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Original Research Article

Quality of Life in Diabetic Patients in a Resettlement Colony of Delhi

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Abstract: India had an estimated 66.8 million diabetics in 2014. Diabetes imposes large economic burdens on national health care systems and affects both national economies and individuals and their families. WHO defines quality of life as an individual's perceptions of their position in the context of the culture and value system in which they live and in relation to their goals, expectations, standards, and concerns. Two broad approaches to health-related quality of life measurement have emerged - generic and disease specific. Diabetes is now recognized as a major public health concern but its burden on society is under-researched. Aim of the study was assessment of Quality of life in diabetic patients in a resettlement colony of Delhi. The study was carried out in Nand Nagri, a resettlement colony of East Delhi from January 2012 to December 2012 in 160 known Type 2 diabetic patients in the age group of 20-60 years. A standardized questionnaire, SF-36v2 was used to assess quality of life of diabetic patients. Analysis was done to get the correlations between demographic variables, clinical variables, and HRQL, using independent sample t-test. There were 68 men (42.5%) and 92 women (57.5%) in the selected sample. The mean age of the study participants was 49.21 ± 8.12 years. The mean SF-36 score of study participants was 59.89 ± 17.24. The two domains that were least affected were MH and BP. The mean score was significantly lower in women in every domain. The mean score was significantly lower among illiterate compared to literate in every domain of SF-36. Being female, Uneducated, of older age, belonging to lower socio-economic status, having increased duration of disease, were the factors associated with decrease quality of life.
Keywords: quality of life, diabetes, SF-36

INTRODUCTION

India had an estimated 66.8 million diabetics in 2014. Diabetes was estimated to be responsible for approximately 10 lakh deaths in 2014. Prevalence of diabetes in urban India rises sharply after the age of forty years, and is highest in the age group of 50-69 years. This is unlike in western population where the maximum prevalence is in those aged 70 years and above [1].

Diabetes imposes large economic burdens on national health care systems and affects both national economies and individuals and their families. Mean healthcare expenditure per person with diabetes in India in 2014 was 96.96 USD [2]. Direct medical costs include resources used to treat the disease. Indirect costs include loss of productivity caused by morbidity, disability, and premature mortality. Intangible costs refer to the reduced quality of life for people with diabetes brought about by stress, pain, and anxiety**.**

WHO defines quality of life as an individual's perceptions of their position in the context of the culture and value system in which they live and in relation to their goals, expectations, standards, and concerns [3].

Two broad approaches to health-related quality of life measurement have emerged - generic and disease specific. The generic approach involves the use of measures applicable across health and illness groups.

Measuring health-related quality of life (HRQOL) in Type II Diabetes Mellitus (DM) is important for several reasons such as dietary restrictions, medication and the actual symptoms of this disease as well as concomitant diseases, all of which may lead to deteriorations in HRQOL. Moreover, the treatment of Type II DM emphasize that one of the primary objectives is to improve HRQOL [4].

People with diabetes have to take a number of decisions everyday to approximate the non-metabolic rate. There is always a risk of developing complications in long run. In fact psychosocial variables (such as depression) are often stronger predictors of medical outcomes such as hospitalization and mortality than are physiologic and metabolic measures (such as the presence of complications, BMI and HbA1c).

Quality of life differs in people with and without diabetes. Most often people with diabetes are compared to the general population, sometimes to persons without any chronic disease, and sometimes to persons who have the some additional diagnoses other than diabetes.

Diabetes is now recognized as a major public health concern but its burden on society is under-researched. There are a number of global studies carried out on quality of life of diabetic patients and the various socio- demographic factors associated with it, but Indian studies are few and they are hospital based, the present study was community based and the quality of life of diabetic patients was assessed.

MATERIALS AND METHODS

Study Area

Present Community-based cross-sectional study was carried out from January 2012 to December 2012 in Nand Nagri, a resettlement colony in East Delhi.

