RESEARCH ARTICLE

Assessing health related quality of life in diabetic subjects by SF 36 questionnaire in a tertiary care diabetes unit of Karachi, Pakistan.

Fariha Shaheen, M.Sc[1], Khalid Abdul Basit[2], Musarrat Riaz, F.C.P.S[3], Asher Fawwad, M. Phil[4], Rubina Hakeem, PhD.[5], Abdul Basit, F.R.C.P.[6]

1. Research Department Baqai Institute of Diabetology and Endocrinology Baqai Medical University
2. 4th year student of MBBS Dow University of Health Sciences, Karachi - Pakistan
3. Department of Medicine Baqai Institute of Diabetology and Endocrinology Baqai Medical University
4. Assistant Professor Baqai Medical University Senior Research Scientist Research Department Baqai Institute of Diabetology and Endocrinology
5. Professor of Nutrition Taibah University, Madinah Almuawwara, Saudi Arabia Honorary Research Consultant Baqai Institute of Diabetology and Endocrinology, Baqai Medical University, Karachi, Sindh, Pakistan
6. Department of Medicine Baqai Institute of Diabetology and Endocrinology Baqai Medical University

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Abstract

Objective: To assess quality of life (QOL) in patients with diabetes and to explore the related determinants of quality of life.

Methods: This cross sectional study was carried out at Baqai Institute of Diabetology & Endocrinology (BIDE), a tertiary care diabetes unit in Karachi Pakistan, from October 2010 to September 2011. Patients with diabetes were recruited from the Outpatient department (OPD) and interviewed on one to one basis by the diabetes educators. SF-36 questionnaire was used as a study tool for assessing QOL. The questionnaire had eight domains i.e. physical functioning (PF), role physical (RP), bodily pain (BP) general health (GH), vitality (VT), social functioning (SF), role emotional (RE) and mental health (MH).

Results: A total of 209 patients with diabetes (121 males, 88 females) participated in the study. Overall mean age and duration of the diabetes was 49.12 ± 12.38 years and 9.49 ± 7.16 years respectively. Among eight domains of QOL, better physical functioning was observed in males, < 40 years of age and participants having 5-10 years duration of diabetes. Vitality was better in males as compared to females and also in non-hypertensive compared to hypertensive subjects. General health status was also more stable in males except bodily pain as compared to females.

Conclusion: QOL in patients with diabetes was significantly associated with gender, age, duration of diabetes, hypertension and smoking. The assessment of quality of life in patients with diabetes could help to improve patient's wellbeing. Further large scale studies are needed to validate our findings.

Introduction

Diabetes Mellitus (DM) is a highly prevalent chronic disease and its associated complications are increasing worldwide (Huang et al., 2007) . The estimated global prevalence of diabetes is 382 million people and is anticipated to rise to 592 million by the year 2035. Another 471 million people are at risk of developing diabetes by the year 2035. Pakistan has around 6.76 million people with diabetes which is predicted to increase to 12.8 million by the year 2035 (IDF, 2013).

Diabetes and its complications have major effects on individual's health. Moreover, it has been established through studies that diabetes and its complications worsen the individual's quality of life (Kamranul et al., 2010). Health related Quality of life (HRQOL) questionnaire (SF-36) with its 36 questions measures physical, mental, social,

emotional and general health status along with the vitality and bodily pain (Ware et al., 1993). This is an effective and standard tool to understand individual's mental, emotional, social, physical and general health status (Zeliha et al., 2007). HRQOL is also used to measure the burden of DM on the population (Angelos et al., 2007). Several studies have demonstrated the various factors associated with HRQOL including age, gender, duration of diabetes, presence of co morbidities and social and psychological factors (Gautam et al., 2009), (Chittleborough et al., 2006), (Sait et al., 2007), (Woodcock et al., 2001).

 Data regarding HRQOL in patients with diabetes is scarce from Pakistan. Therefore, the aim of the study was to assess health related quality of life in patients with diabetes and to explore the influence of diabetes on their physical, mental and social behavior.

