

Quality of Life as Predictor of Psychological Well-being, Self-care and Psychosocial Adjustment in Patients with Type II Diabetes after Initial Unilateral Minor Amputation

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ABSTRACT

OBJECTIVE: The present research investigated the role of perceived quality of life as significant predictor of psychological well-being, self-care and psychosocial adjustment among patients with type II diabetes initially after minor unilateral amputation.

HYPOTHESIS: The quality of life is likely to predict the psychological well-being, psychosocial adjustment and self-care in patients with type II diabetes, gone through initial unilateral minor amputation.

RESEARCH DESIGN: Cross Sectional descriptive.

METHODOLOGY: A sample of 200 patients with type II diabetes was taken; 100 with minor amputation and 100 without amputation. The age ranged between 40 to 60 years. A written informed consent was taken in addition to departmental permission to collect the data from indoor and outdoor units of three main hospitals of Lahore including Jinnah Hospital, Arif Diabetics and Mayo hospital, Lahore. The study was carried between Sep, 2015 to December, 2015. The major study constructs were measured by using Urdu translated measures including Diabetes Related Quality of Life Scale, Psychological Well-being Scale and Social Adjustment Scale- self report (SAS-SR); and Self-care Inventory. Regression analysis was carried out to assess the role of quality of life as significant predictor.

RESULTS: The results revealed that quality of life emerged as significant positive predictor of psychological well-being, self-care and psychosocial adjustment in patients with diabetes who have gone through minor amputation.

CONCLUSION: Quality of life is significant positive predictor and by enhancing the Perceived quality of life of patients with diabetes and minor amputation through psycho-education and counseling, the psychological well-being, psychosocial adjustment and self-care behaviors can be improved.

KEYWORDS: Type II Diabetes; Psychosocial Adjustment; Psychological well-being, Quality of life; Amputation status.

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INTRODUCTION

Pakistan is among countries that have evidenced vivid increase in the reported prevalence rate of diabetes during past few decades¹. It is estimated that Pakistan would be the 4th largest in terms of Diabetes population by 2030 if mushroom occurrence of diabetes continues at the current rate. According to WHO report there are 12.9 million diabetes (9.4 million diagnosed, 3.5 million undiagnosed) in Pakistan representing approximately 10% of the population. It is also estimated that another 38 million peoples, representing 20.5% female and 15.9% male population of Pakistan are pre-diabetic. It is an alarming figure that reprimands grave attention of health professionals.^{1,2} Diabetes

Mellitus (DM) is in fact world's leading disease causing widespread morbidity and mortality. It leads to aggravated outcomes such as high rates of hospitalization, blindness, renal failure and non-traumatic amputation. The prevalence of diabetic peripheral neuropathy, a state in which amputation and consequent disability is incurred is reported to be as high as about 50%.³

Type II diabetes is known as disability causing disorder and this sustains massive damage if neglected and not adequately taken care of. Health-related quality of life (HRQL) has taken much of professional attention due to the fact that in untoward health conditions, the sufferers usually go through marked

disturbed psychological states.⁴ The World Health Organization (WHO) has specified certain dimensions in an attempt to explain the phenomenon of quality of life and has related it to "physical health, psychological state, level of independence, social relationships and relationship to salient features of the environment as core dimensions"^{4, 5}.

Diabetes related neuropathy may erupt as amputation of a limb or part of it, consequently psychological well-being is deteriorated.^{6, 7} Amputation either major or minor causes disability and devastates the psychosocial life of its sufferer.^{8, 9} The NHS reports that people who have diabetes are 15 times more likely to undergo amputations than other people without the condition^{10, 11}.