Sample Size

According to a survey by community medicine department, the population in the age group of 20-59 years was approximately 22,000. Mohan *et al* [5] in their study in 2008 found out the prevalence of known diabetic patients in this age group in urban areas as 7.3%, so the expected number of known diabetics in this age group in Nand-nagri would be around 1600. 10% of this i.e. 160 was taken as sample size assuming that it would provide reasonable understanding of the factors studied, since there is no exact prevalence to be estimated.

Study Tools

A predesigned, pretested, semi-structured interview schedule was used to collect data on personal details, socio-demographic details, disease details, knowledge about diabetes, compliance with treatment and treatment history. A standardized questionnaire, Short-Form 36v2 (SF-36v2) of Medical Outcome Study Group was used to assess quality of life of diabetic patients. SF-36v2 is the world's most widely used, standardized HRQOL instrument with proven validity (studies to date have yielded content, concurrent, criteria, construct, and predictive evidence of validity). It is a generic measure, as opposed to one that targets a specific age, disease, or treatment group. This instrument has eight domains:- Physical Functioning (PF), Role Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role Emotional (RE), and Mental Health (MH). [6]

Statistical Analyses

The continuous variables were expressed as mean ± standard deviation and categorical variables as absolute numbers and percentages. All analyses were conducted using SPSS version 17. Descriptive analyses were used to present the demographic and clinical characteristics of the sample. Bivariate analysis was performed to examine correlations between demographic variables, clinical variables, and HRQL, using independent sample t-test. Significance was defined as $P<0.05$, and the data are presented as means with the standard deviation values.

RESULTS

There were 68 men (42.5%) and 92 women (57.5%) in the selected sample. The mean age of the study participants was 49.21 ± 8.12 years. Most of the study participants (96.9%) were currently married. Higher proportion of women 51/92 (55.4%) were illiterate as compared to men 11/68 (16.2%). Three men (4.4%) were currently unemployed, while 78 (84.8%) women were homemaker or unemployed. Seventy nine (49.3%) respondents were employed at the time of the interview. Most (84.8%) women interviewed were housewives. Majority of the respondents 92/160 (57.5%) were in the upper lower class, 54/160 (33.8%) were in the lower middle class and 13/160 (8.2%) were in the upper middle or upper class. Among men 20 (29.4%), 44 (64.7%) and 35 (51.4%) reported chewing tobacco, smoking and alcohol use respectively while among women only 11 (12%), 3 (3.2%) and 3 (3.3%) reported chewing tobacco, smoking and alcohol use respectively. forty-four (27.5%) were asymptomatic at the time of diagnosis, while the rest had experienced some symptoms related to diabetes. Increased urination was the commonest symptom which was present in 94/160 (58.8%) respondents, followed by increased thirst in 68/160 (42.5%), increased appetite in 55/160 (34.4%), and frequent infections in 22/160 (13.8%) at the time of diagnosis. Polyuria was the commonest current symptom of disease, which was present in 65/160 (40.6%), followed by weight loss in 62/160

(38.8%), polydypsia in 54/160 (33.8%), tingling in 35/160 (21.9%), and poly-phagia in 30/160 (18.8%). Eye problems and hypertension were the commonest co-morbidities, with 46/160 (28.8%) patients reporting them. The mean treatment duration was 5.26 ± 4.54 years. Eighty-five (53.1%) participants were taking a combination of oral hypoglycemic agents, 45/160 (28.1%) were on single oral agents, while 14/160 (8.8%) were following lifestyle modifications and diet restriction. One hundred and fourteen (71.3%) patients reported adherence to medical advice of sweet restriction most of the time. Hundred thirty three (83.1%) patients stated that they took medicines as prescribed most of time, or always. Ninety eight (61.2%) patients had been checked for heart disease at least once. Seventy nine (49.4%) had never been checked for eye complications, 156/160 (97.5%) had never been checked for foot problems.

