Original Research Article

Health related quality of life in type II diabetics and its associated factors: a cross sectional study at an urban health training centre of Northern India

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ABSTRACT

Background: Diabetes mellitus is a chronic disease, leading to many complications and substantial decrease in patient's Health related quality of life (HRQOL). The aim of study was to assess health related quality of life of diabetic patient.
Methods: This cross-sectional observational study was conducted from December 2020 to February 2021. A total of 100 diabetic patients, resident of field practice area of tertiary care teaching hospital were included in the study. SF-36 scale was used to assess the HRQOL.
Results: The most important predictors of impaired HRQOL were female gender, presence of any diabetic complications, presence of non-diabetic comorbidity and longer duration of diabetes. Older age, lower education, unmarried, obesity, hypertension and hyperlipidemia were also associated with impaired HRQOL in SF-36 subscale.
Conclusions: Diabetic patients had lower HRQOL in all the domains of quality of life. Identification of associated factors can help prevent deterioration of quality of life. Prevention and early identification of complications and concomitant chronic disease can also improve quality of life of diabetics.

Keywords: Diabetes, Quality of life, SF-36, HRQOL

INTRODUCTION

Diabetes mellitus (DM) is a major challenging clinical and public health problem in 21st century and could be considered a large global non-communicable epidemic disease. It is estimated that 463 million people globally had diabetes in 2019 and this number is projected to reach 578 million by 2030 and 700 million by 2045.[1] India is home to second largest number (77 million) of adult with diabetes prevalence of 10.4% in adult aged 20-79 years.[1] Diabetes is a rapidly emerging public health problem in India specially in Urban area.[1] The rapid growth in population, rapid urbanization, increased life expectancy and high ethnic susceptibility to diabetes and changes from traditional lifestyles, had led to this diabetes epidemics.[2] Diabetes, apart from being responsible for increased morbidity and mortality, can also affect quality of life due to its progressive effects on multiple system. Quality of life of patients with DM represents personal perception of life experience, social, vocational and domestic functioning against hope and ideal from aspects of physical, psychological, relationships, environmental and spiritual domain.[2] People with diabetes tend to have a poor quality of life particularly in physical and psychological aspect.[3]

WHO defines quality of life as 'the condition of life resulting from the combination of factors such as those determining health, happiness (including comfort in the physical environment and a satisfying occupation), education, social and intellectual attainments, freedom of justice and freedom of expression'.[4] The concept of Health related quality of life (HRQOL) and its determinants had evolved since the 1980 to encompass

those aspects of overall quality of life that could be clearly shown to affect health-either physical or mental.[5] HRQOL is used in planning, implementation and evolution of health provision and policies on wider level. Various socio-demographic and clinical factors can affect HRQOL among diabetes, and identification of these factors can help improve HRQOL.

Though past studies have identified various factors associated with HRQOL, only few studies are available from northern India. The aim of the study was to determine the quality of life of known case of type 2 DM among residents of UHTC and the to determine factors associated with quality of life among these patients.

METHODS

This cross-sectional and observational study was done at Urban health training centre (UHTC) field practice area associated with one of the largest teaching medical college of Western Rajasthan. The study was conducted from December 2020 to February 2021. A total of 100 known case of type 2 diabetes resident of study area were interviewed after taking written informed consent. Quality of life was assessed using Standard questionnaire (SF-36) given by WHO. Information was obtained from both clinical records available with the patients and by interviewing the participants in person. A pre-designed standard interview schedule was used. SF-36 was used for collecting data on various domain such as role physical, physical functioning, bodily pain, vitality, social functioning, emotional and mental health. The study was started after approval from Institutional Ethics Committee.

Statistical analysis

A standard performa was used for entering the particulars of study subjects. Data was summarized and classified in MS excel worksheet. Categorical variables were expressed as frequency and percentage. Continuous variables were expressed as mean and standard deviation and were analysed using Student t-test and Anova test. A p value of ≤0.05 was taken as statistically significant. All statistical analysis was done using Epi info version 7.2.1.0 statistical software.

RESULTS

A total of 100 patients of type 2 diabetes were interviewed. Most participants were male (67%) and mean age was 58 years. Majority were from low socio-economic status, illiterate or completed only primary education. Most patients were married and living with family (Table 1). Most (45%) people had duration of diabetes b\w 5-10 years, 37% had co existing hypertension (Table 2).

Female reported significantly lower quality of life in all domain except RE. Most domains were found significantly better in young age (<50 years), married person and graduate people. People with low socio-economic status had lower quality of life (Table 3). Obese people had lower quality of life. People following combination of diet, medication, exercise had better HRQOL compared to people using only medication for control of diabetes. People with hypertension or any organ involvement had lower quality of life (Table 4).

Table 1: Socio-demographic characteristics of the study population.