Methodology

This hospital based cross sectional study was conducted in the Outpatient department (OPD) of Baqai Institute of Diabetology and Endocrinology (BIDE), a tertiary care diabetes unit in Karachi Pakistan. The study was carried out from October 2010 to September 2011. Eligibility criteria for the study included, being 18 years of age or older; having been diagnosed with type 1 or type 2 diabetes and willingness to give informed consent. Ethical approval for the study was obtained from the institutional review board (IRB) of BIDE. Trained educators collected information regarding QOL through interview on one to one basis. SF-36 questionnaire (Urdu version) was used as an instrument for the assessment of HRQOL; the questionnaire contained 36 questions comprising eight domains i.e. physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional(RE) and mental health (MH). The scoring of all domains was from 0 to 100 considering '0' as the worst possible status and '100' as the best possible status. Scoring manual of Ware et al was used for calculating scores. (Thommasen et al., 2006) Ware et al

Recent medical information of the patients were retrieved from the computerized data record of BIDE. Weight, height and blood pressure were measured by the paramedical staff. Weight of the patient was measured nearest to 0.1 kg by a digital bathroom scale wearing light clothes and no shoes. Height was measured by meter scales nearest to 0.1 cm, patients were asked to stand in erect position for the measurements of height. Body Mass Index (BMI) was calculated by dividing weight in kilogram with height in meters square, patients with BMI ≥ 25 kg/m^2 were considered as obese (Misra et al., 2005). Blood pressure was measured by standard cuffs for an adult fitted mercury sphygmomanometer. Patients were asked to take 10 min rest before the measurement of blood pressure. Patients with blood pressure readings of $\geq 130/85$ mmHg or on antihypertensive medications were considered as hypertensive (Anoop et al., 2005)

Statistical analysis

All variables like age, sex, height, weight, duration and type of diabetes and family history of diabetes and 36 questions of SF-36 were entered in Statistical Package for Social Sciences (SPSS version 13.0) software. Observations were presented as Mean $\pm$ SD and number with percentages. Continuous and categorical variables were analyzed for significance by ANOVA and Chi square respectively. $P < 0.05$ was considered statistically significant.

Results

 Out of 209 diabetic patients, 121 (57.9%) were males and 88 (42.1%) females. The mean age was 49.12 ± 12.38 years and mean duration of diabetes was 9.49 ± 7.16 years. The mean age of males and females were 49.32 ± 11.98 and 48.84 ± 12.98 years and duration of diabetes was 9.8 ± 7.66 and 9.07 ± 6.43 years respectively ($p > 0.05$). Mean body mass index (BMI) of the study participants was 27.53 ± 5.75 kg/m^2, statistical difference was found in mean BMI of males and females (27.09 ± 4.44 vs. 28.80 ± 5.79 kg/m^2, $p < 0.05$). Majority of the subjects (95.7%) were patients with type 2 diabetes, 52.63% were hypertensive and 68.42% were obese (Table 1).

The eight domains of quality of life were analyzed for different groups of age, sex, duration of diabetes, smoking and hypertension. Significant higher scores of physical functioning ($p < 0.0001$), vitality ($p = 0.041$), mental health ($p = 0.039$), bodily pain ($p = 0.012$) and general health scores ($p < 0.0001$) were found in males as compared to females. Physical functioning score was significantly high in people under 40 years of age compared to the older age groups ($p = 0.001$). Higher scores of physical functioning was also observed in patients having 5-10 years duration of diabetes compared to other groups. ($p = 0.048$). Role emotional score was high in non smoker as compared to smokers (79.80 ± 37.53 vs. 27.78 ± 44.30, $p = 0.003$). Vitality was better in non hypertensive than hypertensive subjects (58.42 ± 14.24 vs. 54.07 ± 15.52, $p = 0.039$). Bodily pain scores were found higher in males as compared to females ($p = 0.012$) while general health scores also have the same trend ($p < 0.0001$) (Table 2).