A growing body of literature suggests that diabetes is related with lower levels of quality of life¹²⁻¹⁴ and that people, suffering from diabetes have a worsen quality of life than people with no chronic illness.¹⁵ Similarly, Huang *et al.*¹⁶ showed that end-stage complications have the greatest perceived burden on quality of life. Very few studies have explored the interrelationship of quality of life, psychological well-being (PW) and psychosocial adjustment in patients with diabetes¹⁷. A large number of researches have discussed the adjustment issues in patients with diabetes after amputation with reference to their perceived self-esteem and body image in western empirical findings.¹⁸ Researchers^{19, 20} claim that psychological well-being is generally determined by such factors as physical and psychological health that is moderated by various biochemical patterns. Self-care behaviors are extremely important among patients with diabetes especially the foot care that they are always guided by physician as an issue of pivotal concern. In Sri Lanka, a research finding indicated that more than 50% of the study sample had knowledge and information on diabetic foot care principles but they did not practice²⁰. The practice of foot care principles was below 50²¹. Another study from Saudi Arabia showed that more than half of the diabetics scanned their feet regularly, while 47% did not. In this study, about half the diabetics (47%) did not check on their feet at all, less than one-fifth (19%) checked their feet daily, and 18% walked barefooted²². The research on minor amputation among patients with diabetes are scarce in Pakistan. Therefore, this research study can help to identify areas for targeting psychosocial and health-related interventions for diabetic patients like improving their self-care in order to avoid future limb-loss, improving their quality of life and helping their adjustment after minor amputation. Such psycho-education based interven-

tions can be helpful in educating and guiding the families, friends, relatives and even the health care professionals in providing effective support to the diabetic patients so that they can better understand their needs and problems.

Objectives of Study

The objectives of the current study were a) to find out if psychosocial adjustment, psychological well-being and self-care are likely to be predicted by quality of life in patients with type II diabetes b) to assess the relationship between quality of life, psychological well-being and psychosocial adjustment in patients with type II diabetes c) to identify the differences in perceived quality of life, psychological well-being, psychosocial adjustment and self-care behaviors in patients with and without amputation

Hypotheses

In the current study, a) it was hypothesized that there is likely to be a relationship between quality of life, psychological well-being, self-care behaviors and psychosocial adjustment in patients with type II diabetes b) It was also hypothesized that psychological well-being, psychosocial adjustment and self-care behaviors are likely to be predicted by quality of life in patients with type II diabetes; and c) there are likely to be differences in psychosocial adjustment, psychological well-being, quality of life and self-care behaviors between amputated and non-amputated patients of type II diabetes.

METHOD

Research Design

In this research, cross sectional research design was employed.

Sample

Non-probability purposive sampling was used. The sample consisted of (N= 200) participants with pre-confirmed diagnosis of Type II diabetics (n=100) with minor initial unilateral amputation (male=60, female=40) and (n=100) without amputation (male=54, female= 46), accessed from public and private hospitals of Lahore including Arif Diabetics, Mayo Hospital and Jinnah Hospital, the respondents being within age range of 40 to 60 years. As indicated in the demographic characteristics of table 1. The sample was recruited after screening from the diabetes units; in this regard major help was extended by doctors who referred the suitable sample falling within the stipulated age range and suggested patients with initial unilateral amputation status visiting outdoor for follow ups; not later than five months elapse of amputation status. Both public and private units were accessed for data

collection.

Operational Definition of Variables

Quality of life: Quality of life is personal satisfaction (or dissatisfaction) with the cultural or intellectual conditions under which you live.

Adjustment: Adjustment may be defined as a process of altering behavior to reach a harmonious relationship with the environment.

Assessment Measures

Following valid and standardized assessment measures were used after translating them into Urdu through forward and backward translation procedure as suggested by WHO.

Mental status examination (MSE): A self-constructed MSE was used by the researchers to rule out those patients who had any psychological problems. The orally administered MSE consisted of questions that were based on delusions, hallucinations, mood and daily functioning. The reason to develop mental status examination on these areas was based on literature which shows psychological problems after amputation.

Demographic information questionnaire: Self-developed demographic information questionnaire consisted on age, gender, education, occupation, family structure, marital status, monthly income, duration since body part is amputated and duration since diabetes diagnosed. For patients without amputation, statement "duration since body part is amputated" was removed from the demographic sheet.

Diabetes quality of life scale (DQOL): An Urdu translated version of DQOL was used. The scale consisted of 15 items with a five-point Likert scale (1=very dissatisfied; 5=always worried). The overall internal consistency of DQOL ($\alpha = .81$) in this research was fairly high.

