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Quality of Life with Transtibial Prosthesis: Survey Based on Gender Difference

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ABSTRACT

Back ground: The Quality of Life (QoL) of individuals with lower limb amputation with gender basics have been investigated and reported in literature, also some studies described the QoL of patients with over all lower limb prostheses in different level of amputation. But there is lack of information regarding the quality of life after transtibial amputation with prosthesis fitment in gender basics, which will provide a better information regarding the day to activity of patient and associated risk factor after using the transtibial prosthesis.
Aim and objective: The present study was designed to compare the difference in quality of life of transtibial prosthesis user on the basis of gender.
Methodology: The Study was conducted with 50 transtibial amputee with prosthesis (male= 25 and female= 25). Convenient Sampling technique was used to collect the sample. All the four domains: physical, psychological, social relationships, and environment was measured by using (QoL) WHO quality of life brief scale among all male and female transtibial prosthesis user.
Results: There is no significant effect between male and female found in the domains except social relationship. Overall quality of life between male and female was almost same. But we found that even after prosthetic fitment male population was psychologically weak then female population.
Conclusion: The result of this study shows that, when we compared the quality of life after transtibial lower limb amputation with prosthesis with a gender basis, found that there are no significant differences between male and female.

Keywords: Transtibial prosthesis, gender difference, quality of life, WHO QOL brief Scale.

INTRODUCTION

The world health organization (WHO) defines health as a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity.[1] In 1995, the WHO definition evolved as follows: "Individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. It is a broad ranging concept incorporating in a complex way the persons' physical health, psychological state, level of independence, social relationships, personal beliefs, and their relationships to salient features of the environment". [2]

Amputation is the surgical removal of a part or whole of a limb, is an acquired condition that results in the loss of a limb or part thereof usually from injury, disease or surgery. [3,4]

Peripheral vascular disease, physical trauma and neoplasms, especially osteosarcoma, are the main reasons leading to lower limb amputation. Non-healing diabetic ulcers in the lower extremities can progress to cellulitis, abscesses, osteomyelitis,

gangrene, and amputation may be necessary to prevent the spread of infection from the necrotic tissue. The incidence of acquired amputations differs from 1.2 to 4.4per 10.000 and it is estimated that it will probably reach to a total of 3.6 million by the year 2050.[5] The amputation has a significant and drastic change in a person's life; the amputee goes through a cascade of events post amputation from a stage of shock, to acknowledgement, and finally adjustment. [6] In the Indian sample, both physical component and mental component summary scores of the SF-36 were found to be significantly lower for amputees compared to the general population. Employment status, use of prosthesis or assistive device, stump and phantom pain were found to be predictors of quality of life in this study. Additionally, comorbidities were found to be an independent predictor of both physical and mental health component of QoL.[7]

However, few studies have compared the QOL of people living with and without disability or have addressed the QoL of people who require assistive devices to maintain mobility in low- and middle-income countries like India.[8]

Study found that lower QOL in people with leprosy than in a control group, with women experiencing significantly lower QOL in the psychological domain and men significantly lower QOL in the physical and environmental domains than the control group. Another study from India found lower QOL in a group of lower-limb amputees than in the general population demonstrating that physical and mental health were lower in amputees than in the general population. [9] QoL of participants was found to be significantly lower than that of age and sex-matched diabetic non-amputees with regards to physical functioning, role limitation due to physical health, emotional well-being, social functioning, and bodily pain. Ng SS et al investigated the quality of life of lower limb amputees specifically on patients who had TTA, by comparing the quality of life between TTA patients and age and sex-matched diabetic nonamputees; those fitted with prosthesis and those without. [10] Ezhil.Mathiet et.al investigated the QoL of subjects with transtibial amputation among Indian population by TAPES-R questionnaires and found that amputee individuals were coping psychologically with the event but are restricting themselves from more demanding activities. Stump pain and weight of the prosthesis are preventing the subjects from achieving better independent quality of life.[11] Some study was conducted between diabetic amputee with prosthesis with non-amputee to find out the QoL. Some studies conducted regarding over all quality of life in lower limb amputee with prosthesis user. As per previous studies it was noticed that the females with lower limb amputation have lower quality of life in comparison of males with lower limb amputation.[13] As prosthetic fitment gives a challenge to amputee after transtibial amputation and psychological benefit to patients we need to carry out a study regarding the QoL between male and female with prosthesis in India like developing country.

