

## ORIGINAL ARTICLE

## PSYCHOLOGICAL ADJUSTMENT TO AMPUTATION: VARIATIONS ON THE BASES OF SEX, AGE AND CAUSE OF LIMB LOSS

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**Background:** Amputation is the removal of a limb or part of a limb by a surgical procedure in order to save the life of a person. The underlying reasons behind the occurrence of this tragic incidence may be varied. However, irrespective of its cause limb loss is associated with wide range of life challenges. The study was done to investigate the psychological sequel of an individual after losing a limb and to know the level of strain and pressure they experience after this traumatic event. It also attempts to examine the moderating role of some demographic traits such as age, sex and cause of limb loss in psychosocial adjustment to amputation. **Methods:** The study includes 100 adult amputees of both genders and the data was collected from major government and private hospitals of Peshawar district. Demographic data sheet was constructed in order to know the demographics traits of amputees and a standardize Psychological Adjustment Scale developed by Sabir (1999) was used to find out the level of psychological adjustment after limb loss. **Results:** Nearly all the amputees' exhibit signs of psychological maladjustment at varying degrees. Males showed much greater signs of maladjustment than women and young adults were much psychologically shattered and disturbed as a result of limb loss. Amputation caused by planned medical reasons leads to less adjustment issues as compared to unplanned accidental amputation in which patient were not mentally prepare to accept this loss. **Conclusion:** Psychological aspect of amputation is an important aspect of limb loss which needs to be addressed properly in order to rehabilitate these patients and helps them to adjust successfully to their limb loss

**Keywords:** Amputation; Psychological aspect; Adjustment; Limb loss; Demographic traits; Anxiety; Stress

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## INTRODUCTION

Amputation is the removal of a limb or part of a limb by a surgical procedure in order to save the life of a person. Usually it is a treatment of choice for diseased, injured or infected body part for which the chances of recovery is not possible and which threatens the life of a person.<sup>1</sup> The underlying reasons behind the occurrence of this tragic incidence may be varied. It may be the result of an accident, due to an animal attack or a terrorist act. Sometimes, it is also performed to prevent the spread of disease or infections such as diabetes or gangrene in any body part that impair blood circulation thereby threatening person's life. Moreover, irreparable spread of bone cancer also cause severe damage to a limb and hence amputation is performed as a last resort in order to curtail loss of blood and prevent further spread of cancer.<sup>2</sup> However, irrespective of its cause limb loss is associated with wide range of life challenges.

Although limb amputation may be used as a last resort in order to save the life of a person, still an individual undergoing amputation experience long-term negative psychological and psychosocial effects.<sup>3</sup> A study conducted by William, *et al*<sup>4</sup> revealed that limb loss is more likely to be associated with drastic psychological and psychosocial

responses. Some common reactions include low self-esteem, feeling of helplessness, anxiety, depression, body-image issues, self-pity, sense of loss and social segregation. Hence, it not only leads to disturbance of the physical functions of body but also results in severe social, economical and psychological adjustment issues as well.

Adjustment to limb loss is a complex process and an individual not only needs to adjust to the physical loss of body part but also to overcome the psychological burden it bring along with itself.<sup>5</sup> Furthermore, psychological adjustment to amputation depends on one's personality traits, psychological resources and availability of help and support of family and society.<sup>6</sup> According to Lai *et al*<sup>7</sup> the ability to adjust to limb loss depend on various factors which includes the severity of pain, cause of limb loss, level of disability, demographic traits and availability of adequate support etc.

These factors may either smoothen or hinder an individual's progress towards successful adjustment. Canserver *et al*<sup>8</sup> also emphasized the role of various socio-demographic traits such as age, sex, time since amputation, cause, educational level etc. in the successful adjustment to limb loss.