Social Adjustment Scale-Self report (SAS-SR): A translated version of 45-items SAS-SR by was used. It has seven subscales: job, work, social, relatives, marital, parents, and family adjustment with $\alpha = .96, .92, .70, .55, .17, .27$ and $.75$ reliabilities, respectively. The overall reliability of SAS-SR was $.60$ and was rated on a 5-point Likert scale (5= all the time; 1= not at all).

Psychological Well-being Scale: This scale deals with eudemonic well-being of the individual. The traditional and orthodox concept of health has been questioned in this measure. The state of overall well-being in terms of its state of maximal functioning is being emphasized by this scale. This has 42 items and Cronbach's alpha reliability of this measure for this sample is $.78$.

Self-care Behaviors: This inventory measured the self-care behaviors as practiced by the patients before and after the minor amputation. The Cronbach's Alpha reliability measure being $.82$.

PROCEDURE

After complying with all ethical considerations such as permission for using standardized measures, approval of research board from where the data had to be collected, written consent forms being filled by participants, the data collection was initiated by getting all measures filled in face to face administration procedure. Each participant was accessed individually and this consumed on average the duration of 35 minutes in filling all of the measures. The response rate was 94%. The confidentiality of the participants was ensured and it was clarified that the research participants could withdraw from the research any time they felt uncomfortable.

RESULTS

The present study aimed to find out the role of perceived quality of life as predictor of psychological well-being, psychosocial adjustment and self-care behaviors.

In table 2 descriptive and Cronbach's Alpha of Diabetes based QOL, Psychological Well-being, Psychosocial Adjustment and Self-Care Behaviors (N =200) were shown.

Table 3 shows the Multiple Regression Analysis Predicting Quality of Life in Patients with Type II Diabetes with and without Amputation: Summary of Multivariate Analyses (Simultaneous Entry), Incorporating Autocorrelations Plus Significant Bivariate Psychological Predictors (N=200). In the regression model, self-care behaviors and psychological well-being were significant predictors of quality of life. These findings suggest that better quality of life for diabetes-related can be explained by better self-care behaviors and better psychological well-being. The hypothesis that there are likely to be gender differences in adjustment and quality of life in both amputated and non-amputated patients of type II diabetes. This was analyzed using independent samples t-test. Results are illustrated in Tables.

It was hypothesized that there is likely to be a relationship between quality of life, psychological well-being and psychosocial adjustment in patients with diabetes with the status of amputation and without amputation. Pearson Product Moment Correlation was carried out to assess the relationship between quality of life, psychological well-being, psychosocial adjustment and self-care behaviors in patients with type II diabetes

Quality of Life as Predictor of Psychological Well-being

Table 4 shows the Correlation between Quality of Life and Adjustment in Type II Diabetes Patients. Results presented in the table indicate significant positive correlation between total adjustment, work adjustment, adjustment with relatives, marital adjustment and quality of life and non-significant correlation in quality of life and adjustment job and adjustment social, adjustment parents and adjustment family, self-care behaviors, psychological well-being and psychosocial adjustment. It was also hypothesized that psychological well-being, self-care behaviors and psychosocial adjustment is likely to predict quality of life in patients with type II diabetes. To test the hypothesis, the multi-variate analysis was run. This catered insight into major predictors of quality of life while adjusting for demographic and other psychosocial factors. In the models presented, quality of life was predicted significantly by self-care behaviors, psychological well-being and psychosocial adjustment. Psychosocial adjustment however did not independently explained quality of life. The results are explicated in Table 5 that specify that the Adjustment, Psychological Well-being and Quality of Life related differences among Patients of Type II Diabetes with and without Amputation were prominent (N=100 +100).

In supplementary analysis, the gender differences were sought that revealed that females were more satisfied with life as compared to males. Findings also indicated significant gender differences on psychological well-being total adjustment, social adjustment and adjustment with relatives. Females were high on total adjustment scale and adjustment with relatives subscale as compared to males whereas, males showed better adjustment on adjustment social subscale. No significant gender differences were found on total quality of life, adjustment job, adjustment work, marital adjustment, adjustment parents and adjustment family.