Characteristics		Frequency
Sex	Male	67
	Female	33
Age (years)	<50	28
	50-70	58
	>70	14
Marital status	Married	86
	Single/widowed	14
Education	Illiterate	13
	Primary	31
	Secondary	23
	Higher secondary	20
	Graduate	10
	Post graduate	3
Occupation	Retired	10
	House wife	29
	Employed	48
	Unemployed	13
Socio-economic class (according to modified B. G. Prasad classification)	Class 2	11
	Class 3	12
	Class 4	44
	Class 5	33

Continued.

Characteristics		Frequency
Smoking	Yes	33
	No	67
Alcohol consumption	Yes	25
	No	75

Table 2: Disease related characteristic of study population.

Characteristics		Frequency
BMI	Normal	30
	Over weight	49
	Obese	21
Duration of diabetes (years)	<5	33
	5-10	45
	>10	22
Glouse check frequency	Every 15 days	2
	Once in a month	36
	More than a month	62
HTN	Present	37
	Absent	63
Family history of diabetes	Present	44
	Absent	56
Diabetic control method	Medication	60
	Diet, medication, exercise	40
Micro-vascular complication	One organ affected	33
	Two organs affected	17
	Three organs affected	4
	No organ affected	46

Table 3: SF-36 score according to demographic profile.

Demographic profile		PF	RP	RE	Social funct-ioning	Pain	Ener-gy or fatigue	Emotio nal well-being	General health
Sex	Male	62±23	43±36	58±37	61±17	65±19	55±21	76±12	47±20
	Female	51±23	30±39	60±36	51±19	57±16	46±19	69±13	35±18
	P value	0.02	0.1	0.812	0.008	0.04	0.04	0.01	0.003
Age (years)	<50	76±11	67±30	65±32	70±15	76±12	67±10	81±7	56±14
	50-70	58±21	33±36	66±33	57±16	61±17	58±19	74±11	43±18
	>70	27±15	5±14	19±36	33±13	41±12	22±14	55±12	18±12
	P value	<0.001	<0.001	0.44	<0.001	<0.001	<0.001	<0.001	<0.001
Marital status	Married	62±22	45±37	63±35	61±18	65±17	57±19	76±12	47±18
	Unmarried	55±0	0±0	66±0	56±8	55±17	40±7	80±11	27±10
	Widow/widower	31±17	2±7	25±32	36±11	42±13	24±13	58±14	18±9
	P value	0.00003	0.0002	0.002	<0.001	0.0001	<0.001	0.00004	0.00002
Education	Illiterate	38±20	11±24	51±42	47±18	51±19	39±20	67±15	28±17
	Primary	53±25	30±39	58±35	56±18	59±14	44±22	71±12	37±19
	Secondary	63±22	43±34	69±37	60±22	62±20	56±19	74±16	48±18
	Higher	65±20	57±37	58±38	63±18	71±18	62±18	78±10	52±21
	Graduate	73±12	42±39	53±35	58±14	69±14	62±16	78±9	52±11
	Post-graduate	70±20	75±0	55±38	70±7	77±22	66±10	84±4	53±24
	P value	0.001	0.003	0.74	0.169	0.015	0.002	0.08	0.001
Occupati-on	Retired	51±19	30±30	41±40	47±18	51±24	50±22	68±16	41±19
	House wife	46±22	23±35	57±38	47±18	55±16	43±19	67±14	32±17
	Employed	72±17	57±33	68±32	68±15	72±14	65±13	80±8	55±15

Continued.

Demographic profile		PF	RP	RE	Social funct-ioning	Pain	Ener-gy or fatigue	Emotio nal well-being	General health
	Unemployed	40±22	13±33	43±39	51±14	53±17	30±20	68±14	27±17
	P value	0.001	<0.001	0.04	<0.001	<0.001	<0.001	<0.001	<0.001
Socio-economic class	Class 2	74±20	54±35	63±37	62±14	73±16	60±16	78±12	54±19
	Class 3	55±20	39±36	50±43	53±21	56±26	52±22	72±16	45±20
	Class 4	63±20	46±38	71±3	63±18	65±15	60±16	76±10	47±17
	Class 5	48±26	23±35	44±37	52±19	58±19	40±23	69±15	34±21
	P value	0.039	0.009	0.069	0.056	0.065	0.0004	0.1281	0.1

Table 4: SF-36 score according to health-related characteristics of participants.

