Assessment of Self-Care Practices for Adults with Lower Limb Prosthesis

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Abstract

Background: Prosthesis is an artificial substitute for a missing body part that is used to restore the function of that body part or for cosmetic purposes. ***Aim,*** the aim to assess level of adjustment among adult with lower limb prosthesis. ***Research design*****:** A descriptive research design was utilized to fulfill the aim of this study. ***Setting:*** this study was conducted at the Physical Medicine and Rehabilitation and Rheumatology Center affiliated to the Armed Force, located in Al-Geza Governorate of Egypt. ***Sample:*** A purposive sample of 81 adults with lower limb prosthesis. ***Tools;*** two tools were used for data collection; 1st tool, structured interviewing questionnaire. 2nd tool The Trinity Amputation and Prosthesis Experience Scales (TAPES), It was constructed to assess level of adjustment among adults with prosthesis. ***Results:*** the mean age of adults with lower limb prosthesis was 38.91±10.53 years and 64.2% of them were male. Regarding the total satisfactory level of knowledge, 22.2% of them had a total satisfactory level of knowledge, also, the total adequate practice in was 13.6%. Regarding the total psychosocial adjustment for adults with lower limbs prosthesis 17.3% of them was adjusted, Regarding the satisfaction with lower limbs prosthesis 28.4% of them was satisfaction ***Conclusion:*** less than one quarter of adults with lower limb prothesis had satisfactory level of knowledge. regarding the total adequate self-care reported practice for adults with lower limbs prosthesis, the majority them had a total inadequate self-care practice. Regarding psychosocial adjustment for adults with lower limbs prosthesis only 17.3%, of them were adjusted. Also. The present study shows that, significant difference correlation between the total knowledge of adults with lower limb prosthesis and their total practice (p. value<0.036) and highly significant difference correlation program between total knowledge and their total adjustment (p .value<0.000). ***Recommendation:*** the study recommended that; Regular awareness program should be conducted regarding prosthesis limb, its newest types, parts and how adapt with it.

Key words: Self-care, lower limb, prosthesis, adults

Introduction:

Prosthesis is an externally placed device that replaces a missing or defective limb segment whole or in part. Lower limb prostheses are tools made to mimic as closely as feasible the appearance or functionality of the lower limb that is missing. The Greek verb prosthesis means "to add to, or to insert in addition," and it was borrowed into New Latin (**Nguyen et al., 2020).**

A lower limb prosthesis is a prosthesis that replaces any portion of the lower limb in order to restore its functionality and/or appearance, as artificial hip, thigh, knee, ankle, and foot replacements. The type of lower limb prosthesis that is advised for adults who have lost lower limbs depends on the type of amputation, the amount of muscle strength in the remaining portion of the limb, general health, tasks the prosthetic limb will be expected to perform, pre-amputation lifestyle, whether the adult wants the limb to look as real as possible or if they are more concerned with function, and age **(Pasquina et al., 2015)**.

Self-care encompasses the activities needed to meet daily needs, commonly known as activities of daily living (ADLs), which are learned over time and become lifelong habits. Self-care activities involve not only what is to be done (hygiene, bathing, dressing, toileting, feeding), but also how much, when, where, and how. In every patient, the threat or reality of a self-care deficit evokes panic. Many patients report that they fear loss of independence more than death **(Samuelsson, et al., 2012).**

A self-care deficit affects the core of self-concept and self-determination. For this reason, the nursing focus for self-care deficit should be not on providing the care measure, but on identifying adaptive techniques to allow the patient the maximum degree of participation and independence possible. The diagnosis total self-care deficit once was to describe a patient's inability to complete feeding, bathing, toileting, dressing and grooming. The intent of specifying "total" was to describe a patient with deficits in several ADLs. The ability of the patient to maintain a given level of performance is influenced by the ability to use oxygen to produce energy related to the optimal functioning of the heart, respiratory and circulatory systems as well as the functioning of the neurologic and musculoskeletal systems **(Gonzalo, 2019).**

Adjustment to lower limb prosthesis require adherence to some type of treatment regimen, and they typically involve self-care practices on the part of the prosthetic user. Major areas for self-care are prosthetic user education regarding maintaining and enhancing health these include residual limb care, intact leg care, prosthesis care, prosthesis wear and take off, good positions, exercise & physical fitness and management health problems result from use of prosthesis ***(*Luza *, et al., 2020).***

