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Comparison of Resilience between Amputated and Non Amputated Type-I Diabetes Patients

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Abstract

Diabetes mellitus (DM) is defined as "a metabolic disease characterized by high blood sugar level for a long period". The reported symptomatology are frequent urge to urinate, numbness, or paresthesia, increased thirst, and starvation. DM is characterized by high blood sugar levels resulting from insulin production issues, insulin action, or both. It encompasses several types: Type 1 diabetes, Type 2 diabetes, and gestational diabetes. Diabetic foot ulcers (DFUs) are indeed a significant complication of diabetes mellitus and have garnered considerable attention from researchers and healthcare professionals. Diabetic neuropathy and angiopathy are key contributors to the development of diabetic foot ulcers (DFUs). The objective of the study was to analyze the differences between resilience among amputated and non-amputated patients. Initially, data of 400 patients (N=400) including both amputated and non-amputated type-I diabetic patients was approached for collection of data from both genders of age range 35-55 years from different endocrinology departments of hospitals in Peshawar. Scores on the brief resilience scale indicate that there is a significant difference between amputated and non-amputated type I diabetic patients in terms of resilience. Amputated individuals have higher resilience towards illness than non-amputated individuals. It is concluded from the current study that there is a significant difference between amputated and non-amputated type I diabetic patients in terms of resilience

Keywords: Type-1 diabetes, Amputation, Resilience

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Introduction

Diabetes mellitus is defined as "a metabolic disease characterized by high blood sugar level for a long period". The reported symptomatology are frequent urge to urinate, numbness, or paresthesia, increased thirst, and starvation. It is indeed a significant public health concern, affecting a vast number of individuals worldwide. If it is not addressed timely, it may lead to many complications i.e. blindness, and foot ulcers (Mahlaule, 2017). According to the International Diabetes Federation (IDF) report from 2015, over 400 million people were living with diabetes, highlighting the widespread nature of this condition (Kuang et al, 2021). In Hungary, around 5 to 5.5% prevalence highlights the need for effective management and prevention strategies. This condition impacts individual health and burdens healthcare systems. Untreated diabetes can lead to a range of serious complications, particularly affecting the lower extremities (Makai, et al, 2019).

DM is characterized by high blood sugar levels resulting from insulin production issues, insulin action, or both. It encompasses several types: Type 1 diabetes, Type 2 diabetes, and gestational diabetes. Type 1 diabetes mellitus (T1DM) is indeed a chronic autoimmune condition that destroys pancreatic β-cells, leading to insufficient insulin production. This deficiency causes elevated blood glucose levels (hyperglycemia) because insulin is crucial for glucose uptake in cells. T1DM typically manifests in childhood or adolescence, but it can occur at any age (Katsarou, et al, 2017). Diabetic foot ulcers (DFUs) are indeed a significant complication of T1DM and have garnered considerable attention from researchers and healthcare professionals. Diabetic neuropathy and angiopathy are key contributors to the development of diabetic foot ulcers (DFUs). Reduced blood flow to the lower extremities can impair wound healing and increase the risk of infections. Chronic ischemia (reduced blood flow) can also lead to tissue necrosis, making ulcers more likely to develop and harder to heal. As diabetic nephropathy progresses, it can lead to peripheral neuropathy, which reduces the ability to feel pain, temperature changes, or discomfort in the feet. This lack of sensation means patients may not notice injuries, blisters, or pressure sores. Patients may develop foot deformities due to imbalances in muscle function, exacerbated by neuropathy. These deformities can increase pressure points on the feet, making them more susceptible to injuries and ulcers (Kuang et al, 2021). Diabetic foot ulcers (DFUs) can lead to a poor prognosis, particularly if they are not managed effectively. Studies indicate that a diabetic amputation occurs approximately every 20 seconds worldwide. This indicates the severe impact DFUs can have on patients' lives, often leading to significant morbidity and mortality (Kuang et al, 2021). Approximately 25% of the 30 million individuals with diabetes in the United States are estimated to develop a DFU at some point in their lives. People with diabetes are about 10 times more likely to require amputations compared to those without diabetes. This elevated risk is primarily due to complications arising from DFUs, including infections and poor healing. Patients with suboptimal health insurance or low income often face barriers to accessing timely and appropriate healthcare services. This can lead to delays in diagnosis and treatment of complications like diabetic foot ulcers. Infection and gangrene related to diabetic foot ulcers (DFUs) are indeed among the primary causes of amputations in individuals with diabetes (Crocker, et al, 2021).