Health-related characteristics		PF	RP	RE	Social funct-ioning	Pain	Energy or fatigue	Emoti-onal well-being	General health
BMI	Normal	66±20	55±33	56±34	62±16	67±14	59±18	76±11	49±18
	Over weight	60±22	35±38	63±37	58±19	63±19	54±19	74±13	44±19
	Obese	44±26	23±35	52±41	51±20	54±19	39±24	69±15	34±22
	P value	0.002	0.009	0.44	0.12	0.06	0.002	0.156	0.036
HTN	Present	48±23	22±31	53±39	50±17	55±19	45±21	71±14	36±19
	Absent	65±21	48±38	62±35	62±18	67±17	56±20	75±12	48±19
	P value	0.0003	0.0005	0.205	0.0012	0.0023	0.009	0.1339	0.00284
Diabetic control method	Medication	54±23	31±34	56±38	56±19	59±17	49±21	72±14	39±20
	Diet, medication, exercise	65±22	49±40	63±34	60±18	68±19	57±20	75±12	49±18
	P value	0.019	0.022	0.364	0.434	0.022	0.045	0.243	0.014
Micro-vascular complication	One organ affected	54±23	29±35	56±34	54±14	59±14	47±19	73±13	40±20
	Two organs affected	44±26	23±29	45±48	47±23	46±11	40±22	64±14	30±18
	Three organs affected	35±14	0±0	41±50	40±11	56±29	18±10	63±11	17±5
	No organ affected	69±17	54±37	68±31	66±17	72±17	64±15	79±10	53±16
	P value	0.00034	0.00037	0.1037	0.00039	<0.001	<0.001	0.00035	<0.001

Note: PF- Physical functioning, RP- Physical role limitation, BP- Bodily pain, GH- General health perceptions, VT- Vitality/energy/fatigue, SF- Social functioning, RE- Emotional role limitation, MH- Mental health.

DISCUSSION

We investigated association of demographic, social and clinical variables with HRQOL of diabetic patient. Age, gender, marital status and education were confirmed as important predictors of HRQOL in type 2 diabetes. Most influenced SF-36 sub-scale was PF for all the variable RE sub scale were least affected. In our study it was found that the all the domain scores were better in age less than 50 year of age group. In conformance to present study findings Boom et al how found patients who were older and had diabetes for a longer duration had negative impacts on HRQOL in almost all of the sub-domains.[6]

In our study it was found that all the score in employed person was better than unemployed and house wife.

Similarly, a study conducted by Degu et al found those who are government and self-employee were found to have better scores on HRQOL domains particularly on physical functioning, social functioning and body pain domain.[7]

Degu et al found occupational status was associated with quality of life. In present study it was found that the difference in mean domain score for all domains between married, unmarried and widow/widower was significant. Studies from India and abroad have reported lower QoL among single, widowed or divorced patients compared to married people.[8,9] Poor HRQOL in unmarried and widow/widower could probably be due to lack of peer support and unsupportive environment, financial problem, uncertain future leading to stress in the unmarried person.

Most of the subjects belonged to lower and lower-middle class, there is increase in urban slums in UHTC field area, that ultimately reflects their occupation and socio-economic status. Similarly, a study by Manjunath et al also found most diabetic people from lower class (24%) and lower middle class (63%).[10] In our study population, only 42% people followed good physical exercise, had knowledge about proper diet to be followed as told by health care provider. In our study PF, RP, pain, energy, general health scores were better in those following combination of diet, medication and exercise compared to person taking medication only. Another similar study reported two-thirds of the patients were non-adhered in doing their physical activity in spite of the importance of exercise.[11]

Studies have emphasized preventive role of physical exercise in the quality of life on most dimensions of SF-36 scale and is recommended by the WHO.[12,15] Exercise is an important part of managing diabetes as it improves insulin action, reduce weight, decrease glucose intolerance and the occurrence of complications.[11] In our study it was found that the PF, RP, energy, general health score were better in the person with normal BMI compare to overweight and obese person.

In our study 37% had hypertension with diabetes. Studies have reported co-existing hypertension in as high as 78.4 % of diabetics.[13,14] This can be attributed to sedentary life style, negligence in following the pattern of diet and increases in stress in both vocationally and environmentally urban area. In our study, PF, RP, social functioning, pain, energy, general health scores were better in the normotensive person.

In our study population 46% people don't have any micro vascular complication, 33% had micro vascular complication affecting single organ while 21% had micro-vascular complication affecting multiple organs. Another similar study reported complication in 38.7% diabetics.[14] In our study it was found that most scores better in the person affected with diabetes without any complications. Ayed et al reported patients having a complication had, remarkably lower QOL for the subdomains of physical functioning, the roles of physical, emotional, and general health, and total QOL.[13]

CONCLUSION

Type 2 DM negatively affects quality of life, particularly in relation to their physical function. Common socio demographic characteristics like lower education level, un employment, low socio-economic status, Unmarried status and clinical indicators like obesity, presence of complications or co morbidity were found to have a negative impact on the quality of life among diabetic patients. Timely and proper intervention at primary care level could be prioritized for the right and most needy adult patients with type 2 DM to improve their life experience and HRQOL. Also, in order to preserve a good health and quality of life, it is important to prevent diabetes complication and properly manage concomitant chronic disease.

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