The role of community health nurse assesses functioning in each area and identifies the level of self-care of which the patient is capable. The goal is to maintain current functioning, to increase participation and independence, or both. The syndrome distinction clusters all five self-care deficits together to enable grouping of interventions when indicated, while also permitting specialized interventions for a specific deficit **(Matarese et al., 2018*).***

SIGNIFICANCE OF THE STUDY:

In Egypt, the rate of conditions that result in lower and upper limb loss has increased in recent years, affecting people of all ages. According to statistics from the Armed Forces Rheumatoid Rehabilitation Center (ARRC), there were around 3000 individuals over the course of the previous three years, 90% of whom were adults and 10% of whom were children, and this rate increased yearly [10]. 77.7% of people in a previous study conducted in Egypt at the Armed Force Rheumatoid Rehabilitation Center (ARRC) had lower prosthetic limbs, while 22.3% had upper prosthetic limbs **(Samir et al , 2018).**

Aim Of The Study

The aim of this study is to assess the self-care practices for adults with lower limb prosthesis through:

- Assessing adults with lower limb prosthesis' knowledge regarding prosthesis limbs.
- Assessing adults with lower limb prosthesis ' reported self-care practices of adults with lower limb prosthesis.
- Assessing level of adjustment of adults with lower limb prosthesis toward prosthesis.

RESEARCH QUESTIONS:

1- What is the knowledge of adult with lower limb prosthesis?

2- What are the self-care practices of adult with lower limb prosthesis?

3- What is the level of adjustment of adult with lower limb prosthesis?

4- Is there a correlation between knowledge of adult with lower limb prosthesis and their self-care practices and level of adjustment?

Subjects and Methods

Research design: A descriptive design.

Research Setting:

This study was conducted at the Physical Medicine and Rehabilitation and Rheumatology Center affiliated to Armed Force, located in Al-Giza Governorate of Egypt, in Al Agoza district. The center includes a factory for artificial limbs and rehabilitation accessories which serves all governorates in Egypt and provides rehabilitation program for persons with prosthesis limbs.

Sampling:

A purposive sample had used for choosing the study sample, the total number of the

study sample were 81 of adult with lower limb prosthesis, in last three years average number of adults with prosthesis limbs at Armed force Rheumatoid Rehabilitation Center (ARRC) were 3000 persons, more than 75% (2250) of them were with lower prosthesis limbs, The sample size will be collected by:

$$n = \left(\frac{Z_{1-\alpha/2} + Z_{1-\beta}}{ES} \right)^2$$

Z_α = Standard normal deviate for α = 1.9600.

Z_β = Standard normal deviate for β = 0.8416.

$B = (Z_\alpha + Z_\beta)^2 = 7.8489$.

$C = (E/S_\Delta)^2 = 0.0977$.

$N = B/C = 80.3724$.

The N thus calculated is rounded up to the next highest integer to give the group size.

Group size N: 81

$n = (\frac{1.96+0.84}{0.0977})^2 = 80.3724 \approx 81$ patients

Inclusion criteria:

Adults with lower prosthesis limbs their age from 20 – ≤60 years old

- Wearing prosthesis limbs from 6 month to 1 year

Tools of data collection:

Two tools were used for data collection:

First tool; Structured Interviewing questionnaire, it was designed by the researcher based on the recent literature review and experts' opinions. It is composed of five parts;

First part: It was designed to assess the socio-demographic of adults with lower limb prostheses containing seven closed-ended questions.

Second part: included 4 closed-ended questions about chronic disease, causes of limb loss, the number and timing of limb losses and different types of prostheses. This part was intended to assess the health status of adults with lower limb prostheses.

Third part: Designed to test the knowledge of adults who have lower limb prostheses, this section contains 12 questions that cover topics such as meaning, importance, causes of limb loss, factors affecting prosthesis success, types, parts of lower prostheses, available shapes for terminal devices, the significance of wearing socks, how to choose appropriate shoes, cases where it is necessary to visit a prosthetics technician and a doctor, and cases where stopping and changing a prosthesis is necessary.

