

## Impact of type 2 diabetes mellitus on quality of life in people with diabetes presenting to a specialist diabetes clinic

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**Background/aim:** Quality of life is an important health-related factor that has an impact on all health interventions. The aim of the study was to assess psychosocial outcomes in people with diabetes

**Materials and methods:** A total of 142 people with type 2 diabetes were recruited from a specialist diabetes center. The validated Urdu version of the WHO-5 Well-Being Index was administered for easy understanding of the quality of life of the regional population.

**Results:** The 142 adult participants with diabetes were recruited from a specialist diabetes clinic. The rate of likely depression (WHO-5 score of <28) was 16.9%. Neuropathy was found to have a negative impact on the quality of life in people with diabetes ( $P < 0.001$ ).

**Conclusion:** People with complications of diabetes like neuropathy may experience worsening quality of life. It is advised to incorporate the WHO-5 into annual patient reviews as a measure of emotional well-being to drive changes that improve outcomes for people with diabetes.

**Key words:** Quality of life, well-being, diabetes, Pakistan

### 1. Introduction

According to the World Health Organization (WHO), health is defined as the state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity. Diabetes is a serious health concern all over the world, including Pakistan. According to the International Diabetes Federation (IDF) 387 million individuals have diabetes worldwide (1). This is expected to be 592 million in 2035 with an increase of 53% all over the world and an 85% increase in the Middle East and North African region. Depression is a significant comorbidity prevalent in people with diabetes and adversely affects health outcomes (2).

Diabetes mellitus has a direct effect on the psychosocial adjustment and physical well-being of patients, resulting in complexity in regimens to manage diabetes. It is well known that diabetes is frequently accompanied by short-term complications like hypoglycemia (3) and some long-term chronic complications including macrovascular and microvascular complications (4).

Pakistan, according to the IDF, has an equal number of undiagnosed diabetics and established diabetics, and it is also projected that Pakistan will be 7th in the world diabetes rankings by 2035 in terms of the number of people with diabetes (1). Diabetes is one of the diseases in which self-care is important and patients themselves

have to regulate and monitor their blood glucose levels and to keep up with dietary and exercise practices. Good control is necessary to avoid or delay the risk of chronic complications, both macro- and microvascular (5). It is reported that emotional distress in people with diabetes compromises the outcome and control (6). It is also equated with diabetes-related distress (7).

### 2. Materials and methods

A total of 142 people with type 2 diabetes were recruited from the Sakina Institute of Diabetes and Endocrine Research, Shalamar Hospital, Lahore, Pakistan, in this study from February 2015 to April 2015 after receiving informed consent. The study was approved by the ethics review committee of Shalamar Hospital.

The validated Urdu version of the WHO-5 Well-Being Index, (8) was administered to study participants for easy understanding of the quality of life of the regional population. It has shown to be a reliable measure of emotional functioning and a good screener for depression. A cut-off point of 28 or lower has been shown to offer 94% sensitivity and 65% specificity as a screening tool for depression (9) with acceptable findings for internal consistency (Cronbach's  $\alpha = 0.83$ ) (10). A study comparing the WHO-5 with the longer Center of Epidemiological

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Studies-Depression Scale (CES-D) showed moderate agreement between the two instruments (11). It is also a shorter and potentially quicker questionnaire to complete and so would have particular utility for routine screening in primary care. It covers five positive items related to positive mood, vitality, and general interest. It attempts to establish a well-being score for the last 2 weeks, which can vary between 0 and 25. Lower scores demonstrate a poor overall feeling of well-being. Each of the five items is rated on a 6-point scale from 0 to 5, representing “not present” and “constantly present”, respectively. The scores are then submitted with gross scores ranging from 0 to 25, with 0 representing worst possible and 25 representing the best possible quality of life. To obtain a percentage score ranging from 0 to 100, the raw score is multiplied by 4. Neuropathy was measured by 10-g Semmes-Weinstein monofilament using the method recommended by Boulton et al. (12).

The continuous variables were expressed as mean  $\pm$  standard deviation and categorical variables are presented as frequency and percentage. ANOVA testing was applied using SPSS 21.  $P < 0.05$  was considered statistically significant.

### 3. Results

Among our study group of 142 diabetics, the mean age was  $50.32 \pm 11.15$  years, the mean HbA1c was  $10.03 \pm 2.6\%$ , the mean blood sugar level on the spot was  $239 \pm 91$  mg/dL, and the mean duration of diabetes was  $8.05 \pm 6.44$  years. Furthermore, 25.4% of the participants were male and 76.6% were female. The complication studied was neuropathy, which was present in 19.7% of the studied population, as summarized in Table 1.

