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Amalgamation of self-esteem, depression, anxiety and stress among prosthesis users

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Abstract

Objective: To find the levels of self-esteem, depression, anxiety and stress among prosthesis users.

Method: The cross-sectional study was conducted from June to November 2018 at Chal Foundation centres in Bagh and Swabi, Pakistan, and comprised prosthesis users of both genders aged 15-60 years. Rosenberg self-esteem scale and Depression anxiety and stress scale-21 were used to collect data which was analysed using SPSS 22.

Results: Of the 400 subjects, 315(78.8%) were males and 85(21.2%) were females. The overall mean age was 38.03±11.86 years. Low level of self-esteem was found in 350(87.5%), depression in 374(93.4%), anxiety in 388(96.9%) and stress in 338(84.4%). Females showed significant association with stress (p=0.009).

Conclusion: The level of self-esteem was low among majority of the participants and psychological well-being was found to be poor.

Key Words: Amputation, Anxiety, Depression, Prosthesis users, Quality of life, Self-esteem, Stress.

Introduction

Often traumatic, metabolic, vascular, oncological and infective conditions lead to amputation, especially involving the limbs. Incidence of amputation varies considerably depending on the region and aetiology with amputations involving lower extremity having an overall worldwide incidence of 3.6–68.4 per 1 million population and an incidence of 46.1–9600 per 1 million population in diabetes mellitus (DM) alone[1]. Persons with amputation (PWAs) face a number of psychosocial and psychiatric issues including loss of self-esteem, depression, stress and anxiety with financial repercussions, leading to economic burden due to medical costs and at times suicidal tendencies also develop[2], leading to compromised quality of life (QOL). A review article revealed a high prevalence of psychiatric disorders (32-84%), including depression (10.463%), post-traumatic stress disorder (PTSD) (3.3–56.3%), and the phenomenon of phantom limb (14–92%)[3].

PWAs need both prosthetic devices and rehabilitative methods after limb removal. Prosthesis is a type of an artificial limb that substitutes for a lost part of body, like arms or legs, and helps replace and, hence, restore the movement of the missing limb. The prosthetic devices may be a simple extension to the body or fused with muscles and skeleton. Also, the nervous system may help to control movements lost by any accident, disease or defect. After limb amputation, rehabilitation for successful fitting and use of prosthesis to attain functional mobility are the main goals. A number of medical and psychosocial factors can contribute to fitting, use and function of prosthesis[4].

PWAs with and without prosthesis face certain restrictions in performing their activities of daily life (ADLs) pertaining to professional, leisure and public activities and their perception radically changes about their own body and its appearance. Research indicates higher levels of stress, anxiety, depression and even suicidal tendencies in lower limb amputees[5,6]. Anxiety is a feeling of unpleasant state of inner confusion, often followed by nervous behaviour, while

depression is a common mental disorder evident from unhappiness, loss of concern, feelings of shame or low self-esteem, troubled sleep or hunger, drowsiness or insomnia, and reduced attention**.** Likewise, stress is defined as the body's response to a demand, caused either by, or as a result of, pleasing or unpleasing conditions[7]. Self-esteem is generally considered the positive or negative orientation toward oneself i.e., self-worth. Self-esteem has three dimensions based on worth, efficacy and authenticity[8].

Awareness of pleasant physical appearance is the difficult construction of various mental and physical factors and is the extent to which a person's physical qualities are measured aesthetically satisfying[5]. A number of researchers have explored the self-perception and psychosocial well-being of people who have gone through lower limb amputations[9]. An important relationship was found among body image and life satisfaction, signifying that when an amputee senses negative orientation regarding his or her body image, he or she is found to be less fulfilled with his or her life[9]. However, a study identified two large groups, one with experience of prosthesis as a corporeal structure, and the other as a tool, and proposed future research to look at the psychological aspects of these two groups[10]. Another study reported association between body image and satisfaction related to prosthesis and pointed towards the importance of the aesthetic parts of prosthesis in females and functional aspects in males[11]**.** However, another study[12] reported that interruption of body image as well as anxiety and depression were commonly not frequent in conventional limb-wearers, except in adolescents with traumatic amputations. Additionally, in general, the association between the individual with loss of body part and artificial limb-wearers tend to be just addressed in the existing literature in expressions of 'rejection' and 'acceptance' rates, with suggestion to a variety of causative aspects[13,14].

The current study was planned to determine the levels of self-esteem, depression, anxiety and stress among prosthesis users.

Subjects and Methods

The cross-sectional study was conducted from June to November 2018 at Chal Foundation centres in Bagh and Swabi, Pakistan. After approval from the institutional ethics review board, the sample size was calculated using Raosoft [15] online calculator with confidence level 95%, margin of error 4.8%, population size 20,000 [16] and with 50% response distribution between the two centres. The sample was raised using non probability convenience sampling. Those included were lower limb prosthesis users of both genders aged 15-60 years. Those having cognitive impairments, any other disability, systemic disease and those using orthosis were excluded.