Scoring System for knowledge:

For knowledge questions, the right answers were predetermined based on literature reviews; the right answer received a score of 2, while the wrong answer received a score of 1. The total optimal score for prosthesis knowledge is 24 points. The score ranged from (1–24) and represented 100% for all items for each question. The score was divided into two levels: unsatisfactory knowledge level for knowledge levels below 50% and satisfactory knowledge level for knowledge levels equal or above 50%.

Fourth part: Designed to assess Self-care reported practices of adults with lower prosthesis related to residual limb and prosthesis care, it was adopted from [13]. It covered the following practices included; daily cleaning, examination of residual limb, prosthesis, and intact food, wearing and taking off prosthesis, exercise, correct position and Control weight.

Scoring system:

It was concerned with adults with lower limb prosthesis reported practices regarding:

- **Daily cleaning and Examination**; it consisted of 32 items.

Scoring system: Each item has been scored as 2 grades = always reported, 1 grade = sometimes reported, and zero= never reported. Total optimal score = 64 grades.

- **Wearing above and below the knee prosthesis;** it consisted of 9 items.

Scoring system: Each item has been scored as 2 grades = always reported, 1 grade = sometimes reported, and zero = never reported.

Total optimal score = 18 grades.

- **Wearing the hip prosthesis;**

It consisted of 4 items.

Scoring system: Each item has been scored as 2 grades = always reported, 1 grade = sometimes reported, and zero = never reported. Total optimal score = 8 grades.

- **Taking off prosthesis;** it consisted of 4 items.

Scoring system: Each item has been scored as 2 grades = always reported, 1 grade = sometimes reported, and zero = never reported. Total optimal score = 8 grades.

- **Exercise;** it consisted of 10 items.

Scoring system: Each item has been scored 2 grades = always reported, 1 grade = sometimes reported, and zero= never reported. Total optimal score = 20 grades.

- **Correct position of the body during sitting and sleeping;** it consisted of 9 items.

Scoring system: Each item has been scored as 2 grades = always reported, 1 grade = sometimes reported, and zero = never reported. Total optimal score = 18 grades.

- **Control body Wight;** it consisted of 9 items.

Scoring system: Each item has been scored as 2 grades = always reported, 1 grade = sometimes reported, and zero = never reported. Total optimal score = 18 grades

Total score of self-care reported practices was evaluated and compared with the ideal action in the list; accordingly, it was categorized as follows:

– Adequate reported practice, 60% or more.

– In adequate reported practices, less than 60%

Second Tool: The Trinity Amputation and Prosthesis Experience Scales (TAPES): a tool used to evaluate prosthesis-wearing adults' adjustment levels. It was adapted from ***Gallagher et al. (2010)*** and focused on three standard of prosthesis adjustment for adults: psychosocial adjustment, activity limitation, and satisfaction with prosthesis.

Scoring system:

- Psychosocial adjustment level contains three subscales measuring general adjustment, social adjustment and adjustment to limitations. It contains 15 items in total, each of which is rated on a 4-point scale; 4 grades = strongly agree, 3 grades = agree, 2 grades = disagree and 1 grade = strongly disagree. Higher scores are indicative of greater levels of adjustment.

- **Total optimal score = 60 grades.**

– Adjustable = > 50% (31-60)
– Not Adjustable = ≤ 50% (30-0)

- Activity restriction level comprises 9 items are rated on a 3-point scale 3 grades = not limited at all, 2 grades = limited a little, and 1 grade = limited a lot. Lower scores are indicating greater activity restriction.

- **Total optimal score = 27grades.**

  – Restricted = > 50% (15-27)
  – Not restricted = ≤ 50% (14-0)

- Satisfaction **level** with the prosthesis contains 8 items in this section, rated on a 3-point scale each item has been scored as 3 grades = very satisfied, 2 grades = satisfied, and 1 grade = very dissatisfied. Higher scores on these subscales indicate greater satisfaction with the prosthesis.

- **Total optimal score = 24grades.**

  – Satisfied = > 50% (13-24)
  – Not Satisfied = ≤ 50% (12-0)

Validity and reliability:

The tools were tested for their content validity by a jury of five experts in the Community Health Nursing specialty and two colonels from the rehabilitation center. The required modifications were carried out accordingly. Then, test – retest reliability was applied. The tool proved to be strongly reliable (r=0.8222).

