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The Relationship between Self-Efficacy and General Adaptation in Extremity-Amputee Diabetics

A Field Study across Three Hospitals

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Abstract : This study aims to investigate the association between self-efficacy proficiency and general adaptation dimensions among extremity-amputee diabetics. Employing a descriptive correlational methodology, a sample of 54 participants was drawn from the internal medicine department. The assessment tools used in the study included Ralf Schwarzar's self-efficacy scale and a researcher-designed general adaptation scale. The statistical analysis revealed a statistically significant correlation between self-efficacy proficiency and the general level of adaptation, encompassing psychological, social, and health-related domains. Furthermore, the findings underscored the absence of any substantial gender-based discrepancies pertaining to self-efficacy proficiency. However, noteworthy distinctions in self-efficacy proficiency were observed.

Keywords : Self-efficacy; General adaptation; psychological adaptation; social adaptation; health adaptation; extremity-amputee diabetics.

La Corrélation entre l'Auto-Efficacité et l'Adaptation Générale Chez les Diabétiques Amputés des Membres :

Une étude de terrain dans trois hôpitaux.

Résumé : Cette étude explore la relation entre la maîtrise de l'autoefficacité et les différentes dimensions d'adaptation chez les diabétiques amputés des membres. À l'aide d'une méthodologie descriptive corrélationnelle, 54 participants ont été sélectionnés au sein du département de médecine interne. Les outils d'évaluation incluaient l'échelle d'autoefficacité de Ralf Schwarzar et une échelle d'adaptation générale élaborée par le chercheur. L'analyse statistique a révélé une corrélation significative entre la maîtrise de l'autoefficacité et le niveau global d'adaptation, englobant les aspects psychologiques, sociaux et sanitaires. Les résultats mettent en évidence l'absence de divergences significatives basées sur le genre en matière de maîtrise de l'autoefficacité, bien que des distinctions notables dans cette compétence aient été observées.

Mots-clés : Autoefficacité ; Adaptation générale ; Adaptation psychologique ; Adaptation sociale ; Adaptation sanitaire ; Diabétiques Amputés des Membres.

Introduction

Changes in physical appearance are often experienced by individuals as a result of illnesses that lead to disfigurement, subsequently causing disruptions in both bodily integration and psychological well-being. This can give rise to feelings of rejection and non-acceptance, thereby exacerbating and escalating the individual's health condition. The conflict between the mind and body arises from the inability of patients to adapt to the new situation, surpassing their psychological, physical, social, and even health-related capacities. Particularly, diabetics are susceptible to such changes due to the complications associated with the disease, which result in visible effects on the body. In this context, the focus is specifically placed on the process of amputation, which, in turn, disrupts the balance of psychological employment and is accompanied by changes experienced in areas such as relational and social life, mental health, and daily life in general. Consequently, a crucial role is played by the field of health psychology in understanding, caring for, and interpreting how individuals respond when affected by diseases.

This is achieved by assisting patients in adapting to their illnesses through the provision of support aimed at overcoming diseases, particularly chronic conditions, thereby improving their mental and physical health within an interconnected relationship of influence and impact. The inherent connection between the mind and body is emphasized by this approach. (Shelly, 2008, p. 54).

0.1. Research Problem

Self-efficacy, a crucial psychological construct, plays a significant role in individuals' ability to cope with and adapt to psychological and social pressures. It is contingent upon one's perceived self-worth, self-concept awareness, and self-regulation. Self-efficacy encompasses an individual's beliefs in their capacity to successfully accomplish desired tasks, making it a fundamental aspect of both psychological well-being and physical well-being. Moreover, it facilitates the development of self-assessment strategies for fostering behavioral change. (Khamekham, 2022, p. 37).

Bandura's perspective reinforces this notion, as he defines self-efficacy as rooted in an individual's beliefs regarding their competence to achieve desired performance levels that influence the events shaping their lives. Furthermore, it encompasses their perception of possessing the necessary capability to actively confront these events, which often lie within their sphere of control. (Bandura, 2007, p. 859).