MATERIALS & METHODS

This study was conducted to examine the quality of life among male and female patients with unilateral transtibial prosthesis. Since lower limb amputees have psychological problems, social issues, but after fitment of prosthesis there is a chance of change in life style and ability to perform smooth day today activity.

50 subjects were participated in our study by convenient sampling technique, out of which 25 were male and 25 were female. All subjects agreed to participate in this study through a written informed consent. Inclusions criteria included age 20-65 years, transtibial amputee with prosthesis user for more than 6 months. Other criteria like immediate post operative prosthesis user and other neurologic conditions were excluded from our study.

The study was conducted between (june2021- December 2022) at department of prosthetics and orthotics SIHRLC, Karigiri, Tamil Nadu. The Comparison between the Quality of life among males and females transtibial prosthesis user was done using WHO QOL brief Scale. The 4 domains of the scale like psychological health, social relationship, physical health, environmental issues were used, for find out the quality of life. Participant's scores for each domain of the WHO QOL brief questionnaire were obtained and recorded. After obtaining the scores for questionnaire, the scores were evaluated and result was obtained.

STATISTICAL ANALYSIS

Raw data were exported from the questionnaires into Microsoft Excel, and final data analysis was performed in SPSS version 23.0. Frequency distribution analysis was done for all the sample participated in the study. Chi-square test was used to compare the quality of life of both male and female. The tests were applied at 95% confidence interval on α value set at 0.05. The results were taken to be significant of p-value<0.05.

RESULT

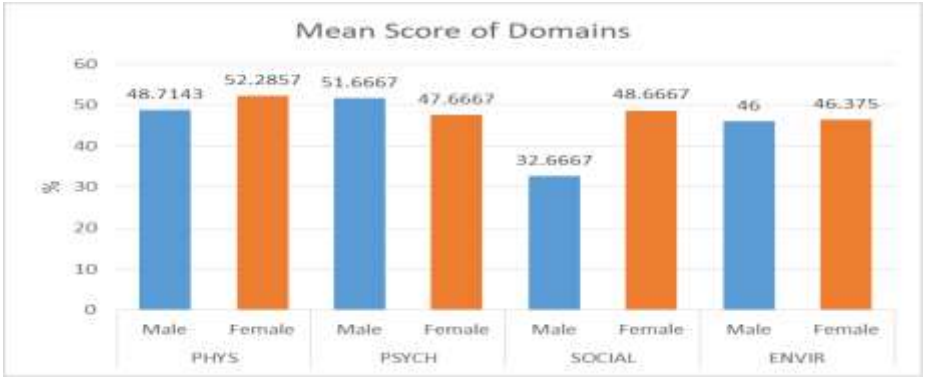
A total number of 57 subjects were recruited for the study. 7 subjects were excluded from the study as they did not give proper data according to inclusion criteria. Out of 50 transtibial amputee, who participated in the study, 25 subjects were female and 25 subjects were male. Their age, gender, education, marital status, illness was recorded. In each domain mean and std. deviation were mentioned in table 1 between male and female. We found that there is no significance difference between male and female regarding with physical, psychological, environmental data. But in social issue we found significance difference.t test was used to find out the QoL among patients.