1. **Operational Design:**

Pilot study:

A pilot study was conducted prior to conducting the actual study; where 5% of the total subjects were recruited in order to establish the sample size and method of sample selection, test the clarity, feasibility, and applicability of the study tool, as well as the relevance and obviousness of the content, estimate the time required to complete the tool, and calculate the time needed for conducting the study. The required modifications were made. The pilot study was not included in the study's overall sample.

Fieldwork: -

- An official permission to conduct the study was obtained from the Colonel of the factory of prosthesis limbs in the Physical Medicine and Rehabilitation and Rheumatology Center.
- Data were collected over a period of eight months from the middle of July 2021to the middle of March 2022. The researcher was available in the study setting 2 days/week from 10.0 a.m. to 2.00 p.m.
- The researcher met the colonel of the factoryof prostheses limbs to explain the aim of the study to facilitate researcher's work.
- The researcher started with introducing herself and explaining the aim of the study for the selected studied sample, assured that the data collected will be confidential and would be only used to achieve the purpose of the study.
- Questionnaire took about 30 to 45 minutes for each studied sample to be fulfilled.

, test – retest reliability was applied. The tool proved to be strongly reliable (r=0.8222).

Ethical consideration:

Prior to the pilot study, ethical approval was obtained from the colonel of the factoryof prostheses limbs, in addition, verbal informed consent was obtained from each participant, and it was assured that anonymity and confidentiality will be guarantee and they have the right to be withdraw from the study at any time.

Administrative Design:

A written letter was obtained from the dean of faculty of nursing, Ain Shams University to the colonel of the factoryof prostheses limbs for research Include the aim of study and Clarification of nature and purpose of the study.

Statistical Design:

Data collected and coded Then the collected data were organized, using appropriate statistical significance tests using the Computer Statistical Package for Social Science (SPSS), version 21. Data presented by using descriptive statistics in the form of percentages. The statistical analysis has included the arithmetic mean, standard deviation and X2 test. Degrees of significance of results were considered as follow: -

P-value > 0.05 not significant

P-value ≤ 0.05 Significant

Results:

Table 1 shows that, the mean age of adults with lower limb prosthesis was 38.91±10.53 years and 64.2% of them were male where as 56.8% of them were married. Regarding educational level, 39.5% of them had secondary level of education meanwhile, only 11.1 were Illiterate. As regard to job there were 33.3 of them free business, 29.6% had government employee, 28.4% of them didn't work, only 4.9% were retired, and 3.7% of them Student, and 72.8% of them had insufficient income.

Figure (1) shows that 40.7% of them loss their lower limb related to related to diseases, 35.8% related to accidents, while 22.2% related to acts terror and demonstrations also the figure presents 1.2% loss their limb related to congenital defect.

Figure (2) Shows that 87.9% of them loss their lower limb related to related to diabetic foot, 9.1% related to peripheral vascular disease (Atherosclerosis), while 3% cancer.

Figure (3): Indicates that, regarding the total satisfactory level of knowledge for adults with lower limbs prosthesis, 22.2% of them had

a total satisfactory level of knowledge and 77.8% of them had a total unsatisfactory level of knowledge.

Table (2): Shows that, regarding self-care reported practice for adults with lower limbs prosthesis 19.8%, 28.4%, 21.0% of them respectively had adequate level of practice related to daily cleaning and checking of residual limb, daily care of the other foot daily cleaning and checking the prosthesis limb .As well reports that, regarding practice for adults with lower limbs prosthesis 100.0% of them had adequate practice related to wear above and below knee prosthesis limb, wear hip prosthesis limb, take off. While 0.0%, 59.3%, 7.4% of them had adequate practice related to exercise, correct posture of the body, control body weight.

Figure (4): Illustrates that, regarding the total adequate self-care reported practice for adults with lower limbs prosthesis, in was 13.6% while 86.4% of them had a total inadequate practice.

Table (3): Shows that, regarding psychosocial adjustment for adults with lower limbs prosthesis 17.3%, of them were adjusted. Also illustrates that regarding the restrict activity for adults with lower limbs is 64.2% and show that regarding the satisfaction of them with prosthesis is 28.4%

Table (4): Shows that, significant difference correlation between the total knowledge of adults with lower limb prosthesis and their total practice (p. value<0.036) and highly significant difference correlation program between total knowledge and their total adjustment (p .value<0.000).