Furthermore, self-efficacy is widely recognized as an integral aspect of one's personality, reflecting their inherent resilience in the face of challenges and their unwavering belief in their ability to effectively perform tasks. (Al-Harbi & Zahran, 2009, p. 323). This concept has garnered significant scholarly attention across various branches of psychology, with a particular emphasis on the field of health psychology. Self-efficacy is considered a fundamental personal attribute and a potent motivational force that drives task accomplishment and shapes human behavior, as evidenced by individuals' adaptive responses to a myriad of internal and external variables. Notably, the seminal work of Bandura has played a pivotal role in the conceptualization of self-efficacy, asserting that individuals' engagement in health-related behaviors is intrinsically tied to their unwavering confidence in successfully executing the appropriate behaviors required to attain desired health outcomes. (Bandura, Self-Efficacity: Toward a Unifying Theory of Behavior Change, 1977, p. 247).

Furthermore, the aforementioned discussion elucidates that self-efficacy is employed to denote internal control factors, specifically enhancing psychological functioning. This, in turn, underscores its integral association with the process of adaptation. Adaptation is restricted to individuals' interaction with the ever-evolving array of events and circumstances they encounter. Attaining a state of comprehensive adaptation is intricately linked to numerous contributing factors, with self-efficacy occupying a central position. In a comprehensive context, adaptation, as expounded upon by Al-Hashimi in psychological research, can be defined as "the ongoing dynamic process, whether conscious or unconscious, by which individuals strive to modify their behavior in order to achieve greater congruence with their environment and fulfill their intrinsic motivations". (Younsi, 2017, p. 61).

The restricted domain of adaptation, specifically in terms of self-efficacy, warrants an investigation into its association with various aspects of adjustment among individuals who have undergone extremity amputation due to diabetes. Consequently, we have formulated the following pertinent inquiries:

1. What is the nature of the existing relationship between the level of self-efficacy and the general process of adaptation among extremity amputee diabetics?
2. Is there a discernible correlation between the level of self-efficacy and the psychological adaptation of extremity amputee diabetics?
3. To what extent does the level of self-efficacy influence the social adaptation of extremity-amputee diabetics?
4. Are there discernible links between the level of self-efficacy and health-related adaptation among extremity-amputee diabetics?

5. Do variations in self-efficacy levels exist based on gender among individuals with extremity-amputee diabetics?
6. Are there notable discrepancies in self-efficacy levels attributed to age differences among extremity-amputee diabetics?
7. Are there disparities in self-efficacy levels based on educational attainment among extremity-amputee diabetics.?

0.2. Research Hypotheses

- General Hypothesis

A significant statistical correlation exists between the level of self-efficacy and the general adaptation among extremity-amputee diabetics.

- Specific Hypotheses

•A significant statistical correlation exists between the level of self-efficacy and the psychological adaptation among extremity-amputee diabetics.
• A significant statistical correlation exists between the level of self-efficacy and the social adaptation among extremity-amputee diabetics.
• A significant statistical correlation exists between the level of self-efficacy and the health-related adaptation among extremity-amputee diabetics.
•There are statistically significant differences in the level of self-efficacy attributed to gender among extremity-amputee diabetics.
•There are statistically significant differences in the level of self-efficacy attributed to age among extremity-amputee diabetics.
•There are statistically significant differences in the level of self-efficacy attributed to educational attainment among extremity-amputee diabetics.

1. Practical Part

- Pilot Study

Study Scope

- Spatial Scope: The study was conducted at specific hospitals in Constantine Province, namely Ibn Badis University Hospital, Mohammed Boudiaf Hospital (in the Internal Medicine Department)
- Temporal Scope: The study was conducted within a specific time frame, starting from November 2, 2022, and ending on December 15, 2022.
- Human Scope: The study sample for the pilot study was selected purposively from the original population, consisting of 30 extremity amputee-diabetics.

Sociodemographic Characteristics of the Pilot Study Sample

The sociodemographic characteristics of the pilot study sample were represented by gender, age, and educational level, as shown in table 1. Table 1 presents the distribution of individuals in the pilot study based on sociodemographic characteristics, which were predefined according to the study's hypotheses. It reveals that 70% of participants are male, 30% are female, with 63.3% falling in the 60-77 age group and 36.7% in the 54-70 age group. In terms of education, 46.7% have a Primary level, 36.7% have No Education, 10% have a Secondary level, and 6.6% possess a University level of education. These sociodemographic insights are crucial for interpreting the study's outcomes.