Amputation refers to the surgical removal or accidental loss of a limb or part of a limb. In another study, it is defined as the eradication of physical extremities usually arms and legs. According to Liu and Williams (2010), amputation is the former surgical

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procedure and was considered the last choice. Lavery, Peters, and Bush (2010) called it reconstructive surgery. It was considered as a patient's rehabilitation to enable them to function properly (Mahlaule, 2017). Amputation is considered an acquired condition because it typically results from specific events or health issues, rather than being present at birth. Complications caused by type 1 diabetes mellitus can lead to foot ulcers or infections, which, if untreated, may require amputation (Calabrese, et al 2023). Most non-traumatic lower limb amputations result from vascular complications associated with diabetes mellitus. In Hungary, 63 out of 100,000 people undergo amputation annually of which 57 lose lower limbs (Makai, et al, 2019). Studies consistently indicate that amputation significantly impacts patients' quality of life and psychological well-being. Individual responses to amputation can vary widely, there are common psychological reactions that many people experience. Fear about the future, concerns about mobility, and uncertainties regarding rehabilitation can lead to significant anxiety. Feelings of sadness and hopelessness are prevalent, often linked to loss of independence and changes in self-identity. Individuals may struggle with social situations due to embarrassment or changes in how they perceive themselves, leading to withdrawal from friends and family. Physical limitations and emotional distress can greatly diminish overall quality of life, affecting daily activities, work, and relationships. Many individuals experience a grieving process for the loss of their limb, which can include feelings of denial, anger, bargaining, and acceptance, similar to the stages of grief experienced in other types of loss. Adapting to a new lifestyle, including learning to use prosthetics or managing changes in physical capabilities, can be challenging (Makai, et al, 2019).

Lower limb amputations are indeed more prevalent than upper limb amputations, and they often result from a combination of medical conditions and traumatic incidents. People with physical disabilities generally have low self-esteem because of their body image. Foot problems related to diabetes are a serious concern and can lead to various significant consequences. Foot complications can limit physical activity, impacting social interactions and quality of life. Severe cases may lead to amputations, which can drastically affect a person's health and mobility (Livingstone et al, 2011).

Gallagher & Maclachlan's (2000), research on how individuals perceive their amputated limb and any positive outcomes from their experience offers valuable insights into the psychological adjustment following amputation. 104 people were taken as a sample to carry out the Trinity Amputation and Prosthesis Experience Scales (TAPES) and two open-ended questions. The majority were young and were the victims of traumatic amputation. It revealed that 56% of them tend to think about their amputated limb. People with bilateral or trans-femoral amputation were more likely to think about their amputated limb than people with trans-tibial amputation. 48% believed that amputation led to better results and considered it good. The results suggest that individuals who can find positive meaning tend to have better physical capabilities and self-rated health, experience fewer restrictions in athletic activities, and are better at adjusting to limitations. It reveals that some amputees still maintained their positive self-esteem despite their body image and self-image (Mireille and Foje, 2019).

