet the diverse needs and preferences of individuals [15]. The gender distribution revealed a significant male majority (77%) compared to females (23%), potentially indicating gender-based disparities in healthcare and rehabilitation services. Addressing gender disparities is the initial crucial step in providing equitable prosthetic care. The results of the research conducted in Hilla City confirm the anticipated finding that men engaging in high-risk behaviors exhibit a higher prevalence of chronic diseases compared to the control group [14]. A majority of our prosthetic users were married (61.5%), underscoring the crucial role of social support for individuals coping with limb loss or undergoing rehabilitation. Family support significantly contributes to psychological adjustment and rehabilitation. This finding mirrors a study conducted in heart centers in Baghdad, where despite their illnesses, a significant portion of individuals are married [16]. 42% of participants had completed primary school, indicating a potential gap in education and knowledge regarding prosthetics among the respondents. Customized outreach programs can greatly enhance awareness and decision-making autonomy. This aligns with the findings of the Al-Muthanna Teaching Hospital concerning dialysis patients, where the analysis reveal a higher prevalence of lower educational levels among patients in this category [17]. Nearly half of our respondents (49.5%) were retired, highlighting the challenges individuals, especially the elderly, face in accessing vocational rehabilitation and employment services post-amputation. This study revealed results similar to another study focusing on diabetic foot patients, where the majority are already retired [18]. The majority of our respondents fell within the 300-600 IQD monthly income bracket, underscoring the financial challenges associated with using prosthetic devices. Subsidies and insurance coverage are essential for overcoming these financial barriers. Seventy percent of amputations were below the knee, emphasizing the importance of specialized prosthetic designs tailored to different amputation levels to enhance mobility and comfort. Prosthetic users had an average amputation duration of 12.42±9.40 years, emphasizing the need for continuous prosthetic care and rehabilitation support throughout the lifespan of prosthetic users. However, the availability, affordability, and ease of operation of rehabilitation equipment services are crucial factors to consider in order to maximize device utilization and effectiveness [19].

The study findings indicated that individuals who have undergone lower limb amputations face various challenges, particularly related to self-efficacy and social support. A significant portion, accounting for 60% of prosthetic users, reported low levels of self-efficacy. This suggests that individuals with amputations struggle to believe in their ability to perform daily tasks and overcome challenges resulting from their amputations. The average self-efficacy score of 22.33±12.48 underscores the widespread nature of this issue. Studies have highlighted that emotional well-being plays a vital role in the rehabilitation of amputees. Hence, it is crucial to assist patients in managing emotional distress and enhancing coping skills [5, 20]. Interventions focusing on emotional efficacy can serve as a significant method to boost resilience and improve psychological adjustment among prosthetic users.

Moreover, 40.5% of our prosthetic users encountered moderate levels of social support. This suggests that while support was present, it might not be sufficient to address the emotional and practical hurdles individuals face post-amputation. The average social support score of 35.9±11.294 provided qualitative insights into the intricate support system available to these individuals.

Utilizing both qualitative and quantitative measurements can be beneficial for amputees during the rehabilitation journey as they can offer insights into the most effective social support mechanisms for amputee recovery [2].

Social support has been demonstrated to boost self-efficacy among prosthetic users. This underscores the significant role of interpersonal relationships in shaping individuals' perceptions of their ability to confront challenges effectively. According to Bandura's Social Cognitive Theory, self-efficacy refers to an individual's belief in their capacity to carry out actions necessary to achieve desired outcomes. This belief is not formed in isolation but is influenced by social factors such as friendships and social interactions [21]. The research suggests that individuals with higher levels of social support are more likely to exhibit increased self-efficacy, particularly in managing fatigue, coping with pain, handling emotional distress, addressing other symptoms and health issues, and overall self-efficacy. The significant correlations identified in this study provide statistical evidence supporting the general notion that social support is linked to self-efficacy. The strong positive relationship between social support and self-efficacy across various domains is reflected in the correlation coefficients. For instance, the r-value of 0.133 for social support suggests that a one-unit increase in social support leads to an improvement of approximately 0.133 units in self-efficacy related to managing fatigue. Similarly, the coefficients for pain management (r=0.198), emotional distress (r=0.172), addressing other symptoms and health problems (r=0.180), and overall self-efficacy (r=0.173) further underscore the impact of social support on self-efficacy, as supported by previous studies indicating additional associations [2, 22].

The significance levels ($p<0.005$ or $p<0.001$) associated with these correlations indicate that the observed relationships are unlikely to be due to chance. They suggest that the findings were reproducible and reliable, thereby reinforcing the evidence that social support plays a crucial role in the self-efficacy of prosthetic users. This outcome aligns with previous studies indicating that social support functions as a stress buffer and facilitates the adoption of adaptive coping strategies [23, 24]. Individuals surrounded by a supportive social network are known to possess the self-efficacy necessary to perceive problems as manageable and believe in their ability to overcome them.

Moreover, the specific domains in which the correlation between social support and self-efficacy was identified provide practitioners with a valuable framework to design interventions aimed at enhancing the well-being of prosthetic users. Therefore, interventions such as building social support networks, enhancing coping skills, or improving mood can potentially alleviate symptoms like fatigue, pain management, and emotional distress. By creating community networks and fostering a supportive environment for individuals with prostheses, they may gain increased confidence in overcoming the physical and emotional challenges linked to their condition [25].

The study results indicated a positive correlation between social support and self-efficacy among prosthetic users, particularly in managing fatigue, coping with pain, navigating emotions, addressing various symptoms and health issues, and overall self-efficacy. The data gathered from this research underscores the significance of social support interventions in fostering resilience and well-being among individuals with prosthetic limbs. This information is valuable for both clinical applications and future research endeavors. The study emphasizes the presence of low self-efficacy and moderate social support among lower limb prosthetic users post-amputation. Furthermore, the positive correlation between social support and self-efficacy emphasizes the significance of fostering supportive atmospheres for these individuals. Consequently, interventions targeting the enhancement of social support networks could notably enhance self-efficacy and overall well-being in this group, ultimately facilitating better adaptation and quality of life following amputation.

There are several limitations that the researchers faced, including that the study design was cross-sectional, samples were collected during the study, and samples were rejected when they were not reliable.

Conclusion

Interventions focused on enhancing social support networks significantly enhance self-efficacy and overall well-being, ultimately fostering improved adjustment and quality of life post-amputation.

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