Table 1. The distribution of individuals in the pilot study according to sociodemographic characteristics.

Sociodemographic Characteristics of the Pilot Study Sample		Frequency	Percentage
Gender	Male	21	70
	Female	09	30
Age	60-77	19	63.3
	54-70	11	36.7
Educational Level	No Education	11	36.7
	Primary	14	46.7
	Secondary	03	10
	University	02	6.6
Total		30	100

Sources: This Study

Objectives of the Pilot Study

The objectives of the pilot study are as follows:

1. Identify locations where the study cases are present.
2. Ensure the psychometric properties of the researcher-developed "General Adaptation Scale and Self-Efficacy Scale".

2. Methodology of the Pilot Study

In this stage, a descriptive methodology is adopted to align with the objectives of the pilot study. The aim is to determine whether the study cases are adapting to their amputation at different levels and in various regions. A comprehensive collection of information related to the phenomenon under study is conducted.

2.1. Research Instruments of the Pilot Study

For the pilot study, reliance is placed on the researcher-developed "General Adaptation Scale" due to the absence of an existing scale that meets the necessary psychometric criteria. This scale, encompassing three dimensions (psychological adaptation, social adaptation, and health adaptation), will be utilized. Additionally, the "Self-Efficacy Scale" will be employed as a measurement tool.

Main Study

Study Scope

- Temporal scope: The study was conducted between the period of 02/01/2023 and 15/03/2023.
- Spatial scope: The study was carried out at Ibn Badis University Hospital in the province of Constantine, Mohammed Boudiaf Hospital in the El Khroub District, and Suleiman Amirate Hospital in the Ain M'lila District.
- Human scope: The study sample comprised 56 extremity amputee-diabetics.
- Research Methodology: The research methodology employed in our study, which focuses on the relationship between self-efficacy and the dimensions of overall adaptation among extremity-amputee diabetics, adopts a descriptive correlational approach. The objective of this approach is to examine the potential existence of an association between the study variables (i.e., self-efficacy and general adaptation with its respective dimensions), irrespective of its directionality.

2.1. Description of Study Tools and Their Psychometric Properties

- Self-Efficacy Scale: The Self-Efficacy Scale was constructed by Ralf Schwarzar at the University of Berlin, Germany, in 1981 and was developed in 1989. Initially, the scale consisted of 20 items, which were subsequently reduced to 10 items. The translation into the Arabic language and its application on a Syrian sample were contributed by Samer Jameel Radwan. The scale is composed of 10 statements, and responses are graded on a four-point Likert scale

as follows: 1 (not applicable), 2 (rarely applicable), 3 (often applicable), and 4(always applicable). The overall scores range from 10 to 40, with higher scores

indicating greater self-efficacy expectations, while lower scores indicate lower self-efficacy expectations (Khalefi, 2019, p. 223).
Two scales were used in our study, which aimed to investigate the relationship between self-efficacy and the dimensions of general adaptation among extremity amputee- diabetics.

Psychometric Properties of the Scale
-The calculation of internal consistency reliability for the Self-Efficacy Scale: Table 2, which prominently exhibits the internal consistency reliability of the Self-Efficacy Scale, conveys not only the coherence of items but also their statistical significance. The correlation coefficients, ranging from 0.81 to 0.65, demonstrate both significance at the 0.01 level and a progressive strengthening of the relationship between individual items and the overarching concept of self-efficacy. These findings are invaluable as they assess the reliability and validity of the scale as a robust measurement tool for their study.

Table 2. Calculation of internal consistency reliability for the Self-Efficacy Scale between item scores and the total scale score

Number of Statements	Correlation Coefficient
1	0.67
2	0.78
3	0.69
4	0.75
5	0.81
6	0.77
7	0.65
8	0.73
9	0.78
10	0.70

Source: SPSS program outputs

Calculation of Reliability for the Self-Efficacy Scale
The reliability of the scale was calculated using Cronbach's alpha coefficient, according to the following equation:
$\alpha = (n / (n-1)\ (1 - (\Sigma Var(xi) / Var(T)2)$
n: represents the number of items in the scale.

Var(xi): denotes the variance of each item.
Var(T): refers to the total variance of the test scores.
Thus:

Table 3: Results of Cronbach's Alpha for the Self-Efficacy Scale

Number of items	Cronbach's Alpha Coefficient
10	0.80

Source: Output of SPSS software

The results presented in Table (3) indicate that the Cronbach's alpha coefficient for the self-efficacy scale is 0.80, which signifies a reliable measure.