After taking informed consent from the subjects, data was collected using a demographic information form, as well as the Rosenberg self-esteem scale (RSES) and 21-item depression, anxiety and stress scale (DASS-21). The English versions of both the scales were administered. Where necessary, the questions were explained by the researchers in Urdu and Pashto languages to obtain true responses which were noted.

RSES [17] is a 10-item unidimensional scale to assess overall self-worth by calculating both the positive and negative thoughts about oneself, measured on 4-point Linkert scale ranging from ‘strongly agree’ to ‘strongly disagree;. Self-esteem is considered normal at a score of 15-25, and low when <15. DASS-21 [18] is a self-reporting scale of the emotional states of depression, anxiety and stress with seven items in each scale further divided into subscales. Each one question has a 0-3 point scoring for each question and reported as normal score 0-9 for depression, 0-7 for anxiety, and 0-14 for stress); mild 10-13 for depression, 8-9 for anxiety, 15-18 for stress; moderate 14-20 for depression, 10-14 for anxiety, 19-25 for stress; severe 21-27 for depression, 15-19 for anxiety, 26-33 for stress; and very severe >28 for depression, >20 for anxiety, and >34 for stress.

Data was tabulated using Microsoft Excel Worksheet and was analysed statistically using SPSS 22. Descriptive statistic, frequencies, percentages, mean

and standard deviation were used. Independent samples t-test was conducted to compare scores for males and females participants. Analysis of variance (ANOVA) was performed to see inter-group and intra-group differences in terms of depression, anxiety, stress and self-esteem for different types of prosthetic materials. P<0.05 was considered significant.

Results

Of the 400 subjects, 315(78.8%) were males and 85(21.2%) were females. The overall mean age was 38.03±11.86 years (Table 1). Low level of self-esteem was found in 350(87.5%), depression in 374(93.4%), anxiety in 388(96.9%) and stress in 338(84.4%) (Table 2). In terms of gender, there was no significant difference related to depression, anxiety and self-esteem scores. Females showed significant association with stress (p=0.009) (Table 3).

There was no inter-group or intra-group differences related to depression, anxiety, stress and self-esteem for different types of prosthetic materials (Table 4).

Discussion

The study, with a predominance of less-educated, male, married population with a mean age of 38.03±11.86 years, revealed low level of self-esteem in 87.5% of prosthesis users, with depression in 93.4%, anxiety in 96.9% and stress in 84.4%. A study revealed that unsuccessful prosthetic fitting had significant association with a number of psychosocial factors, including depression[4]. Also, a significant difference in prevalence of depression and anxiety was noted which was high after amputation but declined following inpatient rehabilitation to rise again following discharge[19]. A local study with comparable demographic picture reported good QOL in 80% respondents[20], which may be due to early provision of prosthesis in majority cases.

In one study, higher prevalence of anxiety in subjects aged 18-38 years was noted, while prevalence of depression was higher in those aged 60-80 years[9]. In the current study, depression (p=0.001) and self-esteem (p=0.052) had significant association with age.

In the current study, no significant difference was found in gender terms in the level of depression, anxiety and self-esteem, but mean stress scores were higher for females (p=0.009).

The findings correlated with level of amputation for stress (p=0.001), but no relationship was noted for depression, anxiety and self-esteem, though our population mainly comprised males. In one study, male gender positively predicted fitting a limb prosthesis at both trans-tibial (p=0.001) and trans-femoral (p=0.001) levels. Bilateral amputations and increasing age were negative predictors of fitting with a prosthetic limb (p<0.001). DM negatively predicted fitting with a prosthetic limb at trans-femoral amputation level (p<0.001)[21].

Regarding psychological well-being, the current study revealed high scores of depression (93.4%) compared to a previous study (28.35%)[22]. The current study revealed extremely severe depression in 3.5%, severe depression in 31.2%, moderate depression in 51% and mild depression in 7.7%. Most studies have reported high level of depression and anxiety in the initial 2 years of amputation[2]. In the present study3.1% respondents had normal anxiety, 2% mild anxiety, 16.5% moderate anxiety, 35.7% had severe anxiety and 42.7% had extremely severe anxiety. A previous study found prevalence of significant anxiety in 35.5% of its respondents.[22]. The current study found low level of self-esteem in 87.5% participants with no significant difference in terms of gender (p=0.07) The findings are consistent with a study done in Australia[5].

A review article revealed that the residual limb, prosthesis fit, appearance, properties and use of the prosthesis influenced patient satisfaction[23].

The main limitation of the current study is that it was conducted in certain geographical areas of Pakistan with unequal gender distribution, and that it used data-collection tools in English which were not validated in Urdu.