Table 6 point out the Gender Differences in Adjustment and Quality of Life among Patients of Type II Diabetes (N=200). Results of independent samples t-test indicated significant gender differences on total quality of life, satisfaction with life and impact, psychological well-being and self-care skills. Mean values showed that females have better quality of life than men. Results directed significant gender differences on marital adjustment and family adjustment. Females were found to be more adjusted on adjustment marital and adjustment work subscale as compared to males while showed poorer psychological well-being and poorer self-care behaviors than males. Whereas, males scored high on adjustment job and adjustment

family as compared to females. Non-significant differences were found in total adjustment, adjustment social, adjustment relative and adjustment parents.

TABLE I: DESCRIPTIVE OF THE SAMPLE CHARACTERISTICS (n =200)

Variable	Amputated (n=100) f (%) or M (SD)	Non-Amputated (n=100) f (%)M (SD)
Age		
40-44	22(22)	20(20)
45-50	25(25)	43(43)
51-55	43(43)	17(17)
56-60	20(20)	20(20)
Mean	54.31(7.65)	48.31(7.23)
Gender		
Male	60 (60)	46(46)
Female	40 (40)	54(54)
Education		
Middle	23(23)	17(17)
Matric	0(0)	12(12)
Intermediate	0(0)	17(17)
Graduation	6(21.4)	5(5)
Masters	1(3.6)	3(3)

Note. n=100 + 100

TABLE II: DESCRIPTIVE AND CRONBACH'S ALPHA OF DIABETES BASED QOL, PSYCHOLOGICAL WELL-BEING, PSYCHOSOCIAL ADJUSTMENT AND SELF-CARE BEHAVIORS (n=200)

Variable	M	SD	Cronbach's Alpha
Psychological Well-being Scale	63.18	14.46	.78
Diabetes quality of life scale	34	5.12	.81
Social Adjustment Scale	142	19.05	.83
Self-care Behaviors	30	5,45	.74

Note: M= Mean, SD=Standard Deviation

TABLE III: MULTIPLE REGRESSION ANALYSIS PREDICTING QUALITY OF LIFE IN PATIENTS WITH TYPE II DIABETES WITH AND WITHOUT AMPUTATION: SUMMARY OF MULTIVARIATE ANALYSES (SIMULTANEOUS ENTRY), INCORPORATING AUTOCORRELATIONS PLUS SIGNIFICANT BIVARIATE PSYCHOLOGICAL PREDICTORS (n=200)

	Coefficient	Standard Error	β	p
Constant	3.121	1.037		0.012
Psychosocial adjustment	0.0001	0.110	0.001	.01
Psychological Well-being	0.0053	0.006	0.018	.001
Self-care Behaviors	0.0023	0.011	0.220	.001

Adjusted for all other variables in the model.

Model adjusted $r^2 0.22 p < 0.001$;

Regression F test _ 4.72 with df = 4, 196

TABLE IV:
CORRELATION BETWEEN QUALITY OF LIFE AND ADJUSTMENT IN TYPE II DIABETES PATIENTS

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	-	.35**	.56**	.57**	.62**	.56**	.21	.23	.38**	.12	.47**	.28**	.72**	.76**
AJ		-	-.54**	-.24	-.13	-.38**	-.27**	-.05	-.33*	-.12	.07	-.16	.32*	.53
AW			-	.01	.21*	.33**	.05	-.07	.41**	.44*	.07	.28**	.55**	.42
AS				-	.12	.16	.06	-.12	.14	.03	.03	.11	.51	.37
AR					-	.26**	.21*	.17	.30**	.35**	.33**	.34**	.41	.21
AM						-	.15	.34**	.33**	.03	.25*	.28**	.31	.62
AP							-	.05	.04	-.01	-.14	.01	.32**	.34
AF								-	.05	-.16	.15	.03	.41*	.43
SAT									-	.67**	.69**	.98**	.52	.34
IMP										-	.55**	.78**	.44**	.32
WOR											-	.79**	.54	.45
QOL											.	-	.76**	>.83**
PWB												-		.75**
SC														-

Note. N=200; A=total adjustment; AJ= adjustment job; AW= adjustment work; AS= adjustment social; AR= adjustment with relatives; AM= adjustment marital; AP= adjustment parents; AF= adjustment family; SAT=satisfaction with life; IMP=impact; WOR= worry; QOL=quality of life; PWB= Psychological Well-being; Sc: Self-care Behaviors