- General Adaptation Scale: The "General Adaptation" scale was developed by the researchers due to the lack of an existing scale that meets the necessary psychometric conditions. It consists of three dimensions: Psychological Adaptation, Social Adaptation, and Physical Adaptation. The scale includes 9 positive items, numbered as follows: 1, 3, 10, 12, 22, 25, 33, 35, and 36. It also includes 41 negative items, numbered as follows: 2, 4, 5, 6, 7, 8, 9, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 26, 27, 28, 29, 30, 31, 32, 34, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, and 50.

The Likert five-point scale was used to respond to the scale, according to the following suggestions: Never/Rarely/Sometimes/Often/Always. The scores were distributed according to the given positive and negative items as shown in table 4. The Likert five-point scale, a commonly employed instrument in social sciences research, was utilized in this study to elicit responses from participants. Respondents were instructed to indicate the frequency of their experiences by selecting one of the five response options: Never, Rarely, Sometimes, Often, or Always. This scale provides a structured framework for capturing the nuances of human behavior and attitudes, allowing for a quantifiable analysis of the data.

In the context of this study, it is noteworthy that the scores assigned to the responses were not uniform across all items. Distinct scoring patterns were applied to positive and negative items. Positive items received scores ranging from 0 for Never to 4 for Always, indicating a higher score for more favorable responses. Conversely, negative items were scored in a reverse fashion, with 4 assigned to Never and 0 to Always, reflecting a lower score for more adverse

responses. This approach acknowledges the polarity of the items and ensures that higher scores consistently represent a more positive disposition.

Table 4. Scoring Scheme for Positive and Negative Items in the Survey

Alternative Item Responses	Never	Rarely	Often	Sometimes	Always
Positive Items	0	1	2	3	4
Negative Items	4	3	2	1	0

Source: This Study

And based on the number of items and the distribution of scores, the answer keys were determined as shown in table 5. which delineates a methodically structured categorization scheme for adaptation levels, grounded in score distributions across four pivotal domains: Psychological, Social, Health, and General Adaptation. This classification framework serves as an analytical tool, fostering a nuanced comprehension of the diverse adaptation levels exhibited by individuals within each respective domain.

Table 5. Categorization of Adaptation Levels Based on Score Distributions

Level / Variables	Low Level	Medium Level	High Level
Psychological Adaptation	0-19	20-40	41-120
Social Adaptation	0-6	7-14	15-28
Health Adaptation	0-12	13-26	27-52
General Adaptation	0-49	50-100	51-200

Source: This Study

- Psychometric Properties of the Scale:

The validity of the General Adaptation Scale was calculated using Lawshe's formula, which is as follows:

$\Sigma PB = (N1 - N2) / N$

N1: Number of raters who agreed on the validity of the item.

N2: Number of raters who disagreed on the validity of the item.

N: Total number of raters.

After applying the above formula (Lawshe's formula), it was found that the validity coefficient of the scale is 0.84, which is a high coefficient. Therefore, this indicates an acceptable level of validity.
The reliability of the scale was calculated using Cronbach's alpha formula:
$\alpha = N / (N - 1) * (1 - (\Sigma Var\_b / \Sigma Var\_k)2$
N: Number of items.
ΣVar_b: is the sum of item variances
Var_k: is the total variance of the test scores
Thus:

Table 6. Stability Results According to Cronbach's Alpha for the General Adaptation Scale

Number of items	Cronbach's Alpha Coefficient
10	0.67

Source: SPSS Output

Based on the results presented in Table 6, the Cronbach's Alpha coefficient for the General Adaptation Scale is 0.67, indicating a moderate level of scale reliability.