We graded the quality of life according to the WHO Well-Being Index into three categories with proper scoring. It was revealed that 16.9% of the participants could be categorized as likely having depression, whereas

**Table 1.** Patient characteristics.

Total sample size	142 (100)
Males	36 (25.4)
Females	106 (74.6)
Age, years	$50.32 \pm 11.151$
HbA1c, %	$10.02 \pm 2.6$
Duration of diabetes, years	$8.05 \pm 6.441$
Blood sugar level	$239.23 \pm 91.01$
Neuropathy	
Absent	114 (80.3)
Present	28 (19.7)

Data are represented as n (%) and mean  $\pm$  SD as applicable.

**Table 2.** Frequency of populations according to WHO-5 Well-Being Index.

	Frequency	Percent
Likely depression	24	16.9
Low mood	80	56.3
No depression	38	26.8
Total	142	100.0

56.3% were categorized as having a low mood and 26.8% had no depression, as depicted in Table 2.

Among those with likely depression, 22.2% were male and 15.1% were female, while among those with low mood 61.1% were male and 54.7% were female. Hence, there were more females without depression as compared to males at 30.2% and 16.7%, respectively. It was also noted with interest that the P-value was quite significant for low quality of life in the population with diabetic neuropathy, as shown in Table 3.

### 4. Discussion

In developing countries like Pakistan, where per capita income is low and the burden of diabetes is phenomenal, compliance and self-care issues are even more cumbersome and need to be addressed in a more vigorous way. The cost of living and especially the education of children requires extra financial resources. Middle class families with only one bread winner, in most cases, are under a lot of stress. On top of their existing financial issues, if a chronic disease like diabetes affects a family member the financial burden and cost of living further increases and this translates into worsening of emotional health. It is not only the financial issues but also the fear and actual complications related to diabetes that can compromise the quality of life. In our study we looked at the relationship of diabetes mellitus and quality of life and we compared one of the diabetic complications, neuropathy, with other parameters like sex, age, and HbA1c.

In another study, likely depression using the WHO-5 score was 13.8% (13), whereas in our study, the proportion of participants with likely depression using the same questionnaire was 16.9%. Although it was not compared with a control, it is quite clear that the quality of life is compromised in people with diabetes as almost 74% of the studied population had either likely depression or low moods, with only about one-fourth not having any depression along with diabetes.

Moreover, people with diabetes-related complications like neuropathy have lower health-related quality of life as compared to people without complications (14,15). It was also noted with interest that the P-value was quite significant for low quality of life both in males and females in the population with diabetic neuropathy.

**Table 3.** Relationship of sex, neuropathy, age, and HbA1c with the WHO-5 well-being score.

		WHO 5 score			Total	P-value
		Likely depression	Low mood	No depression		
Sex	Male	8 (22.2)	22 (61.1)	6 (16.7)	36 (100)	0.242
	Female	16 (15.1)	58 (54.7)	32 (30.2)	106 (100)	
Neuropathy	Absent	12 (10.5)	70 (61.4)	32 (28.1)	114 (100)	<0.001*
	Present	12 (42.9)	10 (35.7)	6 (21.4)	28 (100)	
Age (years)	Less than 40 years	6 (21.4)	12 (42.9)	10 (35.7)	28 (100)	0.274
	More than 40 years	18 (15.8)	68 (59.6)	28 (24.6)	114 (100)	
HbA1c	Less than 7%	4 (22.2)	6 (33.3)	8 (44.4)	18 (100)	0.096
	More than 7%	20 (16.1)	74 (59.7)	30 (24.2)	124 (100)	

Data are represented as n (%). \*P < 0.05 was considered statistically significant.

A study among Swedish people with type 2 diabetes mellitus found no link between quality of life and duration of the diabetes (16). In another study, Weineberger et al. failed to show a relationship between the degree of glycemic control and quality of life (17). The UKPDS studies (18) did not find a connection between poor glycemic control and increased fatigue in patients on both conventional and intensive therapies (19). In concordance with other studies, there was no statistically significant difference between the age groups of <40 years and >40 years in the studied population. There was a numerical difference between quality of life and HbA1c of <7% and >7%, but upon statistical analysis the P-value was 0.096, which is not significant. When classified separately according to sex, it was seen that males had more depression or low moods as compared to females.

People with diabetes were found to be affected by worsening quality of life with complications of diabetes like neuropathy. It is advised to incorporate the WHO-5 in annual patient reviews as a measure of emotional well-being to drive changes that improve outcomes for people with diabetes. We need larger randomized controlled trials to establish the low quality of life associated with depression at a local level. However, it is quite clear from the results that only one-third of the population studied was enjoying a good quality of life.

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