Table 1: Distribution of SF-36 scores by sex of the study subjects (n=160)

	Male (n=68)	Female (n=92)	Domain score (n=160)	P –value
Physical functioning (I)	73.53 ± 20.64	57.45 ± 20.99	64.28 ± 22.26	<0.001
Role physical (II)	66.64 ± 19.28	56.45 ± 15.95	60.78 ± 18.10	<0.001
Bodily pain (III)	74.19 ± 21.52	57.04 ± 19.84	64.33 ± 22.20	<0.001
General health (IV)	54.93 ± 20.05	36.36 ± 18.23	44.25 ± 21.08	<0.001
Vitality (V)	63.14 ± 20.61	49.25 ± 20.04	55.16 ± 21.36	<0.001
Social functioning (VI)	68.20 ± 25.13	50.27 ± 26.53	57.89 ± 27.35	<0.001
Role emotional (VII)	68.01 ± 17.85	58.24 ± 14.70	62.40 ± 16.77	<0.001
Mental health (VIII)	75.22 ± 16.13	66.14 ± 16.49	70.00 ± 16.90	0.001
Physical component summary	66.49 ± 17.24	51.31 ± 15.70	57.76 ± 17.97	<0.001
Mental component summary	65.90 ± 16.75	52.05 ± 15.59	57.94 ± 17.45	<0.001
SF-36	67.98 ± 16.42	53.90 ± 15.35	59.89 ± 17.24	<0.001

The mean SF-36 score of study participants was 59.89 ± 17.24. Out of eight domains in the SF-36 questionnaire, the two most affected domains were GH and VT. The two domains that were least affected were MH and BP. The mean score was significantly lower among participants ≥50 years compared to participants <50 years in every domain of SF-36 (P<0.001). The mean score was significantly lower in women in every domain as determined by independent sample t-test (P<0.001). The mean score was significantly lower among illiterate compared to literate in every domain of SF-36 as determined by independent sample t-test (P<0.001). The mean SF-36 score was lower in subjects who had increased duration of disease but that did not reach the statistical significant (p=0.077). The mean SF-36 score was significantly lower (55.48 ± 15.851 vs. 61.77 ± 17.529) in subjects who had the history of episodes of hyperglycemia in past year (p= 0.034). The mean SF-36 score was significantly lower in participants who were having any of diabetes- related complication. The SF-36 score was significantly lower in hypertensive subjects (P<0.001).

Table 2: Mean SF-36 score by a number of variables

S. No.	Variable		Mean score	P-value
1.	Gender	Male	67.98 ± 16.42	<0.001
		Female	53.90 ± 15.35	
2.	Age	≥50 years	54.11 ± 16.11	<0.001
		<50 years	67.31 ± 15.83	
3.	Education	Illiterate	51.21 ± 15.29	<0.001
		literate	65.37 ± 16.17	
4.	Duration of disease	≤5 years	61.63 ± 16.85	0.077
		>5 years	56.55 ± 17.63	
5.	History of hyperglycemia	Yes	61.77 ± 17.53	0.034
		No	55.48 ± 15.85	
6.	Complication	Yes	52.32 ± 16.89	<0.001
		No	64.93 ± 15.61	
7.	Hypertension	Yes	49.32 ± 16.40	<0.001
		No	64.15 ± 15.72	

DISCUSSION

The present study was conducted in Nand Nagri, which is populated mainly by people hailing from the lower and middle socio-economic strata. With time, due to rapid urbanization and urban migration such population is increasing in Delhi. The resettled

migrants transition to an urbanized lifestyle, the adoption of which renders them susceptible to various lifestyle diseases.

The SF-36 score of study participants in the present study was 59.89 ± 17.24. The score was lowest in the GH domain (44.25 ± 21.08) and highest in the MH domain (70.00 ± 16.90). This is because complications arising due to diabetes affect a number of organs of body affecting the score of the GH domain. In a similar study done by Gautam *et al* the SF-36 score was comparable [7]. Rejeski *et al* found a score of 47.0 and 54.0 for PCS and MCS respectively in their study sample. The lower score in their study could be due to different age group (45-74 years) or due to the fact that they had taken only overweight and obese adults [8]. The result of the current study also reflects the findings of Papadopoulos *et al*. They reported that the two most affected domains were GH (48.9 ± 23.0) and VT (56.9 ± 27.4), as in current study [10]. The mean quality of life score was 56.8 ± 22.7 in physical domain and 55.3 ± 21.7 in mental domain in a study done by Timareh *et al*, which are almost similar to current study. Their results showed that quality of life was significantly associated with demographic variables such as age, sex, educational level, marital status [8].