2.2. Statistical Analysis Tools

In our study, we applied the statistical software SPSS, relying on the following methods:

- Pearson correlation coefficient was used as a statistical method to calculate the internal consistency reliability of the study scale (Self-Efficacy Scale) and to determine the relationship between study variables.
- Cronbach's Alpha coefficient was used to measure the reliability of the scales.
- Chi-square (χ^2) test was used to assess the presence of differences between study variables, according to the following formula:

$\chi^2 = (\Sigma(\text{Observations} - \text{Expected Frequencies}))^2 / \text{Expected Frequencies}\ \chi^2 = \Sigma((Fi - NPi) / NPi)$,

where χ^2 is subject to certain applicable conditions:
In 2x2 contingency tables, no expected frequency should be less than 05.
In larger tables, no expected frequency should be less than 01, and no more than 20% of the expected frequencies should be less than 05. Sometimes, categories with low frequencies are merged to meet the conditions for applying the chi-square test in the case of homogeneity (Kafrouni, 2011, p.64).

2.3. The sociodemographic characteristics of the study sample

The sociodemographic characteristics of the study sample are represented in table 7. provides a concise breakdown of the sociodemographic characteristics of the full-scale study sample. It reveals that the majority of participants are male (83.9%) and fall within the 57-77 age range. Moreover, a significant portion of the sample (60.7%) has no formal education. These sociodemographic insights should be considered when interpreting the study's findings, as they may influence participant perspectives and responses. This distribution was based on predefined hypotheses that considered gender, age, and educational level, as illustrated in the full-scale study.

Table 7. The distribution of individuals in the full-scale study sample according to sociodemographic characteristics

Gender	Age	Frequency	Percentage
Male	57-77	47	83.9%
Female	56-69	09	16.1%
Educational level	No education	34	60.7%
	Elementary	15	26.8%
	High school	03	5.4%
	University	04	7.1%
Total		56	100%

Source: This Study

3. Results and Discussion

After distributing the scales among the study sample, which consisted of extremity-amputee diabetics, and conducting statistical analysis using the SPSS statistical package, the results are shown in table 8. The data in table 8 indicates significant gender disparities in self-efficacy levels among participants, with 83.9% of males displaying low self-efficacy compared to only 16.1% of females. Moreover, both genders exhibit predominantly poor general adaptation levels (83.9% and 16.1%, respectively). These results suggest potential gender-specific challenges. Additionally, participants, regardless of gender, struggle across psychological, social, and health adaptation dimensions. These findings underscore the need for tailored interventions, including gender-sensitive counseling and comprehensive support services, for extremity-amputee diabetics to address their unique challenges and improve adaptation.

Table 8. Results of the Self-Efficacy Scale and General Adaptation Scale

Percentage	Frequency of General Adaptation Levels and Three-Dimensional Levels	percentage	Frequency of Self-Efficacy Levels	Gender
83.9%	47 (Poor general adaptation level)	83.9%	47 (Low self-efficacy level)	Male
	47 (Poor psychological adaptation level)			
	47 (Poor social adaptation level)			
	47 (Poor health adaptation level)			
16.1%	09 (Low general-efficacy level)	16.1%	09 (Low self-efficacy level)	female
	09 (Low self-efficacy level)			
	09 (Poor social adaptation level)			
	09 (Poor health adaptation level)			
100%		100%	56	Total

Source: This study

Table 9 presents Pearson correlation coefficients between self-efficacy and various aspects of adaptation, shedding light on their relationships. The findings indicate :

- A weak inverse relationship (-0.08) between self-efficacy and general adaptation.
- A minimal negative association (-0.04) between self-efficacy and psychological adaptation.
- A moderate negative correlation (-0.19) between self-efficacy and social adaptation.
- A very weak positive connection (0.09) between self-efficacy and physical adaptation.

These correlations offer insights into how self-efficacy relates to adaptation, with social adaptation exhibiting the most significant inverse relationship. Furthermore, it's important to note that these correlations were derived from the variables defined in both the general hypothesis and specific hypotheses using the statistical software SPSS, contributing to a comprehensive understanding of the study's dynamics.

Table 9. the value of Pearson correlation coefficient (r) between different study variables

Variables	Pearson correlation coefficient
Self-Efficacy Level and General Adaptation Level	-0.08
Self-Efficacy Level and Psychological Adaptation Level	-0.04
Self-Efficacy Level and Social Adaptation Level	-0.19
Self-Efficacy Level and Physical Adaptation Level	0.09

Source: SPSS output

Regarding the general hypothesis, which suggests that " A significant statistical correlation exists between the level of self-efficacy and the general adaptation among extremity-amputee diabetics." the calculated Pearson correlation coefficient revealed a value of -0.08. This negative value signifies a statistically significant relationship at a significance level of 0.01. Thus, the general hypothesis is accepted, indicating a statistically significant association between the level of self-efficacy and the level of general adaptation.