The psychological responses to amputation are multifaceted and can be influenced by various factors such as age, gender, supportive social network, individual personality, and coping capacity which play a significant role in how individuals adapt during rehabilitation. The loss of a limb can profoundly impact an individual's body image and

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mental health. Individuals may struggle to accept their new body, leading to feelings of inadequacy or embarrassment. Many people associate their limbs with their identity and capabilities, and losing a limb can create a sense of loss beyond the physical. The psychological impact of amputation can lead to increased levels of anxiety and depression. Individuals may worry about their future, capabilities, and how others perceive them. Phantom limb pain is a common phenomenon where individuals feel sensations in the limb that has been amputated. This can add to emotional distress and complicate recovery. Individuals may withdraw from social situations due to embarrassment or discomfort, leading to feelings of isolation. The loss of a limb can limit participation in certain activities, leading to a decrease in engagement with hobbies or social events. This change can affect overall quality of life and community involvement (Calabrese, et al 2023).

Masten et al (2001) defines resilience as the development, ability, or outcome of successfully adapting to challenging or threatening conditions. Reed-Victor (2002) elaborates that resilience is shaped by individual characteristics such as personal resources, weaknesses, and abilities and by the goodness-of-fit between the individual and their environment. Indeed, numerous studies have established that individuals with higher levels of resilience tend to experience more positive emotions, even in the face of significant distress (Makai, et al, 2019). Walsh et al (2016) patients with lower limb amputation support the idea that resilience significantly influences their recovery and adaptation process. Resilient individuals tend to take initiative in their rehabilitation, actively seeking resources, therapies, and support to aid their recovery. These patients are more likely to establish personally meaningful goals, which can provide motivation and direction during the rehabilitation process. This goal-oriented approach helps them focus on what they can achieve rather than what they have lost. Even when facing physical pain, depression, and reduced activity, resilient individuals are better equipped to find and maintain positive emotional experiences. Psychological resilience processes, such as cognitive and coping strategies, interact with biological systems in complex ways to facilitate adaptation to stressful and traumatic life events (Miller, et al, 2020). Evidence supports the notion that individuals with chronic physical disabilities who exhibit higher levels of resilience tend to experience greater life role satisfaction and overall quality of life. Greater resilience at the time of injury is associated with protective effects against future depression and can predict better social functioning (Miller, et al, 2020).

As theorized by Charney, resilience refers to a collection of personal characteristics and traits that enable individuals to adapt to adverse life events effectively. Optimism, humor, cognitive flexibility, coping skills, skill at facing fears, moral compass, altruism, role model, social support, and physical exercise are the features of resilience (Miller, et al, 2020). For instance, coping skills and cognitive flexibility promote acceptance of adversity, enabling active problem-solving and a more resilient mindset. This can lead to better emotional well-being and improved outcomes in the face of stress. In addition, role models demonstrate effective ways to handle adversity, showing that overcoming challenges is possible. Being part of a supportive network provides encouragement and validation. Friends, family, or mentors can offer perspective, share their experiences, and provide emotional backing during tough times. Furthermore, physical activity is the core feature that positively affects the physiological and psychological well-being of the person, enhancing an individual's mood, self-efficacy, and physical hardiness. Knowing the characteristics responsible for building resilience within an individual's personality is

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important. (Miller, et al, 2020). Traumatic and dysvascular transtibial amputation (TTA) presents significant challenges that highlight the importance of resilience. Individuals facing TTA often deal with not only physical limitations but also emotional and psychological hurdles. Resilience helps them adapt to changes in mobility, manage chronic pain, and navigate the complexities of rehabilitation. For most individuals with transtibial amputation (TTA), conventional rehabilitation Despite advancements in rehabilitation and improvements in physical function, many individuals with transtibial amputation (TTA), especially those in middle age or older, often experience poor and variable outcomes in terms of physical activity and disability primarily targets enhancing physical function and improving gait with a prosthesis. Resilience plays a significant role in the physical activity and disability outcomes for individuals with transtibial amputation (TTA). There is a notable gap in resilience research specifically targeting middle-aged individuals with traumatic and dysvascular transtibial amputation (TTA). Understanding resilience characteristics relevant to this demographic is crucial. Most rehabilitation research has traditionally centered on younger, healthier individuals with traumatic amputations, which can limit the applicability of findings to older adults, particularly those with transtibial amputation (TTA) who often face unique challenges. Older adults are more likely to have multiple health issues, such as diabetes, cardiovascular disease, or arthritis, which can complicate rehabilitation and affect overall outcomes. Qualitative methods, utilizing both inductive and deductive approaches, are indeed well-suited for exploring resilience characteristics that can enhance disability outcomes for individuals with transtibial amputation (TTA).

