QUALITY OF LIFE IN INDIVIDUALS WITH LOWER LIMB AMPUTATION

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ABSTRACT

The main objective of this study was to assess the quality of life (QOL) in individuals with lower limb amputation. An observational cross sectional study was carried out on 196 amputees participants whose age was >18 years. Participants were selected through convenient sampling between May to August 2022 from Services hospital, Lahore, Aziz Bhatti Shaheed Teaching hospital Gujrat, Civil hospital Kharian. SF-36 questionnaire was used for the assessment of QOL' in this 0 indicates the poor whereas 100 indicates higher quality of life. All information were put and analyzed by SPSS Version 24. Average age of patients was found 44.44 ± 12.52 years. Out of 196 patients, 159(81.10%) were male. Segments of QOL, physical functioning (61.5±19.6), physical role (34.5±26.8), bodily pain (44.2±28.09), general health (55.90±10.7), vitality (54.4±9.70), social functioning (60.3±29.06), emotional role (50.3±43.4) and mental health (63.3±17.3) was observed respectively. Findings of this study was concluded that physical functioning, social functioning and mental health noted high score and fair quality of life as compare to other segments of quality of life however in segments; role physical and bodily pain were very compromised and poor quality of life with lower score .

Index Terms: Quality of life, SF-36 questionnaire, cross sectional study, lower limb amputation.

INTRODUCTION

Phantom limb pain is the name for discomfort felt near a missing limb (PLP). PLP has many different descriptions, but typically includes burning, gnawing, stabbing, agony, and aching. (1) The pain in the stump that remains after an amputation normally goes away after a few weeks as the incision heals. (2) The cortical sensory experience of an amputated body part is characterized by Phantom limb sensation.(3) Under the space of Quality of life, mental capability and actual wellbeing .In handicapped people, personal satisfaction discernments

are related with agony and transformation about prosthetic appendages and psychosocial prosperity as opposed to clinical or segment factors.

Phantom limb sensations are generally defined as tingling, pins, numbness, burning, needles, squeezing, cramping or itching. There are also regular reports of changes in the length, volume, temperature, size, or location of the phantom limb. (4) More than 100,000 individuals in the US have limbs amputated yearly as a result of illnesses or traumas, such as diabetes and peripheral vascular disease. (5) Pain from phantom limbs is naturally felt in the lower portion of the missing extremity. Diabetic foot intricacy is driving reason for removal in Pakistan and Pakistan is sixth biggest nation experiencing diabetes. (6)

Phantom aches are episodic and often come in short bursts that last a few seconds to several hours. Only a small percentage of individuals have severe and constant phantom pain. (7) The two types of pain reported after amputation surgery are acute after operation pain and persistent after amputation pain. (8) Amputation is one of the foremost causes of persistent impairment and it produces an important shift in practically every element of a person's functioning and daily life. (9) Limitations in bodily function and structure reduce the level of activity and hence involvement for amputees, while environmental and personal factors have an effect on quality of life as well. (10)

Lower limb amputations may alter one's health status, regardless of the cause. Reduced balance, strength, and mobility are just a few examples of impairments that might result in disability. (11) Performing well in mobility-related tasks like transfers, walking, climbing stairs, and ADLs has been linked to balance. (12)

The degree and duration of pain in the lower limb that was amputated may be influenced by factors in both the PNS and CNS. It can last a lifetime and significantly lower the quality of life for those who experience it. (13) Amputations can result from trauma, infections, asthma, cardiovascular disease, cancer, and other illnesses. Amputations are most frequently caused by trauma worldwide. (14) Lower limb amputation, which most usually occurs below the knee, is a common occurrence in accident and combat casualties.(15)

Psychological-emotional, informational, material, and social support are all examples of social support. (16) Family is unquestionably the patient's primary support system in coping with the disease that has occurred in his or her life (spouse, children and parents). (17) Given the numerous pressures in the lives of amputees as well as their chronic physical

ailments and disabilities, which raise the possibility of further lowering their quality of life, collaboration with other groups and people is usually vital.(18)

The majority of lower extremity amputations are brought on by this triad. Diabetes is associated with 82 percent of all lower extremity amputations brought on by vascular disease in the USA, and diabetics have a day's danger of amputation that is 30 times greater than persons without the disorder.(19)

Extra body weight is a major cause for people who have had their lower limbs amputated (LLA), as it can have a number of detrimental effects, as well as a higher risk of osteoarthritis, heart disease, falls and other accidents, and decreased functional ability in addition to musculoskeletal pain, and more reduced quality of life and reduced prosthetic fit and performance.(20) Better results may be obtained if a multidisciplinary strategy is adopted with competent physiotherapy and other rehabilitation departments coordinated. (21) Objective of this study was to evaluate the quality of life op participants with low limb amputations.

METHODS

Study design, duration and setting

An observational cross sectional study was carried out on 196 amputees participants whose age was >18 years. Data from selected participants were collected between May to August 2022 from Services hospital, Lahore, Aziz Bhatti Shaheed Teaching hospital Gujrat, Civil hospital Kharian.