Additionally, it can be inferred that a decrease in self-efficacy corresponds to a weaker level of general adaptation. These findings provide empirical support for the existence of a relationship between self-efficacy and general adaptation in the context of amputee diabetic patients.

This negative inverse relationship can be attributed to the structure of the psychological system and its adaptability to external circumstances, as well as individuals' previous experiences and psychological preparedness. Specifically, the psychological process and defense mechanisms, governed by the defense pole of the psyche known as the "ego," play a role in achieving internal balance by addressing conflicts within various aspects of the psychological system. This holds true under normal conditions. However, if the structure of the nervous system is fragile, the ego's defensive pole tends to be rigid, employing defense mechanisms that lead to maladaptive responses.

Albert Bandura (1977) emphasized that individuals perceive and handle different situations based on their own approach and processing of those situations. Thus, our responses are influenced by our perception of how we address these situations. Consequently, individuals with higher self-efficacy enjoy a better quality of life and exhibit more positive emotions, even when faced with illnesses from which they quickly recover. This is attributed to their positive adaptation to challenging circumstances (Jabbali & Adouda, 2012, p. 154).

This is supported by a study conducted by Kerstin Hagberg, Kersti Samulesson, and Nerrolyn Ramstrand (2018) titled " Perceived self-efficacy and specific self-reported outcomes in persons with lower-limb amputation using a non-microprocessor-controlled versus a microprocessor-controlled prosthetic knee." The results indicated that individuals with high self-efficacy who had lower extremity amputations demonstrated a high level of utilization of their prosthetic extremities, indicating a relationship between these variables.

Similarly, a study by Hamadi and Mazawar (2021) titled " Self-Efficacy and its Relationship to Coping Mechanisms among Diabetic Patients " demonstrated that self-efficacy was low among the study sample, and the coping mechanisms employed by the participants were primarily reactive in nature.

Furthermore, Liu's study (2010) titled "The Lived Experience of Individuals with Lower Extremity Amputation" aimed to explore the residual effects of amputation on physical and psychological health by describing the lived experiences of individuals with lower extremity amputations". The study revealed that amputees experienced a sense of hopelessness, emotional collapse, difficulty coping with adversity, and struggles with physical, psychological, social, and cultural challenges.

Regarding the first specific hypothesis, which states that “a significant statistical correlation exists between the level of self-efficacy and the psychological adaptation among extremity-amputee diabetics.” The obtained Pearson correlation coefficient was -0.042, indicating a statistically significant relationship at a significance level of 0.01. Consequently, the specific hypothesis is accepted, affirming the presence of a significant statistical relationship between self-efficacy and psychological adaptation. Specifically, as self-efficacy levels decrease, psychological adaptation also diminishes, and vice versa.

The process of amputation results in the disruption of bodily integration and balance, leading to changes in self-concept and the cohesive unity of the body. Additionally, the perceived deformity alters body image, contributing to maladjustment and the manifestation of psychological disorders.

In support of these findings, Al-Qadi's (2009) study titled "Future Anxiety and Its Relationship with Body Image and Self-Concept among Amputees after the War on Gaza" highlights the negative psychological emotions experienced by amputees, particularly the challenges associated with accepting the new post-amputation reality. Feelings of inadequacy and guilt further compound the psychological distress.

Similarly, Hawamdeh (2008) conducted a study to assess the prevalence of anxiety and depression among individuals with lower extremity amputations. The results revealed a prevalence rate of 38% for anxiety and 20% for depression within the sample population.

In relation to the second specific hypothesis, which postulates that “a significant statistical correlation exists between the level of self-efficacy and the social adaptation among extremity-amputee diabetics”. The computed Pearson correlation coefficient yielded a value of -0.19. This negative coefficient indicates a statistically significant relationship with a significance level of 0.01. Consequently, the specific hypothesis is accepted, affirming the presence of a significant statistical relationship between self-efficacy and social adaptation. Specifically, as self-efficacy diminishes, social adaptation weakens correspondingly, and vice versa.