A qualitative study in the USA (2022) highlights an important aspect of assessing resilience in individuals with traumatic amputations (TTA). The Connor-Davidson Resilience Scale (CD-RISC) is a widely used tool for measuring resilience. The study used semi-structured interviews to gather qualitative data, which provides rich insights into the lived experiences of participants. The CD-RISC scores were then utilized to categorize participants as resilient or less resilient. The choice to use a general population cut point of <82 points to identify less resilient individuals underscores the lack of specific benchmarks for TTA patients (Miller et al., 2020). The 2015 study from Washington underscores how resilience plays a critical role in rehabilitation outcomes for individuals with traumatic amputations (TTA) and other chronic physical disabilities. Resilience is linked to better recovery and adaptation in individuals facing significant physical challenges. It can enhance the ability to cope with the emotional and physical aspects of rehabilitation (Silverman et al., 2015). The 2015 study from the Netherlands that reviews resilience across individual, community, and national levels offers valuable insights into how these dimensions interact and influence one another. Individual Resilience refers to personal traits, coping mechanisms, and psychological resources that help individuals navigate challenges and adversity. Community Resilience focuses on the collective capacity of communities to respond to crises, emphasizing social networks, shared resources, and collaborative problem-solving. National Resilience encompasses the systemic factors at a national level, including policies, infrastructure, and governance that contribute to the overall resilience of a society (Shaul Kimhi, 2015).

The Rationale of the Study

Type 1 diabetes is an autoimmune disease that is diagnosed at an early age of life. Over some time, the diseases produce overall physiological and psychological complications

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including heart problems, kidney disorders, and even amputations affecting the ultimate psychological well-being and mental conditions of the patient. The current study focuses on identifying differences between resilience with and without amputated fingers and toes. The study will help to develop resilience in diabetic patients who are going through amputations due to diabetes.

Objective of the Study

To analyze differences between resilience among amputated and non-amputated patients.

Hypothesis:

There will be a significant difference in resilience among amputated and non-amputated type-1 diabetic patients.

Methodology

Sample

Initially, data of 400 patients (N=400) including both amputated and non-amputated type-I diabetic patients was approached for collection of data from both genders of age range 35-55 years from different endocrinology departments of hospitals in Peshawar. After the collection of data, the data was analyzed to determine the actual number of participants for the study. This strategy was used as it has been assumed that the availability of amputated type-I diabetic patients with amputation of fingers and toes will be lesser than their counter group. After having the data of 400 individuals, the sample was determined based on available amputated type-I diabetic patients.

Inclusion and Exclusion Criteria

- Patients with type-1 diabetes who had amputation in the last year were included.
- Patients having type-2 diabetes were not included.
- Patients below age 35 and above age 55 were excluded.
- Patients having other endocrinological issues were also excluded.

Instruments

1. Brief Resilience Scale (BRS)

Through self-reporting, the Brief Resilience Scale (BRS) measures the ability of an individual to adjust and recover in the face of stress and adversity. It was created in 2008 by Smith et al. and consists of six components. The overall score on the BRS ranges from 6-30, with stronger resilience being indicated by higher scores. The BRS uses a five-point Likert scale, with the options Strongly Disagree, Disagree, Neutral, Agree and & Strongly Agree as responses. The BRS has been determined to have strong validity and reliability in measuring resilience across different populations and cultures. It is often used in research studies and clinical settings to assess an individual's resilience and track changes over time. The Brief Resilience Scale has good validity and reliability with its internal consistency is α= 0.71.