Keeping in view the importance of psychological aspect of limb loss, the current study aims to investigate the psychological sequel of an individual after losing a limb and to know the level of strain and pressure they experience after this traumatic event. It also attempts to examine the moderating role of some demographic traits such as age, sex and cause of limb loss in psychosocial adjustment to amputation. The current study aims to find out the extent to which this adjustment process varies on the bases of these demographic traits and found some interesting findings in respect of these factors. The issue under study is of great significance as it targeted that group of population who are neglected in every field of life. Although these special people lost some of their body parts but still have enough talents, skills and abilities. With proper psychological treatment and efficient rehabilitation strategies these people will be able to become productive and contributing members of society

## MATERIAL AND METHODS

This is an empirical and cross sectional in nature as it analysed the relationship between demographics factors and psychological adjustment of patients with limb loss. A total of 100 cases of amputation were included in the study. Due to scarcity of sample convenient sampling technique was used to collect the data and the data was gathered from three major government and private hospitals of Peshawar district. The study consisted of both adult (19–60 years) males and females who underwent major limb amputation. The target group of this study was acquired limb amputees therefore patients with congenital limb amputation or other associated disabilities were excluded. Moreover, adjustment to limb loss varies with time since amputation therefore the present study included those amputees who acquired this condition not less than six weeks before and not more than one year

The instrument used for the study consisted of three sections in which the first section was used for the introduction of the topic and confidentiality statement. Second section comprised of demographic datasheet which gathered information regarding age, sex, cause, socio-economic status etc. and the third section contained the items regarding psychological adjustment. In order to investigate the level of psychological adjustment of patients, a psychological Adjustment scale developed by Sabir<sup>9</sup> was used. This assessment tool consists of 27 items with five subscales such as Accurate perception of reality, ability to cope with stress and anxiety, Positive self-image, ability to express full range of emotions and good interpersonal relationships. Responses are scored on 4-point rating scale with response options

ranging from strongly agree (5) to strongly disagree (1). Scoring is reversed for negatively phrased items. Possible score ranged from 27–135 with cut off=81. High scores reflect better psychological adjustment and low scores indicate poor psychological adjustment. The reliability coefficient of this scale is .82.<sup>9</sup>

Data was collected by using questionnaire based survey method and self-administrative technique has been used for the data collection process. The participants were approached through hospital directories. After obtaining their consent to participate in the study the subjects were briefed about the nature and purpose of the study and, they were given the scales in small groups under the researcher's supervision. The data was analysed through SPSS version 20. The collected data were statistically analysed using SPSS version 20. Frequent distribution and percentages were conducted to obtain demographic information while descriptive statistics were calculated to obtain the scores of all scales and subscales.

## RESULTS

Results of the study revealed that out of 100 patients, 80 were males and 20 were females. Ages of the patients ranged from 20 to 60 years among which 34% were between the age group of 20–29 years, 36% were found in between age range of 30–40 years while 30% were found in age group of 40–60 years. The majority (76) of the cases of amputation took place due to unplanned accidental reasons while 24 cases were the result of planned medical reasons such as diabetes. Among the total 76 cases of unplanned amputation, 56 cases were caused by road traffic accidents, 9 cases were due to bomb blasts, 4 cases were the result of electric shocks and 7 were caused by gunshots.

Descriptive statistics of Psychological Adjustment Scale showed that nearly every patient of amputation exhibit signs of psychological maladjustment and a minimum score on this scale was 59 while maximum score was 126. Furthermore, respondents scores on all subscales of psychological Adjustment Scale such as accurate perception of reality, ability to cope with stress and anxiety, Positive self-image, ability to express full range of emotions and interpersonal relations were also calculated. (Table-1). Results showed that amputees also face problems in all of these areas after the incident of amputation

Independent *t*-test (Table 2) was conducted to compare the adjustment level of amputees on the bases of gender and cause of amputation. With respect to gender, results depicted significant differences between males

and females {t (98) = -9.09, p< .001} on their level of adjustment and on average females (M=121.2.SD=3.5) scored higher than males (M=90.6, SD=14.5).

Similarly, with respect to causes of amputation results revealed that on psychological Adjustment scale there were also significant differences {t (98) = -8.92, p<.001} between amputees having planned amputation and unplanned accidental amputation. It was found that amputees with planned amputation (M=118.29, SD= 6.76) scores higher than amputees with unplanned amputation (M=89.98, SD=15.01) on psychological scale (Table-3)

With reference to age of amputees at the time of amputation, analysis of variance (ANOVA) was conducted (Table 5) to compare the adjustment level of different group of amputees. Results of the current study demonstrated significant variation between amputees of different age groups {F (97) =32.8. p<.001}. It was found that among all other age groups, young amputees were much seriously disturbed due to amputation. Results depicted that older adults (40–60 years) were better psychologically adjusted (M= 113.2. SD=10.10) as compared to middle aged group (M= 94.2. SD=17.35) and young age group (M= 84.9. SD=84.39) (Table no 4).