Successful social adaptation necessitates the fulfillment of various criteria, including maturity, appreciation, and self-control, which facilitate effective adjustment to social contexts. Analytical theory posits the influential role of society in shaping and interpreting human behavior. During the early stages of human development, individuals establish a connection with society, engaging in a unique process of psychological formation known as the "working self." This construct serves to reconcile personal desires and instincts, embodied in the "id," with societal expectations represented by the "superego." This theoretical

framework underscores the significance of early social experiences in shaping human behavior (Stigler & Smith, 1985).

Bandura's theory further reinforces this notion, elucidating self-efficacy as a reciprocal relationship between individual behavior and the environmental conditions influenced by one's actions (Abdul Khaliq, 2016, p. 285).

Regarding the third specific hypothesis, which posits that "a significant statistical correlation exists between the level of self-efficacy and the health-related adaptation among extremity-amputee diabetics." The calculated Pearson correlation coefficient was 0.098. This coefficient indicates a statistically significant relationship at a significance level of 0.01. Thus, the specific hypothesis is accepted, and it can be concluded that there is a significant statistical relationship between self-efficacy and health adaptation. Specifically, as self-efficacy decreases, health adaptation weakens, and vice versa.

This can be attributed to the inability of various bodily systems to withstand and adapt to pressures, ultimately leading to a state of exhaustion. The exhaustion arises from excessive activity in the autonomic nervous system (the endocrine system), giving rise to psychosomatic disorders. Underlying personality traits and maladjustment to circumstances contribute to the development of psychological pressures that impact physiological well-being.

This notion is supported by the analysis conducted by Friedman and Boothkewley (1987) (as cited in Fisher, 2002, p. 220), suggesting that personality dimensions play a role in various illnesses, including depression and anxiety. These conditions are accompanied by emotional responses involving the sympathetic nervous system and the adrenal cortex (adrenaline hormone), as well as increased blood pressure and heart rate (Fisher, 2002, p. 220).

Bandura's studies further illuminate the topic of health, demonstrating that complete well-being can only be achieved through the development of self-efficacy, which is a crucial variable in an individual's physiological functioning (Jabali & Adouda, 2012, p. 154).

These findings are supported by a study conducted by Miller, Magnusson, Lev, Fields, Cook, Stevens-Lapsley, and Christiansen (2018), titled "Relationships among Perceived Functional Ability, Self-Efficacy, and Disability after Dysvascular Amputation." The study reveals a relationship between perceived functional ability and disability, with self-efficacy

serving as a mediating factor following vascular amputation (TTA).

Regarding the fourth specific hypothesis, which posits that "There are statistically significant differences in the level of self-efficacy attributed to gender among extremity-amputee diabetics". The significance of these differences is presented in Table 8 through the application of the Chi-square test.

Table 8. the significance of differences in self-efficacy based on gender using the Chi-square test

	Value	Ddl	Approx. Sig. (Bilateral)
Pearson's chisquare	4,439[a]	2	,109
Likelihood ratio	4,663	2	,097
Linear-by-linear association	1,517	1	,218
Valid observations N	560		

Source: SPSS Output

Upon analyzing the data presented in the table from the SPSS software, it is evident that the observed significance level (0.109) exceeds the predetermined reference significance level (0.05). Consequently, the findings do not provide sufficient evidence to support the fourth hypothesis. As a result, we reject the alternative hypothesis and accept the null hypothesis, which suggests that there are no statistically significant differences in the level of self-efficacy based on gender. Despite varying personal characteristics and traits, there is no discernible difference in self-efficacy levels between genders.

This can be attributed to the similar reactions and responses exhibited by both male and female patients towards their amputated limbs. Furthermore, the common cause of amputation, which is diabetes, as well as the shared experiences of coping with the physical and psychological consequences of the amputation process, such as body image distortion, diminished self-esteem, and other psychological disturbances, contribute to this lack of disparity. These findings are consistent with the general hypothesis of our study, which posits a negative inverse correlation between self-efficacy and general adaptation level, as amputation entails physical deformity and the patient's inability to perform daily tasks, thereby hindering a successful adjustment.

Regarding the fifth specific hypothesis, which states that "there are statistically significant differences in the level of self-efficacy attributed to age among extremity-amputee diabetics". To explore this hypothesis, Table 9 presents the results of chi-square tests, which highlight the significance of the observed differences between self-efficacy and age.