Procedure

Data was collected from different hospitals in Peshawar, KP, including Lady Reading Hospital Peshawar, Khyber Teaching Hospital, and Mercy Teaching Hospital. Patients were briefed about the purpose of the research and their privacy and confidentiality was ensured. The study instruments were provided to the participants for data collection.

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Results

Table 1: ***Frequencies and Percentages of demographics of the sample (N=300)***

Variables	Frequencies	%
Gender		
Male	95	31.7
Female	205	68.3
Marital Status		
Single	13	4.3
Married	287	95.7
Education		
No education	182	60.7
Primary	45	15.0
Secondary	71	23.7
Higher	02	0.6
Category		
Amputated 150		50%
Non-Amputated 150		50%

Table 2: ***Mean scores, Standard Deviation, and t-values of Amputated (n=150) and Non-Amputated (n=150) patients of Type-I diabetes on Brief Resilience Scale (BRS)***

	Amputated		Non-amputated						
	(n= 150)		(n=150)				95%CI		
	M	SD	M	SD	t(df)	P	LL	UL	Cohen's d
Brief Resilience Scale (BRS)	16.06	2.403	14.77	3.604	-3.650(296)	.000	-1.944	-.597	0.42

Table 2 finding depict that there is a significant difference between amputated and non-amputated type I diabetic patients in terms of resilience. Therefore accepting our hypothesis 1. The results further describe that amputated individuals have higher resilience towards illness than non-amputated individuals

Discussion

Diabetes mellitus is indeed characterized by prolonged high blood sugar levels that trigger different symptoms among patients including frequent urination, increased thirst, and feelings of hunger. If diabetes is not managed effectively, it can lead to serious complications, including blindness, foot ulcers, kidney damage, and cardiovascular disease.

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There are three types of diabetes, type 1, type 2, and gestational diabetes. Diabetic foot ulcers (DFUs) are a major concern for individuals with diabetes and are a focus of significant research and clinical attention. Amputation is the surgical removal or loss of a limb or part of a limb, commonly affecting the arms and legs. Amputation can have significant physical and psychological impacts on individuals, including mobility and body image changes. Rehabilitation and support are crucial for helping patients adjust to life after amputation, which may involve physical therapy, prosthetics, and counseling.

Table 1 explains the descriptive statistics of the sample, of which 95 were males and 205 were females, with an estimated percentage of 31.7% males and 68.3% females aged between 35-55 years. 13 were single and 287 were married with an estimated percentage of 4.3% and 95.7%. 182 respectively. Among the sample 182 were illiterate with an estimated percentage of 60.7%. The primary level sample was 45 with an estimated percentage of 15.0%, the secondary level sample was 71 with an estimated percentage of 23.7%, and the higher level sample was 02 with an estimated percentage of 0.6%. Both amputated and non-amputated patients in the sample were 150 with an estimated percentage of 50%.

Table 2 indicates the mean value of amputated = 16.06 and standard deviation =2.403 at 0.05 C.I and the mean value of non-amputated = 14.77 and standard deviation = 3.604 at 0.05 C.I that there is a significant difference between amputated and non-amputated type I diabetic patients in terms of resilience. Therefore, we are accepting our hypothesis 1. The results further describe that amputated individuals have higher resilience towards illness than non-amputated individuals. A study conducted in 2024 indicated that patients with traumatic amputations, psychological recovery, and acceptance of limb loss are indeed positively affected by comprehensive medical treatment that addresses both physical and psychological needs can promote healing and instills confidence in recovery. Individuals with greater resilience are often better equipped to cope with adversity, leading to more effective adaptation and acceptance of their new reality. A strong network of family, friends, and peer support can provide emotional comfort, reduce feelings of isolation, and facilitate adjustment (Phutane, et al, 2024).