Conclusions

The level of self-esteem was low among majority of the participants and psychological well-being was found to be poor, indicating need of further studies to identify the factors associated with poor psychological well-being of prosthesis users that can be modified to improve their psychological well-being.

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Illustrations

Table 1: Demographic variables and P-value for Rosenberg self-esteem scale and depression anxiety and stress scale-21 (**DASS-21). (n=400)**

Variable	Variable Group (N, %)	Stress (X^2,P)	Depress-ion (X^2,P	Anxiety (X^2,P)	Self Esteem (X^2,P)
Age Group (Years)	15-30 (136, 34.6%), 31-45 (138, 34.8%), 46-60 (126, 30.6%)	40.62 0.274	64.43 0.001	34.03 0.279	48.44 0.052
Gender	Male (315, 78.8%), Female (85, 21.2%)	31.14 0.028	16.21 0.509	26.95 0.029	16.62 0.48
Marital Status	Married (262, 65.5%), Unmarried (138, 34.5%)	27.83, 0.065	34.07, 0.008	22.07, 0.106	33.00, 0.011
Education Level	Professional level (0.5%), Masters (5.3%), Graduation (9%), FSC (6%), SSC (20.2%), Middle School (20.8%), Illiterate (38.2%)	183.29 0.120	162.59 0.282	141.67 0.330	210.11 0.002
Occupation	No Job (167,41.%), House wives (27,6.8%), Student (48,12%), Teacher (22,5.5%), Doctor (5,1.3%), Farmer (19,4.7%), Driver (26,6.5%), Shopkeeper (72,18%), Officer (14,3.5%)	204.03 0.014	218.7 0.001	167.75, 0.029	235.15 0.001
Causes of Amputation	Landmine (128, 32%), Earth Quake (48, 12%), RTA (119, 29.7%), Gangrene (49, 12.2%),	154.13, 0.658	132.86, 0.878	134.22, 0.503	139.26 0.780

	Machine Injury (5,1.3%), Congenital (20,5%), Burns (2,0.5%), Dysmelia (4,1%), Bomb blast (25,6.3%)				
Amputation Level	Trans femoral (80, 20%), Trans tibial (251, 62.7%), Partial Foot (52, 13%), Trans radial (4,1%), Knee Disarticulation (10,2.5%), Tans humeral (2,0.5%), Hip Disarticulation (1,0.3%)	508.21 0.001	211.83, 0.339	181.6, 0.453	107.76 1.00

X^2: Chi-Square; RTA: Road traffic accident.

Table 2: Severity on Rosenberg self-esteem scale and depression anxiety and stress scale-21 (**DASS-21) (n=400)**

Scale	Severity	Depression	Anxiety	Stress	Self Esteem
DASS	Normal	26 (6.6%)	12 (3.1%)	62 (15.5%)	
	Mild	31 (7.7%)	8 (2%)	110 (27.5%)	
	Moderate	204 (51%)	66 (16.5%)	186 (46.5%)	
	Severe	125 (31.2%)	143 (35.7%)	39 (9.7%)	
	Very Severe	14 (3.5%)	171 (42.7%)	3 (0.8%)	
Rosenberg	Low Self Esteem				350 (87.5%)
	High self Esteem				50 (12.5%)

Table 3: Gender Distribution realted to depression, anxiety, stress and self-esteem scores (mean±standard deviation) (n=400)

Gender	Depression	Anxiety	Stress	Self Esteem
Total	**18.61±6.02**	**17.72±4.60**	**19.45±5.08**	**21.94±2.77**
Male	18.68±6.02	17.49±4.43	19.10±4.87	22.07±2.74
Female	18.32±6.06	18.56±5.13	20.72±5.63	21.45±2.85
P-Value	0.629	0.570	0.009	0.070

Table 4: Descriptive Statistics and analysis of variance (ANOVA) for different types of prosthetic materials (n=400).

DOMAIN	MATERIAL	MEAN±SD	STD. ERROR	F	P-VALUE
Stress	Polypropylene	19.48±5.09	0.26	0.686	0.504
	Modular	16.67±4.16	2.40		
	Conventional	16.00±0.00	.		
	Total	19.45±5.08	0.25		
Depression	Polypropylene	18.63±6.04	0.30	0.361	0.697
	Modular	17.33±4.16	2.40		
	Conventional	14.00±0.00	.		
	Total	18.61±6.03	0.30		
Anxiety	Polypropylene	17.73±4.61	0.23	0.331	0.719
	Modular	18.00±6.00	3.46		
	Conventional	14.00±0.00	.		
	Total	17.72±4.61	0.23		

Self-Esteem	Polypropylene	21.96±2.77	0.14	1.411	0.245
	Modular	19.33±1.53	0.88		
	Conventional	23.00±0.00	.		
	Total	21.94±2.77	0.14		

276 SD: Standard deviation.
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