Domain	Gender	N	Mean	Std. Deviation	P-value
PHYSICAL	Male	25	48.7143	13.94230	0.399
	Female	25	52.2857	15.69940	
PSYCHOLOGICAL	Male	25	51.6667	15.72882	0.331
	Female	25	47.6667	12.95916	
SOCIAL	Male	25	32.6667	24.52323	0.052
	Female	25	48.6667	31.88521	
ENVIRNMENTAL	Male	25	46.0000	24.16442	0.952
	Female	25	46.3750	19.73704	

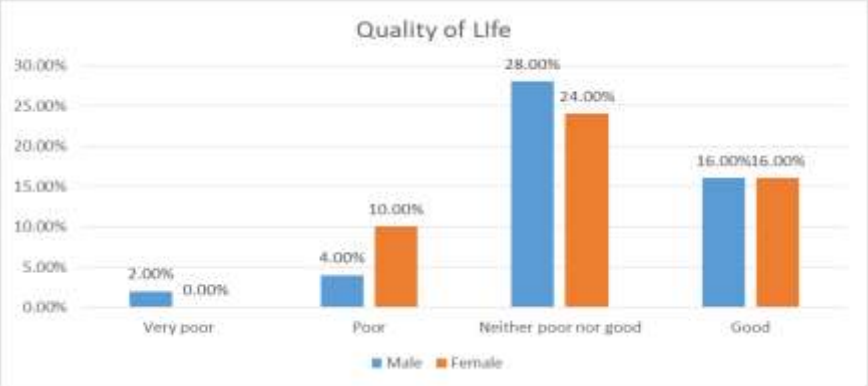
Table :1 score of each domain

		Gender				P-Value
		Male		Female		
		N	%	N	%	
QOL (Q1)	Very poor	1	2.00%	0	0.00%	.486
	Poor	2	4.00%	5	10.00%	
	Neither Poor nor Good	14	28.00%	12	24.00%	
	Good	8	16.00%	8	16.00%	

Table :2 Quality of life among patients



Graph 1: Scoring of each domain



Graph 2:Comparision of QoL between Male and Female

DISCUSSION

Amputation creates plenty of problems in several directions. It has an impact on how the body looks, feels, and functions. Quality of life (QOL) has become an important outcome in clinical and interventional research in recent years, as the focus on health assessment has shifted away from conventional health indicators like mortality and morbidity. Lower limb amputation with transtibial, patients emphasize the significance of quality of life in determining a good treatment outcome. People who have had limbs amputated may perceive a decrease in their quality of life immediately after the amputation, but this may alter over time as their tolerance with the new condition improves as they live longer with the aftermath. The purpose of this study was to discover the differences that existed between the genders in terms of quality of life. Amputation of a limbs causes various changes in an individual's psychological and social functioning, including changes in self-concept and body images, a reduction in quality of life, and the loss of employment status or vocation. Females are less comfortable with their job capability, are emotionally more handicapped, feel more stressed, and believe others are able to live their lives better, according to the study, resulting in a lower quality of life among females than males.

In our study we found that prosthesis fitment changes the life style of patient and helps in performing ADL activity. Regarding the quality of life physical, social and environmental domain we did not find any significance difference between male and female. In social issues having only significance difference was found. We found that the quality of life after prosthetic treatment, neither poor nor good as per patients view. But still some population have a good QoL. We found that some prosthetic complications like wearing time, maintenance of prosthetic limb, stump pain and fatigue among patients. We found that the phantom limb pain was reduced in all patients, body image was improved after prosthesis fitment. Female patients have difficulties during transport compare to male. But we found that in concern to health satisfaction females are not satisfied with respect to male. After amputation, again depression, anxiety is more in male.

Limitation of study:

Sample size is less

Current clinical study was conducted in one center.

Proper environmental barrier was not checked.

Future scope:

The study will be conduct with More sample size with follow up plan.

CONCLUSION

The result of this study shows that, when we compared the quality of life after transtibial lower limb amputation with prosthesis with a gender basis, found that there are no significant differences between male and female. As it is a one centre prospective

short-term study we cannot generalize a strong statement about the quality of life.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

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