All eight domain scores were further compared in obese vs. non obese individuals, subjects with positive and negative family history of diabetes, poor and good control of diabetes (HbA1c <7 vs. HbA1c>7 %), newly registered and follow up patients. QOL domains scores were not statistically significant in any of the above mentioned groups (p>0.05)

Discussion

The present study demonstrates that overall HRQOL is poor in people with diabetes. In this study among eight domains of QOL physical functioning, vitality, mental health, bodily pain and general health were observed significantly higher in males as compared to females. Similar findings for higher scores of physical functioning, vitality, bodily pain and general health in males were reported in a study from Greece (Angelos et al., 2007) The study from India by Gautam et al., showed significant higher scores in Indian males amongst all eight domains of QOL as compared to females. Poor results were observed because of lower socioeconomic status, illiteracy and less physical activity. Gautam et al also reported lower scores in all domains except general health and mental health in patients with more than 5 years duration of diabetes. Similarly females had worse QOL scores than males (Gautam et al., 2009). Chittleborough et al., also showed significantly higher scores in all eight domains in Australian males with diabetes as compared to female with diabetes except general health, vitality and role emotional (Chittleborough et al., 2006). Another study from turkey of Sait et al., had reported higher scores in males except role physical, role emotional and social functioning, study also showed negative significant correlation of BMI with physical functioning, role physical and bodily pain (Sait et al., 2007).

Duration of diabetes is associated with physical functioning with significant higher scores in 5-10 years of diabetes duration group. Duration of diabetes is negatively associated with physical functioning, role physical, vitality and general health (Sait et al., 2007). Woodcock et al., reported the same findings of higher scores in males then females except bodily pain and general health. Physical functioning, role physical and role emotional were associated with older age and duration of diabetes was associated with bodily pain (Woodcock et al., 2001). Increased duration of diabetes was associated with significant decreased in physical functioning, role physical, mental health and general health scores.HbA1c was not associated with any of the domains HRQOL (Graham et al., 2007).

Higher score of role emotional was seen in non-smokers as compared to smoker individuals. Vitality was significantly better in non-hypertensive individuals in comparison to hypertensive subjects. Bodily pain is associated with males although general health status is also better in males as compared to females. A study carried out in Mexican American population showed that the physical health was different in patients with and without diabetes, while the mental health was equivocal in older Mexican Americans individuals with diabetes. Scientific approach has been implemented to educate people about the physical and mental disturbances related to diabetes (Anoop et al., 2005). A significant drop was noted in physical functioning in younger females and in patients with prolongs duration of diabetes (Baumann et al., 2011).

Limitations

The findings of this study cannot be generalized as it is a hospital based study with a mall sample size and absence of control group of non-diabetic population.

Conclusion

QOL in patients with diabetes was significantly associated with gender, age, duration of diabetes, hypertension and smoking in patients with diabetes. The assessment of quality of life in patients with diabetes could help to improve patient's wellbeing. Further large scale studies are needed to validate our findings in patients with diabetes.

Acknowledgment

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Table1: Baseline characteristics of the studied population.

Variables	Total	Male	Female	P-value
N	209	121 (57.9%)	88 (42.1%)	
Diabetes type				
Type 1	9 (4.3%)	4 (3.3%)	5 (5.7%)	0.400
Type 2	200 (95.7%)	117 (96.7%)	83 (94.32%)	0.400
Age (years)	49.12±12.38	49.32±11.98	48.84±12.98	0.197
<40 years	55 (26.31)	33 (27.27%)	22 (25%)	0.400
40-50 years	63 (30.14%)	33 (27.27%)	30 (34.1%)	0.400
50-60 years	58 (27.75%)	32 (26.44%)	26 (29.5%)	0.400
>60 years	33 (15.79%)	23 (19%)	10 (11.36%)	0.400
Duration of diabetes (years)	9.49±7.16	9.8±7.66	9.07±6.43	0.468
< 5 years	68 (32.53%)	44 (36.36%)	24 (27.27%)	0.100
5-10 years	62 (29.66%)	29 (23.96%)	33 (37.5%)	0.100
> 10 years	78 (37.32%)	47 (38.84%)	31 (35.22%)	0.100
Family history of diabetes	152 (72.72%)	89 (73.55%)	63 (71.6%)	0.753