**Table-1: Descriptive statistics of psychological adjustment scale and its subscales of (n=100)**

Scales	Range	Min	Max	Mean	SD	Var	skw
Psychological Adjustment	67.0	59.0	126.0	96.7	18.1	329.0	-.01
Perception of reality	11.0	9.0	20.0	15.4	2.9	8.66	-.27
Ability to cope with stress	16.0	12.0	28.0	20.3	4.2	17.87	.25
Positive self-Image	23.0	11.0	34.0	24.8	6.2	39.01	-.46
Ability to express emotions	15.0	15.0	30.0	22.2	3.6	13.52	.07
Interpersonal relationships	11.0	9.0	20.0	15.3	2.8	8.03	-.19

**Table-2: Means, Standard deviations& t-values on level of psychological adjustment for both genders (n=100)**

Variable	Females n=20		Males n=80		T (98)	95 % CI		Cohen's d
	Mean	SD	Mean	SD		LL	UL	
PAS	121.2	3.54	90.6	14.85	-9.09***	-37.18	-23.86	2.85

\*\*\*p<.001

**Table-3: Means, Standard deviations& t-values for unplanned and planned causes of amputation (n=100)**

Variable	Planned causes (n=24)		Unplanned causes n=76		T (98)	95 % CI		Cohen's d
	Mean	SD	Mean	SD		LL	UL	
SES	85.6	6.97	61.3	17.0	-6.79***	-31.37	-17.18	1.86
PAS	118.2	6.76	89.9	15.0	-8.92***	-34.59	-22.01	2.43

\*\*\*p<.001

**Table-4: Analyses of variance of psychological adjustment and age groups (n=100)**

Variable	Group1. (n=34) 20-29 yrs		Group 2 (n=36) 30-40 yrs		Group 3 (n=30) 49-60 yrs		F(97)	i-j
	M	SD	M	SD	M	SD		
PAS	84.94	13.39	94.22	17.35	113.26	10.10	32.85***	1<2<3

\*\*\*p <.001

## DISCUSSION

The study sample was adult males and females, who acquired limb amputation at some stage of their life. Amputees between the age group of 20–60 years were selected as target group and the reason behind selecting this age group was that this is the most active and productive age group. As compared to children and old folks, adult people are much harshly disturbed by any kind of disability including amputation.<sup>10</sup>

Results of the current study showed an increased rate of acquired limb amputation in males as compared to females. Usually males are typically the bread winners of the families and are more actively involved in different occupational and vocational activities. That's why they are more exposed to accidental and environmental treats and

hence are more prudent to be the victims of amputation. On the other hand, females usually spend more time in the safe environment of their homes, they rarely engage in any kind of mechanical work and do not drive too often, which keeps them safe from the different accidental and environmental risks of amputation. Due to all of these reasons the ratio of male amputees is comparatively larger than females and the same trend was observed in the present study. Previous researches<sup>11</sup> also confirmed this male domination of the current study regarding the incidence of amputation. It was found that due to their active life styles men have high probabilities of meeting road traffic accidents, work place mishaps as well as catching infections and diseases.

Almost all previous studies on the psychological aspect of amputation revealed that limb loss harshly disturbed the psychological state of

the people involved.<sup>12</sup> Some frequently noted reactions were severe anxiety, helplessness, frustration, anger, negative self-image, social isolation, and depression.<sup>13</sup> Results of the current study was also in line with previous studies and revealed that nearly all the patients of amputation showed signs of psychological mal adjustment (Table-1).