TABLE V: ADJUSTMENT, PSYCHOLOGICAL WELL-BEING AND QUALITY OF LIFE RELATED DIFFERENCES AMONG PATIENTS OF TYPE II DIABETES WITH AND WITHOUT AMPUTATION (n=200)

Variable	WMA		WOA		t	P	95% CI	Cohen's d
	M	SD	M	SD				
QOL	27.72	7.05	33.29	10.69	-1.52	.14	[-13.09, 1.96]	-0.23
SWL	11.34	18.80	12.26	11.92	2.86**	.01	[2.80, 15.47]	-0.06
IMP	14.68	8.38	14.64	11.68	-.02	.99	[-4.86, 4.78]	0.00
WOR	9.21	7.69	10.17	9.11	.49	.63	[-2.92, 4.84]	-0.11
A	10.44	16.66	11.92	18.34	2.86**	.01	[2.80, 15.47]	-0.06
AJ	14.00	6.96	15.12	9.37	-.02	.99	[-4.86, 4.78]	0.00
AW	5.36	11.71	5.99	7.79	.49	.63	[-2.92, 4.84]	-0.11
AS	27.45	10.53	26.71	10.41	2.80**	.01	[1.24, 7.25]	-0.53
AR	15.36	5.18	16.59	5.85	3.24**	.00	[1.04, 4.31]	-0.62
AM	24.09	4.44	28.41	6.44	1.19	.24	[-.80, 3.20]	-0.24
AP	13.00	2.37	13.76	2.28	-.80	.43	[-1.32, .56]	0.17
AF	5.18	2.64	6.94	2.28	.96	.34	[-.50, 1.45]	-0.20
PWB	3.23	4.12	5.23	3.22	.73	.21	[-.32, 1.24]	-0.23
SCB	14.34	2.11	9.01	2.12	.82	.13	[-.23, 1.32]	0.13

Note. n= 100 +100; QOL= Quality of life; SWL=Satisfaction with life; IMP=Impact; WOR= worry; A=total adjustment; AJ= adjustment job; AW= Adjustment work; AS= adjustment social; AR= adjustment with relatives; AM= Adjustment marital; AP= Adjustment parents; AF= Adjustment family; PWB= Psychological Well-being; SCB= self-care behaviors. WMA = with minor amputation; WOA= Without amputation; **p<.01, *p<.05

TABLE VI: GENDER DIFFERENCES IN ADJUSTMENT AND QUALITY OF LIFE AMONG PATIENTS OF TYPE II DIABETES (n=200)

Variable	Male		Female		t	p	95% CI	Cohen's d
	M	SD	M	SD				
QOL	29.72	7.05	35.29	5.69	-1.52*	.03	[-13.09, 1.96]	-0.23
SWL	11.34	19.30	13.33	11.92	2.86**	.01	[2.80, 15.47]	-0.06
IMP	14.68	8.38	17.64	6.68	-.02*	.99	[-4.86, 4.78]	0.00
WOR	10.21	7.69	9.17	9.11	.49	.63	[-2.92, 4.84]	-0.11
A	11.21	11.01	12.54	13.35	-1.42	.16	[-10.34, 1.73]	-0.06
AJ	17.78	10.43	8.35	11.71	3.40**	.00	[3.89, 14.97]	0.00
AW	5.78	7.89	18.96	2.84	-7.74**	.00	[-16.57, -9.77]	-0.11
AS	31.54	4.62	30.65	4.85	.74	.46	[-1.50, 3.29]	-0.53
AR	19.19	2.20	17.95	3.18	1.89	.06	[-.07, 2.55]	-0.62
AM	26.71	3.63	30.30	2.51	-4.25**	.00	[-5.27, -1.90]	-0.24
AP	13.02	2.19	13.22	1.73	-.37	.71	[-1.24, .85]	0.17
AF	7.09	1.79	6.00	2.37	2.13*	.04	[.07, 2.11]	0.20
PWB	9.43	0.45	7.43	1.01	1.31**	.03	[.05, 2.14]	0.12
SCB	5.74	0.44	9.32	1.21	4.12**	.02	[.06, 3.12]	0.32