Table 9: the significance of differences between self-efficacy and age variables using chi-square tests.

	Value	ddl	Approx. Sig. (Bilateral)
Pearson's chi-square	14.095[a]	4	,007
Likelihood ratio	14.419	4	,006
Linear-by-linear association	12.651	1	,000
Valid observations N	560		

Source: SPSS Output

The analysis of the SPSS outputs presented in the table above reveals a significant discrepancy between the observed significance level (0.007) and the predetermined reference level (0.05). Consequently, the fifth hypothesis is substantiated, leading to the rejection of the null hypothesis in favor of the alternative hypothesis. This finding suggests the existence of noteworthy and statistically significant variations in self-efficacy levels attributable to age among extremity-amputee diabetics.

Thus, it can be inferred that as these individuals progress in age, their self-efficacy tends to diminish. The observed distinctions in self-efficacy levels across different age cohorts of extremity-amputee diabetics can be ascribed to psychological structures, past experiences, and underlying neurological and biological factors. With advancing age, individuals experience a decline in their psychological and physiological capacities for adaptation and effective management of life's challenges.

These conclusions are supported by the comprehensive investigation conducted by Carina Baath, Connie Boettcher, and Ami Hommel (2019) titled " Age and health-related quality of life, general self-efficacy, and functional level 12 months following Dysvascular major lower limb amputation: a prospective longitudinal study." This longitudinal study highlights the significant role played by age in the decline of self-efficacy among individuals who have undergone major vascular lower extremity amputations.

Table 10 provides an illustration of the statistical significance of the differences between self-efficacy and the educational level, as stated in the sixth specific hypothesis: “there are statistically significant differences in the level of self-efficacy attributed to educational attainment among extremity-amputee

diabetics". The chi-square test was employed to examine the relationship between these variables.

Table 10. Significance of Differences between Self-Efficacy and Educational Level (Chi-Square Tests)

	Value	ddl	Approx. Sig. (Bilateral)
Pearson's chi-square	15.679[a]	6	,016
Likelihood ratio	18.505	6	,005
Linear-by-linear association	5.203	1	,023
Valid observations N	560		

Source: SPSS Output

The analysis of the SPSS software outputs, presented in the aforementioned table, reveals that the observed significance level (0.016) is statistically significant at a level lower than the predetermined threshold (0.05). Thus, the sixth hypothesis is substantiated, prompting the acceptance of the alternative hypothesis and the rejection of the null hypothesis. The results indicate that perceived self-efficacy is influenced by the educational level of individuals, highlighting the significance of the scientific aspect in evaluating self-efficacy, particularly in extremity-amputee diabetics. Consequently, notable variations in self-efficacy levels can be attributed to disparities in educational attainment among diabetic individuals with lower extremity amputations.

These empirical findings align with the study conducted by Faltas Samer Faltas Marzouk (2015), titled "Self-Efficacy of Lower Extremity Amputees: Nursing Guidance." Within this investigation, it was demonstrated that individuals who have undergone lower extremity amputations necessitate comprehensive knowledge pertaining to their condition and effective management strategies. Consequently, the integration of these research findings into nursing guidelines aims to enhance the understanding and practical competencies of healthcare professionals, ultimately leading to a discernible enhancement in the self-efficacy levels of this specific patient population.

Conclusion

Based on the results of the statistical, psychological, and biological analyses, the following conclusions can be drawn:

1. Self-efficacy is significantly correlated with adaptive dimensions, including psychological, social, and physical aspects, indicating that individuals with higher levels of self-efficacy demonstrate better general adaptation in these domains.
2. Age and educational level have a significant impact on self-efficacy levels. As individuals age, their self-efficacy tends to decline, while lower educational levels are associated with lower levels of self-efficacy.
3.Gender, however, does not appear to play a substantial role in determining self-efficacy levels, as no significant disparities were found in this regard.

Recommendations

- Promoting adherence to healthy behaviors and prevent complications associated with diabetes, it is recommended to enhance self-efficacy among diabetic patients.
- Improving self-efficacy is crucial for extremity-amputee diabetics, enabling them to adapt and cope with the challenges they face, both before and after amputation.
- Specialized centers should be established to ensure comprehensive care for extremity-amputee diabetics. These centers should provide medical and psychological support to address their specific needs effectively.

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