Sampling technique and sample size calculation

Non-probability convenient sampling technique was applied to select the participants. Sample size n=196 was calculated using below mentioned formula[10] and WHO recommended calculator

$$\mathbf{n = (Z_{1-\alpha/2})^2(p)(1-p)/(d)^2}$$

$Z_{1-\alpha/2}$ = 1.96, It is standard normal variate at 95% confidence interval, p = 0.50, which is expected proportion, and d = Expected precision or effect size was used 7%.

$$n = (1.96)^2(0.50)\ (1-0.50)\ /\ (0.07)^2 = \mathbf{196}$$

Participants

Amputees participants with age >18 years who had unilateral or bilateral lower limb amputation and transtibial or trans femoral amputation of lower extremities were included in

the study. Hearing or speech impairment, mental incapacity and individuals who were undergoing gait training and procuring a new artificial limb were excluded from the study.

Ethical approval and Consent

Ethical approval was taken from Institutional Review Board (IRB) of University of Lahore, Pubjab, Pakistan. An informed and written consent was taken from the participants before collecting data. Ensured that data would be used for only research purpose.

Data collection procedure and outcome measures

Data were collected from 196 participants who were fulfilling the inclusion and exclusion criteria. Firstly, demographic questions were asked and noted. Secondly, a SF-36 questionnaire with Cronbach's alpha = 0.85 and reliability coefficient = 0.75 was used to assess the quality of life of participants as data collection tool. SF-36 questionnaire had eight different segments including physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role and mental health with 36 items.

Statistical analysis

All information of participants were entered and analyzed through SPSS Version 24. In descriptive analysis, a bar chart was drawn for segments of SF-36 questionnaire and mean± standard deviation for numerical data whereas frequencies and percentages were calculated for categorical variables. All data were calculated at 95% confidence interval.

RESULTS

Out of total n=196, male participants were 159(81%), mostly 161(82%) were married and average age of all participants was observed 44.44 ± 12.52 years shown in **table 1**.

Table 1: Socio-demographic details

Variables	Responses	n(%)	Mean ± S.D
Age of participants (Years)			44.44 ± 12.523
Gender	Male	159(81)	
	Female	37(19)	
Marital Status	Single	30(15)	
	Married	161(82)	
	Divorce	5(3)	
Total		**196(100)**	

Table 2. Body parts and Cause of amputation

Variable	Categories	n(%)
Body Part	**Foot**	31(16)
	Ankle	73(37)
	Lower part of leg	92(47)
CAUSE	**Trauma**	98(50)
	Diabetic	57(29)
	Infection	21(11)
	Poor circulation	11(6)
	Tumor	9(5)
Total		**196(100)**

Out of 196 lower limb amputations, 31(16%), 73(37%) and 92(47%) were found with foot, ankle and lower part of leg respectively. Mostly amputations were due to trauma and diabetic that were 98(50%) and 57(29%) respectively that is shown in **table 2**.

Table 3: Quality of Life in individuals with lower limb amputation

Segments	Mean±S.D
Physical Functioning	61.26±19.66
Role Physical	34.57±26.81
Bodily Pain	44.27±28.09
General Health	55.98±10.75
Vitality	54.49±9.78
Social Functioning	60.33±29.06
Role Emotional	50.34±43.43
Mental Health	63.35±17.39

Table 3 shows average score out of 100 for each segment of SF-36 for the assessment of QOL, in this 0 indicates the poor quality of life whereas 100 indicates higher quality of life, physical functioning (61.5±19.6), physical role (34.5±26.8), bodily pain (44.2±28.09), general health (55.90±10.7), vitality (54.4±9.70), social functioning (60.3±29.06), emotional role (50.3±43.4) and mental health (63.3±17.3) was observed that is also shown in **Figure 1.**