Smoking	30 (14.35%)	30 (24.8%)	0 (0%)	**< 0.0001**
Body Mass Index (kg/m²)	27.53±5.75	27.09±4.44	28.80±5.79	**0.018**
Obesity (BMI ≥ 25 kg/m²)	143 (68.42%)	81 (66.94%)	62 (70.45%)	0.507
Systolic blood pressure (mmHg)	126.46±20.59	126.74±19.11	126.08±22.57	0.821
Diastolic blood pressure (mmHg)	79.31±10.79	80.33±9.61	77.90±12.14	0.108
Hypertension (≥ 130/85 mmHg)	110 (52.63%)	62 (51.23%)	48 (54.54%)	0.637
HbA1c (%)	9.31±2.13	9.34±2.11	9.28±2.18	0.854
HbA1c ≥ 7 (%)	168 (80.38%)	100 (82.64%)	68 (77.27%)	0.955

Data presented as Mean± SD and n (%), P<0.05 is considered as statistical significant value.

	Physical Functioning (PF)	Role Physical (RP)	Role Emotional (RE)	Vitality (VT)	Mental Health (MH)	Social Functioning (SF)	Bodily Pain (BP)	General Health (GH)
Gender								
Male	72.61±24.52	62.66±44.41	70.43±43.82	57.95±14.43	64.36±16.65	73.85±30.70	63.62±27.22	60.0±25.33
Female	59.27±25.13	62.80±43.03	79.01±38.0	53.60±15.73	59.48±16.63	69.76±33.67	53.08±31.99	46.33±24.22
P-value	**<0.0001**	0.986	0.432	**0.041**	**0.039**	0.367	**0.012**	**<0.0001**
Age								
<40 years	76.01±21.45	69.04±43.55	92.30±19.97	58.54±14.95	63.49±15.32	74.09±33.58	62.09±30.52	54.81±26.52
40-50 years	69.49±23.80	61.90±44.20	77.77±39.19	55.16±14.59	61.61±17.19	73.18±32.55	58.67±28.74	55.24±24.06
51-60 years	62.70±27.21	54.03±45.68	55.88±49.63	56.55±15.84	61.93±15.93	71.76±30.03	55.82±30.70	51.12±27.51
>60 years	54.35±26.88	71.49±38.82	76.67±41.72	53.06±14.92	62.45±20.33	67.34±32.38	61.61±28.84	57.42±24.59
P-value	**0.001**	0.487	0.105	0.396	0.939	0.809	0.686	0.697
Duration of diabetes								
<5 years	69.68±24.53	67.24±43.06	79.76±37.08	57.16±14.33	64.59±15.01	78.92±28.22	58.47±30.51	58.80±25.74
5-10 years	71.43±23.73	61.36±44.96	85.96±33.91	55.82±15.71	59.87±17.34	71.72±34.37	59.79±29.62	51.31±24.49
>10 years	61.55±27.19	60.79±43.49	61.11±46.54	55.19±15.24	61.97±17.54	66.88±32.49	58.89±29.23	52.33±26.32
P-value	**0.048**	0.809	0.122	0.732	0.277	0.078	0.968	0.19
Smoking								
Smoker	66.94±27.92	57.69±49.35	27.78±44.30	57.41±13.27	64.82±18.03	79.74±27.63	60.34±30.09	57.76±24.91
Non-smoker	67.06±25.26	63.44±42.88	79.80±37.53	55.93±15.40	61.92±16.58	70.90±32.51	52.41±26.63	53.73±25.87
P-value	0.982	0.658	**0.003**	0.626	0.388	0.168	0.183	0.435
Hypertension								
No	70.25±23.97	61.11±43.94	72.91±44.18	58.42±14.24	64.65±16.55	72.45±34.75	60.43±28.22	56.83±23.34
Yes	64.13±26.74	64.08±43.49	75.49±39.40	54.07±15.62	60.22±16.77	71.87±29.35	58.12±31.05	51.99±27.59
P-value	0.087	0.728	0.817	**0.039**	0.058	0.898	0.579	0.177

Table 2: Mean scores of SF-36 domains in different groups.
Data presented as Mean ±SD, P<0.05 is considered as statistical significant value