Conclusion

Type 1 diabetes (T1D) is an autoimmune condition where the body's immune system attacks insulin-producing beta cells in the pancreas. This leads to little or no insulin production, making daily insulin administration essential for managing blood glucose levels.

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towards illness than non-amputated individuals. So, based on the results of our current study, we concluded that resilience is high among amputated individuals compared to non-amputated patients. Different studies use different instruments to measure resilience among amputated and non-amputated patients suffering from type 1 diabetes to make them accept and adjust to their amputated limb.

Limitations and Suggestions

- A limited number of hospitals were approached for data collection. For future research, more endocrinology departments of hospitals should be consulted for the same problem.
- Patients' ir-respect of their age can be a sample of a research study in future research.

References

Calabrese, L., Maffoni, M., Torlaschi, V., & Pierobon, A. (2023). What is hidden behind Amputation? A quantity-qualitative systematic review on psychological adjustment and Quality of life in lower limb amputees for non-traumatic reasons. In *Healthcare* (Vol.11, No. 11, p. 1661). MDPI.

Crocker, R. M., Palmer, K. N., Marrero, D. G., & Tan, T. W. (2021). Patient perspectives on the Physical, psycho-social, and financial impacts of diabetic foot ulceration and Amputation. *Journal of Diabetes and its Complications*, *35*(8), 107960.

Katsarou, A., Gudbjörnsdottir, S., Rawshani, A., Dabelea, D., Bonifacio, E., Anderson, B. J., & Lernmark, Å. (2017). Type 1 diabetes mellitus. *Nature reviews Disease primers*, *3*(1), 1- 17. https://doi.org/10.1038/nrdp.2017.16

Liu, Y.H.P & Williams, D. (2010). Fundamental of amputation care and prosthesis. USA:Demosmed Publishers.

Mahlaule, G. (2017). *Lived Experiences of Patients with Diabetes-Related Lower Limb Amputation in Charlotte Maxeke Johannesburg Academic Hospital*. University of Johannesburg (South Africa).

Makai, G., Rátvai, E., Veszely, J., Pethes, B., & Kiss, E. C. (2019). Resilience inpatients with Diabetes-related lower limb amputation. *The Open Psychology Journal*, *12*(1).

Mireille, N. N., & Foje, N. N. (2019). Social resilience and self-esteem among amputees: A case Study of amputees with positive self-esteem. *Journal of Medical-Clinical Research & Reviews*, *3*(2), 1-7.

Livingstone, W., Van De Mortel, T. F., & Taylor, B. (2011). A path of perpetual resilience: Exploring the experience of a diabetes-related amputation through grounded theory. *Contemporary nurse*, *39*(1), 20-30. http://dx.doi.org/10.5172/conu.2011.39.1.20

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American* Reed-

Miller, M. J., Mealer, M. L., Cook, P. F., So, N., Morris, M. A., & Christiansen, C. L. (2020). Qualitative analysis of resilience characteristics of people with unilateral transtibial Amputation. *Disability and Health Journal*, *13*(4), 100925.

Silverman, A. M., Molton, I. R., Alschuler, K. N., Ehde, D. M., & Jensen, M. P. (2015). Resilience Predicts functional outcomes in people aging with disability: A longitudinal investigation. *Archives of Physical Medicine and Rehabilitation*, *96*(7), 1262–1268. https://doi.org/10.1016/j.apmr.2015.02.023.

Shaul Kimhi. (2015). Level of Resilience: A Critical Review. *IOS Press, the NATO Science for Peace and Security Programme*, 49–59.

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Online ISSN 3006-4651

Print ISSN 3006-466X

Walsh, M. V., Armstrong, T. W., Poritz, J., Elliott, T. R., Jackson, W. T., & Ryan, T. (2016). Resilience, pain interference, and upper limb loss: Testing the mediating effects of positive Emotion and activity restriction on distress. *Archives of Physical Medicine and Rehabilitation*, *97*(5), 781-787. https://doi.org/10.1016/j.apmr.2016.01.016