SF-36 score was significantly lower (P<0.001) in the older age group (>50 years) in each domain, and component summary (PCS & MCS) of SF-36. This is quite obvious as increasing age in itself is a determining factor in quality of life of an individual. Also a chronic disease like diabetes will have more detrimental effect on the body of an older person than on a young one. Similar findings were reported from other studies also [4, 9, 10, 11].

Higher score in men as compared to women is consistent with reported gender differences in health-related quality of life in the general population [12]. other reasons that may be contributing to this could be that in a developing country like India where availability of medical services is limited and also there will be other priorities in a lower middle class family than to spend money in physician fee, blood investigations and medicines. Male is the head of family in majority of families so they can spend money on their illness but can overlook the illness of a female member in the family. Other researchers have also reported similar findings [4, 6, 9, 10]. These findings, suggesting that diabetic men have an advantage over diabetic women in health-related quality of life, reinforce the need to control for gender in future investigations of quality of life in diabetes.

The current study is in agreement with previous evidence which reports that SF-36 scores are higher in literate people [4, 6, 9, 10, 13]. Patients with higher level of education were likely to have more knowledge about diabetes and diabetes care. This could be attributed to a better understanding of the disease, its effect on them, and the ability to afford the best treatment.

The SF-36 score was higher in subjects belonging to upper middle or lower middle socioeconomic strata as compared to those of upper lower class, as the former one would be able to access better medical facilities. Other researchers have also reported similar findings. [6]

The SF-36 score was reported to be significantly lower in subjects with history of hyperglycemic episodes in the past year (55.48 ± 15.851 vs. 61.77 ± 17.529) as compared to subjects with no history of hyperglycemic episodes in the past year (p=0.034). History of hyperglycemic episodes shows the paucity in the control of blood sugar in the past, which increases the chances of complications due to diabetes. A number of studies report similar findings [11, 14].

In the present study 17 (10.6%) of those interviewed had been hospitalized in the past year. SF-36 score was significantly lower (44.81 ± 15.94 vs. 61.68 ± 16.54) in these patients (P<0.001). History of hospitalization clearly indicates the advance disease process which will cause deterioration of bodily functions. This will ultimately hamper the quality of life of diabetics. Other researchers have also reported a similar trend [13].

SF-36 score was significantly lower (52.32 ± 16.89 vs 64.93 ± 15.61) in study participants having one or more of complications (P<0.001). This is quite obvious as presence of complications also indicates advance disease status which will ultimately affects the quality of life. Similar findings were reported from a number of studies [4, 10].

Hypertension was present in 46 (28.8%) study participants. Presence of co-morbidities means multiple burdens on body, hampering quality of life of individuals. The SF-36 score was significantly lower (49.32 ± 16.40 vs 64.15 ± 15.72) in hypertensive patients (P<0.001).

Limitations and bias

1. A comparison group of non-diabetic subjects was not included in study.
2. Due to operational constraints all the diabetics of the area were not included in the study.
3. Concomitant chronic diseases and diabetic complications were self-reported.
4. It would be interesting to compare HRQOL in this patient group, with an age- and gender-matched

group from the general population, in order to assess the specific impact of the disease.

CONCLUSIONS

Being female, Uneducated, of older age, belonging to lower socio-economic status, having increased duration of disease, having episodes of hyperglycemic episodes in last year, history of hospitalization in last year, suffering from diabetes related complications, diagnosed hypertensive, being physically inactive were the factors associated with a poorer quality of life.

In a majority of the patients, diabetes was diagnosed incidentally during investigation for other medical/surgical condition. This is because of not having adequate knowledge of symptoms of diabetes.

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