Table (1): Distribution of studied sample of adult with lower limb prosthesis according to their socio-demographic characteristics (N =81).

Characteristics	No	%
Age:		
- 20 -<30years old	16	19.7
- 30 -<4 years old	29	35.8
- 40 -<50 years old	21	26
- 50-≤60 years old	15	18.5
Mean ± SD	38.91±10.53	
Sex:		
Male	52	64.2
Female	29	35.8
Residence:		
Rural	42	51.9
Urban	39	48.1
Marital status:		
Single	25	30.9
Married	46	56.8
Divorced	2	2.5
Widow	8	9.9
Educational level:		
No read and write	9	11.1
Basic education	11	13.6
Secondary education	32	39.5
University education	29	35.8
Occupation:		
Student	3	3.7
Government employee	24	29.6
Private Employee (free business)	27	33.3
Retirement	4	4.9
Don't work	23	28.4
Income:		
Sufficient	22	27.2
Insufficient	59	72.8

Figure (1): Distribution of studied sample of adult with lower limb prosthesis according to causes of limb loss (N =81).

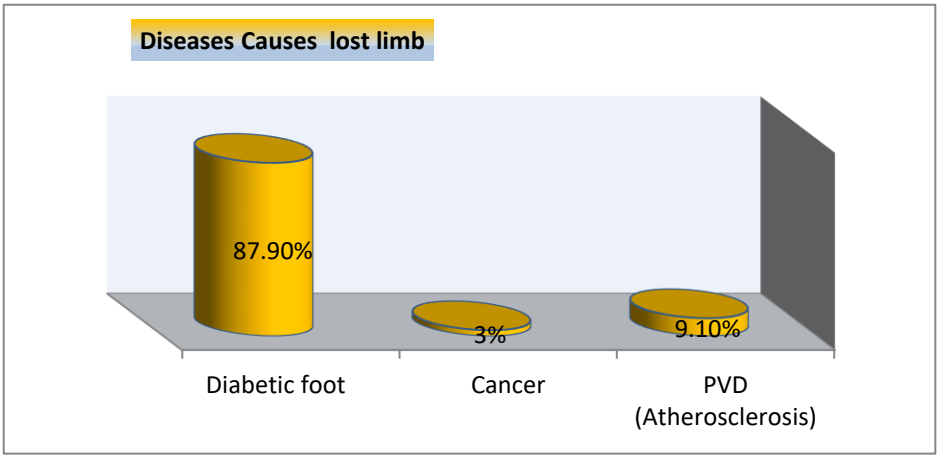

Figure (2): Distribution of studied sample of adult with lower limb prosthesis according to diseases causes limb loss (N =33)**.**

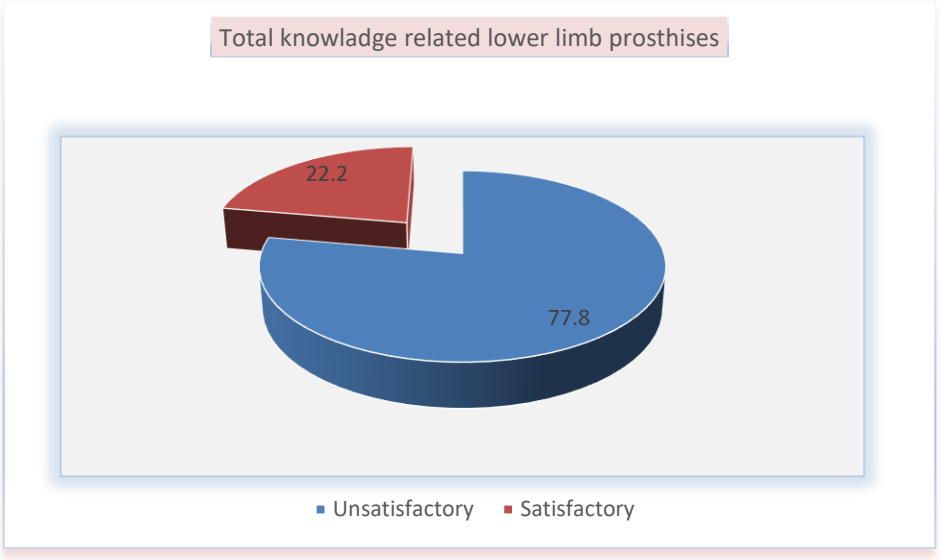

Figure (3): Distribution of studied sample of adult with lower limb prosthesis according to their total satisfactory knowledge (N =81).