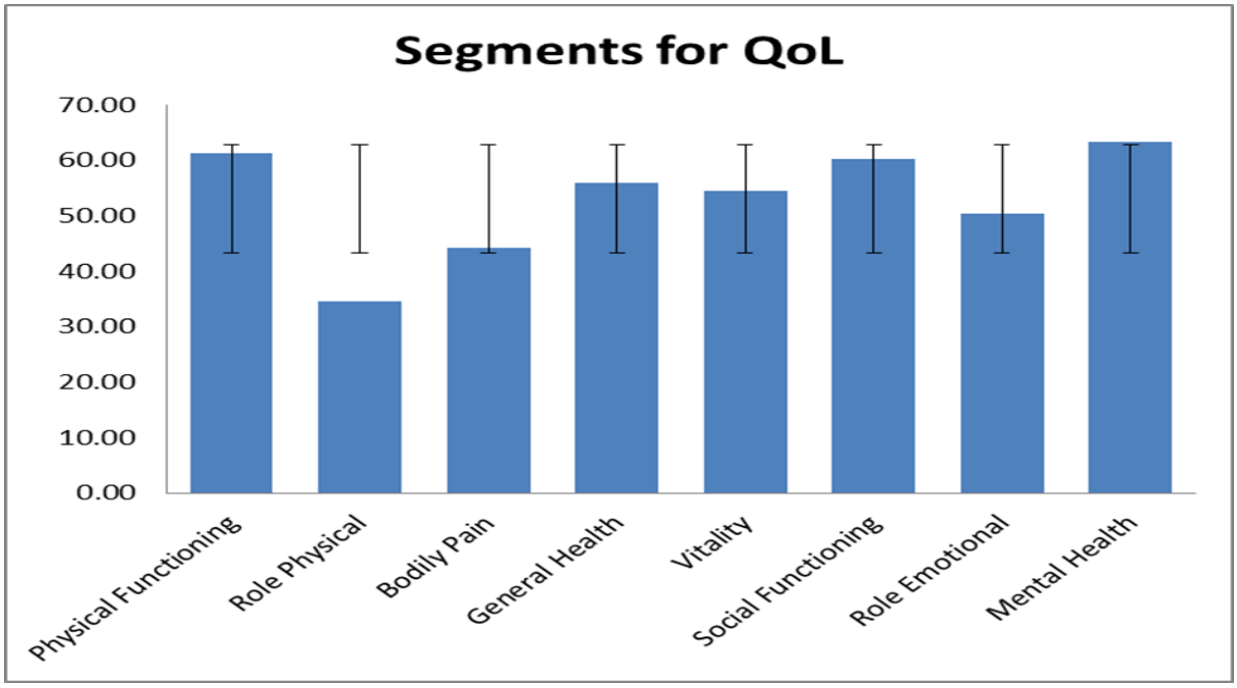

Figure 1. Average score for each segments for Quality of Life

DISCUSSION

An observational cross-sectional study to assess the quality of life for people who have had their lower limbs amputated. The study included 196 patients from services hospital Lahore Aziz Bhatti shaheed hospital Gujrat and Civil hospital kharian with above 18 years. Data was collected from 196 subjects from by using SF-36 and questionnaire. In recent study mean age group was 94 with 196 male patients and 37 female patients out of 196. There were 30 unmarried patients, 161 married and 5 divorced. The cause of amputation of 97 was due to trauma, 57 for diabetes, 21 due to infection, 10 were of tumor and 11 due to poor circulation. The eight dimensions that make up the quality of life questionnaire are physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health. The values and answer of questionnaire and Performa were encoded in SPSS software and details of analyzed data were discussed. The overall mean age of the female was 44.44 ± 12.523 years.

In previous study conducted by Mihu asano, Paula Rushton, showed that out of 415, 295 patients were males and 120 were females. Two hundred fifty seven patients were married and one hundred and fifty eight were unmarried patients. (22) In this study out of one hundred and fifteen, ninety four patients were male and twenty one patients were female. Nineteen patients were un-married, ninety three were married and three divorced.

Another cross-sectional study employed the 36-Item Health Survey 1.0 (SF-36) by Research and Development (RAND) to measure quality of life. Lower extremity amputation patients persistently underperformed the control group on all SF-36 measures, according to the findings. The SF-36 factors were the same for both genders. 11 (39%) and 17 (61%) patients, respectively, had transtibial and transfemoral levels of amputation. Physical functioning and general health status factors showed higher scores in the transtibial amputation patients.(23) According to a recent study, older persons who have had a lower limb amputated experience significant reductions in both physical functioning (mean: 61.09) and general health condition (mean: 56.03)

In previous study use SF 36 questionnaire patients had bodily pain (M=85.5, S.D=27.15) and General health status (M=71.38, S.D= 23.5). (24) In our study, bodily pain (M=44.2, S.D=28.09), general health (M=55.9, S.D=10.7).

Those who have had transtibial amputations are significantly more ambulatory than patients who have had transfemoral amputations. This is most likely one of the causes of why the outcomes of distinct domains substantially higher values on the SF-36 (in terms of bodily performance and general health) in the individuals with transtibial amputations in comparison to those with amputations at the transfemoral level. When compared to those who have chronic rheumatic disease the patients' condition, such as rheumatoid arthritis, with lower levels of functional status of those with above-the-knee amputations, but those with below-the-knee amputations were far more useful. (25) In our study results, 47% patient had lower limb amputation.

The majority of lower limb amputees in this study were found to be male (83%), and approximately two-thirds of them were above the age of 45. Diabetes (46%) or trauma (41.5%) accounted for nearly 90% of amputations, and transtibial amputation (67%) was the most prevalent level of amputation. (26) In our study, 50% traumatic, 29% diabetic patients. It was an observational study on the basis of which just a questionnaire survey was conducted due to which the results are so small and having a limited findings. The use of walking aids during walking tests was not investigated in this study. We calculated the walking aid score without knowing which patient used a walking aid.

CONCLUSION

Findings of this study was concluded that physical functioning, social functioning and mental health noted high score and fair quality of life as compare to other segments of quality of life however in segments; role physical and bodily pain were very compromised and poor

quality of life with lower score . Future research suggests that practitioners should consider all of these elements during the treatment process, while establishing the rehabilitation programmer, and after the discharge of these patients to guarantee a better recovery, reintegration into society, and regaining a better QOL. More studies should be conducted for rehab plans. The study must be conducted on upper limb amputation

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Data Availability: Data will be provided on the demand by corresponding author.

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