As far as the psychological adjustment to limb amputation is concerned, socio-demographic factors play an important role. It sometimes facilitates or sometimes inhibits an individual adjustment to this drastic, life-altering loss.<sup>14</sup> Among these factors gender is an important socio-demographic factor that could be associated with the efficient adjustment to limb amputation. Results of the current study showed that male amputees faced more psychological adjustment issues as majority of male patients score low on psychological adjustment scale. This implies that in our society, males are more psychologically shattered and disturbed by amputation as compared to females. Similar findings were also observed by Washington<sup>15</sup>, who stated that males suffered more than females in case of amputation. It was found that males usually had more adjustment issues following limb loss and are more psychologically disturbed than females. Active life style, Social pressure and societal expectations all increases their level of anxiety and depression after losing a body part.

Some other studies revealed contrasting results regarding the sex of amputees and their level of psychological adjustment. Some researches<sup>16</sup> found that males easily and efficiently accepted the reality of this loss and returned to normal life as quickly as possible while female take some time to go through this trauma.

Studies showed that the difficulty of psychological adjustment with the harsh reality of limb loss varies with age as well.<sup>17</sup> Finding of the present study revealed that incidence of amputation was more common in young adults (20–40 years) as compare to late adults (41–60 years). Mostly young people are engaged in different sort of mechanical, arduous and unsafe activities, due to which they have more chances of trapping to be the victims of amputation. Current study further concluded that young adults were also much psychologically shattered and disturbed due to this loss as amputation limits their work efficiency and productivity resulting in feeling of unworthiness and burden on family. Young people are also much concerned about their body appearance and perfection and they not only losses their body part but also their dream, ambitions and aspirations. A study conducted by Crosby & Miller<sup>18</sup> revealed that young amputees had more

adjustment related issues as compare to older amputees. For Dunn<sup>10</sup> amputation restricts the everyday activities of young people and they also have appearance related concerns that's why they are at more risk of developing psychological symptoms. On the other hand, old age already restricts the activities of aged amputees and they also are less concern about physical appearance, as a result they comparatively exhibit less adjustment symptoms.

Due to current socio-political instability, road traffic accidents, bomb blasts, factories and machine related accidents, the rate of amputation is increasing day by day around the globe<sup>19</sup> including Pakistan as well<sup>20</sup>. Nowadays the common causes of amputation in develop countries are peripheral vascular diseases while accidents, bomb blasts, natural disasters, tumours and infections are the foremost causes of amputation in undeveloped countries.<sup>19,21</sup>

In respect of the exhibition of psychological reaction to limb loss, the cause of amputation is also very important. Usually amputation surgeries are performed either due to accidental / traumatic reasons or due to planned medical grounds. Finding of the current research showed that presently the rate of unplanned accidental causes is much greater than planned medical causes. It was found that the psychological reaction of amputees towards planned amputation was totally different as compared to traumatic or accidental amputation. Sudden unexpected limb loss seriously disturbed the psychological harmony of an individual resulting in many maladjustment issues following amputation.<sup>22</sup> Moreover, in case of traumatic amputation the patient react negatively as he is not mentally prepared for this loss and as result they are at higher risk of developing psychological symptoms.<sup>23</sup> On the other hand, individual undergone planned amputation for the treatment of any disease or infection usually gets some time to accept the necessity of this procedure. They are mentally prepared for this loss and accept it as a lifesaving option.<sup>24</sup>

## CONCLUSION

Amputation has proven to have distinctive psychosocial and psychological consequences which are usually ignored while dealing with cases of amputation. Amputation not only results in loss of body part but also results in loss of psychological harmony of an individual. It commonly leads to stress, anxiety, helplessness, feeling of unworthiness, low self-esteem and self-image, uncontrolled emotions and ultimately results in social isolation. Successful adjustment to amputation is closely associated with the socio-demographic traits of an individual. Due to societal expectation, social

demands and family responsibilities males exhibits more rigorous signs of psychological maladjustment than females. As compare to older adults, young adults suffer much as compared to older adults because they also losses their productivity, ambition and aspirations. Furthermore, unexpected accidental amputations were associated with denial, shock and greater mal-adjustment issues.

### AUTHORS' CONTRIBUTION

SA: Main author and principal researcher, concept, research design, data collection, analyses, results and Discussion. SKFH: Proof reading and critical revision for important intellectual content

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