Table (2): Distribution of studied sample of adult with lower limb prosthesis according to their self-care reported practices (N =81).

Items	N	%
➢ **Cleaning**		
• **Daily Cleaning and Checking of residual limb.**		
Adequate	16	**19.8**
In –adequate	65	**80.2**
Mean and SD	**7.5185±2.47543**	
▪ **Daily care of the other foot (Healthy foot)**		
Adequate	23	**28.4**
In –adequate	58	**71.6**
Mean and SD	**9.1975±2.00885**	
▪ **Daily Cleaning and Checking the prosthesis limb**		
Adequate	17	**21.0**
In –adequate	64	**79.0**
Mean and SD	**14.7160±2.18652**	
➢ **Wearing the prosthesis**		
▪ **Above and below knee prosthesis limb**		
Adequate	74	**100.0**
In –adequate	0	**0.0**
Mean and SD	**14.1622±1.59646**	
▪ **Hip prosthesis limb**		
Adequate	7	**100.0**
In –adequate	0	**0.0**
Mean and SD	**6.8571±.69007**	
➢ **Take off the prosthesis**		
Adequate	81	**100.0**
In –adequate	0	**0.0**
Mean and SD	**8.5802±.89253**	
➢ **Exercise**		
Adequate	0	**0.0**
In –adequate	81	**100.0**
Mean and SD	**1.7160±2.19792**	
➢ **Correct posture of the body**		
Adequate	48	**59.3**
In –adequate	33	**40.7**
Mean and SD	**10.0370±3.24594**	
➢ **Control body weight**		
Adequate	6	**7.4**
In –adequate	75	**92.6**
Mean and SD	**7.2840±1.95726**	
➢ **Total Practice**		
Adequate	11	**13.6**
In –adequate	70	**86.4**
Mean and SD	**72.5802±8.56426**	

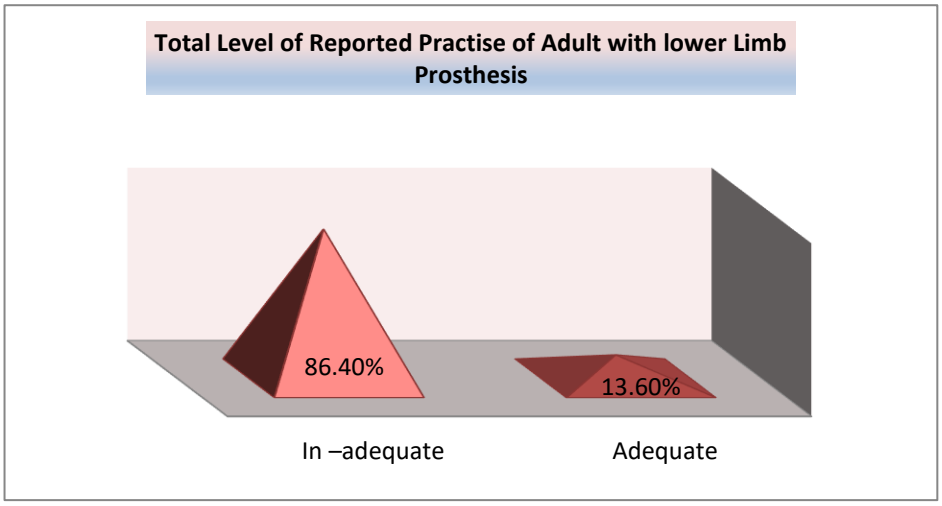

Figure (4): Distribution of studied sample of adult with lower limb prosthesis according to their total self-care reported practice (n =81).