Note. n= 100+100 or sample number; QOL=Quality of life; SAT=Satisfaction with life; IMP=Impact; WOR= worry; A=total adjustment; AJ=adjustment job; AW=Adjustment work; AS=adjustment social; AR=adjustment with relatives; AM=Adjustment marital; AP=Adjustment parents; AF=Adjustment family; PWB= Psychological Well-being; SCB= Self-care Behaviors

**p<.01, *p<.05

DISCUSSION

This research aimed at determining the relationship between the quality of life, self-care behaviors, psychological well-being and psychosocial adjustment among patients with type II diabetes with and without initial, unilateral, minor amputation. The focus was to investigate quality of life as the predictor of psychological well-being, psychosocial adjustment and self-care behaviors. The main hypothesis was that there is likely to be a relationship between quality of life, psychological well-being, self-care behaviors and psychosocial adjustment in patients of type II diabetes with minor amputation and without amputation. As minor amputation not only causes impaired functioning, poorer psychological well-being, impaired patterns of psychosocial adjustment and poor quality of life but all this is mediated by the self-care behaviors that the patients display after getting minor amputation. The current research study indicated significant positive correlation between total adjustment, work adjustment, adjustment with relatives, marital adjustment, psychological well-being, self-care behaviors and quality of life. Thus, it is found that patients who are well adjusted to diabetic status, display better self-care behaviors and have better quality of life as well as they show better improvements in work, relative and marital adjustment. As according to some researchers¹⁷, people with Type II diabetes who are not taking insulin, who share engagement in physical activities with their partner are more likely to have better quality of life and manifest psychologically well-adjusted patterns of life to their diagnosis of diabetes. It was also hypothesized that there are gender differences in quality of life and adjustment for both groups. Results showed non-significant gender differences on quality of life among both groups. Results are consistent with previous literature²³ who found that no significant gender differences in coping strategies of diabetic patients. Religious coping strategy was mostly used by females than male diabetic patients. Similarly, active practical coping strategy was most commonly used strategy by diabetic patients.

In the present research significant gender differences in patients of type II diabetes with amputation were found on adjustment. Results indicated that female patients of type II diabetes with amputation had better adjustment than male patients of type II diabetes with amputation. Findings are also consistent with the previous research in which diabetic women showed frequent health concerns and in various types of households differed in the adequacy of their resources and in the ways that they cope with diabetes. Findings further indicated that greater social support, more adequate personal resources, and more effective coping are associated with better adjustment. In the current

research, significant relationship was found out between quality of life and psychosocial adjustment among patients with type II diabetes. Results concluded that patients of type II diabetes who are well adjusted with their family, peers, and work have better coping strategies and therefore, healthier quality of life. Moreover, gender differences were systematically being found in psychosocial adjustment in amputated diabetic patients with females having better total psychosocial adjustment and adjustment with relatives than males. Whereas, male amputated patients had better social adjustment than females. In patients without amputation, females exhibited better quality of life, marital and work adjustment than males. Male patients without amputation were found to have more job and family adjustment than female patients.^{24,25}

Various limitations were observed in the current research. Due to restricted time period, a limited number of participants could be approached and thus, the sample size was small. Only literate participants were included. The sample comprised essentially from one urban unit thus rural data lies unexplored in this regard. Accordingly, several suggestions are recommended for future research. It is suggested to collect data from much more widely diverse geographical location for the sampled population. And therefore, the sample size and its diversity can be increased for enhancing generalization. It is suggested to take into account the patient's education as it has not been carefully taken into account for in the present research but may emerge as significant variable that may affect the quality of life and adjustment of the person.

CONCLUSION

Thus it is inferred that quality of life stand as significant positive predictor of psychological well-being, psychosocial adjustment and self-care behaviors among patients with diabetes. The current study carries important implications in many domains of life of diabetic patient. Certain steps can be initiated to increase awareness among type II diabetic patients to improve their quality of life and adjustment, self-care behaviors, and significance of psychological well-being. Psycho-education can be helpful for the patient and their families as well so they can better cooperate with patient and help them to adjust in the environment. Moreover, the findings of the research also guide health psychologists regarding the importance of quality of life and psychosocial adjustment of type II diabetic patients with its increasing value in patients with minor or major amputation.

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