Table (3): Distribution of studied sample of adult with lower limb prosthesis according to the three level of adjustment toward prosthesis (N=81**).**

Item		N	%
Psychosocial Adjustment			
General adjustment			
•	Adjustment	13	16.0
• adjustment	Not	68	84.0
• SD	Mean and	9.1605±1.97773	
Social adjustment			
•	Adjustment	12	14.8
• adjustment	Not	69	85.2
• SD	Mean and	8.7284±2.91981	
Adjustment to limitation			
•	Adjustment	21	25.9
• adjustment	Not	60	47.1
• SD	Mean and	10.5432±1.88447	
Restrict activity			
Not Restricted		29	35.8
Restricted		52	64.2
Satisfaction with prosthesis			
Satisfaction		23	28.4
Not Satisfaction		58	71.6

Table (4): Correlation between knowledge, practice, and total Adjustment (n =81).

Items		Total practice	Total Adjustment
Total knowledge			
	R	.233*	396**
	P value	.036	.000

Discussion:

Limb loss has become one of the common problems in the present society. A number of people have one or both limb loss and the situation moves to an increase worldwide. Limb loss is a major cause of disability. External prosthetic appliances are devices used to replace the function of a missing body part and are often referred to as prosthetic devices, or prostheses **(*Bella & Margery ,2011)*).** Adults with prosthetic limb have to adapt to several losses and changes to their lifestyle, social interactions, and identity. Prosthetic limb is important for functioning, quality of life, and to enable social participation of individual with limb loss **(*Sinha* et al., 2011)** therefore, the current study aims to assess QOL among adults with prosthetic limb

The current study found that the study sample's average age with lower limb prostheses was 38.91± 10.53 years **(table 1).** This finding is consistent with Sinha et al., 2014 who revealed that the sample's mean age was 43.05 ±10.96 years. However, ***Mohammed & Shebl, (2014)*** reported that the mean age of their study sample was 47.6 11.85 years. Also, **Horne and Neil, (2009)** in their study, said that the mean age of the investigated group was 62. 05 ±10.59. Additionally, Rodrigues et al., 2016 found that the mean age of the sample 63.4 years 14.1 years.

In terms of gender, slightly more than one third of them were women and slightly less than two thirds were men **(Table 1).** This outcome was consistent with ***Mohammed & Shebl, (2014)*** finding that 59% of the study sample was of men and 41% of it was of women. Additionally, these results are consistent with a study of Rodrigues et al., 2016 which said that 62.8% of the investigated samples were men and 37.2% were women. In the opinion of the investigator, this outcome may be related to the fact that men are more likely to work hazard and accidents, and that they enlist in the military, increasing their exposure to terrorist activities that could result in limb loss and the need for prosthetic limbs.

More than half of the group under study resided in a rural location **(Table 1).** According to ***Mohammed & Shebl, (2014)*** 52.0% of the sample was from rural areas, and this result is consistent with their findings. In the opinion of the researcher, the majority of adults in rural communities use more transportation for their jobs, learning, and military obligations, putting them at a larger risk of traffic accidents that could end in limb loss.

In terms of job, one-third of them were retired and unemployed **(Table 1).** ***Sinha et al., (2014)*** mention that 41% of their sample unemployed, and this support the findings. Also, agreement with the results study of ***Journeay et al., (2018),*** who said 31% of sample weren't work. Some of the studied sample did retire early even though they did not reach the retirement age, this result might be owing to limb loss

Less than three quarter of sample have insufficient income **(Table 1).** ***Mohammed & Shebl, (2014)*** mention that 63.0% of studied sample had insufficient income, and this outcome is consistent with the current study findings. The reason of the findings perhaps because of one-third of the study sample is unemployed and retirements, as well prosthetic limb costs and living expenses.

According to the study's findings regarding the causes of limb loss, more than a third of those who lost limbs due to accidents, as well more than third because of diseases like

diabetes mellitus, peripheral vascular disease, and cancer. Less than a quarter of those who lost limbs due to terrorist acts, and very few of those who due to congenital defects. In (Figure 1). This outcome is consistent with ***Marzen & Bartman's, (2005)*** reported that accidents were the primary cause of limb loss. ***Chalya et al., (2012)*** also said that, diabetic foot problems accounted for 41.9% of major limb amputations, then trauma accounting for 38.4% and vascular disease accounting for 8.6%. According to ***Johannesson et al., (2009)*** people with diabetes had a noticeably higher rate of amputation than people without. Additionally, diabetes poses as one of the key risk factors seen in 67% of amputees this according to ***Ida et al., 2015***.

The current investigation revealed that slightly less than two thirds of adults with lower limb prosthesis were wearing below the knee prosthesis, while roughly one third were wearing above the knee prostheses. This finding is consistent with ***Ndukwu & Muoneme,(2015)*** who found that 64.4% of the research sample in their investigation. Additionally, this outcome is consistent with a study by ***Singh & Prasad, (2015)*** who said that 59% of amputations were transtibial. In contrast to this finding, a study by ***Ashraff et al., (2021)*** revealed that 53.7% of the patients had above-knee amputations .and 46.3% had below-knee amputations.

In relation to knowledge about prophesies limb, this study illustrated that the more than three quarter of adult with lower limb prophesies had unsatisfactory total knowledge score level about prosthesis limbs **(Figure 3).** In agreement with this result, the review article conduct by ***Francesca et al., (2016)*** about Literature Review on Needs of Upper Limb Prosthesis Users, who reported that information about prosthesis is a significant need for limb prosthesis users. In consistent with the findings of the present study, the study conducted by ***Godlwana, (2013)*** who stated that the majority of the study sample had good knowledge about prosthesis limbs. The results of the present study might be related to the adult with prophesies limb interested only about knowledge of how to use and care of prophesies limb not general knowledge about prophesies limb.

As regarded practice of adult with lower limb prophesies about self -care, the present result showed that all of study sample had adequate practice regarding wearing and take off prosthesis limb while the majority of them had inadequate practice regarding cleaning and examination of residual limb and prosthesis limb **(table 2).** This result might be related to, the prosthetist in the rehabilitation center give to adult with prophesies limb instructions about how use the prosthesis (take off &wear) but not made stress about how cleaning and examination.

Carey et al., (2015) reported that the prosthesis should be checked over at least once per week. Straps, harnesses and their attachments to the prosthesis need to be checked for tear and to ensure that the attachments are secure. Joints should also be checked to ensure they are not too loose or too tight. When the prosthesis is removed, check to ensure the liner is in good condition with no incidence of splits tear

Regard to the study sample's total psychosocial adjustment, the majority of them were not adjustable **(Table 3).** ***Ali & Haider, (2017)*** indicated that nearly all amputees show signs of psychological maladjustment to varied degrees and this support the findings of the present study.

In terms of restricted activity of adult with lower limb prostheses, slightly less than two thirds of them had restricted activity with prosthesis, also slightly less than three-quarters of the studied sample were not satisfied with their prostheses (Table 3). ***Baars et al, (2018)*** reported that 40% to 60% of amputee patients are dissatisfied with their prostheses, over 50% of users report experiencing pain when wearing their prostheses, and 57% are unsatisfied about comfort with of their prostheses and this corroborated the findings of the current study.

In contrast to the current study, ***Sinha et al., (2014***) found that the results of the TAPES subscales showed that amputees, on average satisfied with how they could function with the prosthesis, were moderately psychosocially adjusted (based on their scores on the TAPES

subscales measuring social adjustment and adjustment to limitation), and did not exhibit more limitations in engaging in social or functional activities, with the exception of athletic activities. The results of the subscale measuring social activity restriction showed that the amputees did not feel socially constrained. The results of the current study may be explained by the fact that the study sample wore lower limb prostheses from a brief period of time (6 months to a year) and require more time for adjustment.

Conclusion:

On the light of the finding of the present study, it can be concluded that: less than one quarter of adults with lower limb prosthesis had satisfactory level of knowledge. Regarding the total adequate self-care reported practice for adults with lower limbs prosthesis, the majority them had a total inadequate self-care practice. Regarding psychosocial adjustment for adults with lower limbs prosthesis only 17.3%, of them were adjusted. Also. The present study shows that, significant difference correlation between the total knowledge of adults with lower limb prosthesis and their total practice (p. value<0.036) and highly significant difference correlation program between total knowledge and their total adjustment (p .value<0.000).

Recommendation:

The following recommendations were reached in the light of the results of this study:

- -Regular awareness program should be conducted regarding prosthesis limb, its newest types, parts, complications and prevention of problems caused by prosthesis and how adapt with it.
- -Guidelines or simplified booklet containing basic information about prosthetic limb should be designed and available in all rehabilitation centers.
- -Continuous educational program should be implemented regarding self-care

-Further studies are required involving larger study sample of individuals with prosthesis limb at different study settings, throughout Egypt, in order to generalize the results

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