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Research Article

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An Analytical Cross-Sectional Study on Quality of Life Among Diabetics in Rural and Urban Puducherry

Pavithran M* and Vasudevan K

Assistant Professor Department of Community Medicine, MGMCRI Puducherry, Professor & Head Department of Community Medicine, IGMCRI Puducherry, India

***Corresponding author**
Pavithran M, Assistant Professor Department of Community Medicine, MGMCRI Puducherry, Professor & Head Department of Community Medicine, IGMCRI Puducherry, India.

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ABSTRACT

Introduction: Quality of life 'as a sense of well-being that encompasses the physical, psychological, social and spiritual condition' Cases of diabetes in India are attributed to the lifestyle changes along with rapid urbanization and industrialization. With increase in prevalence of Diabetes in India it becomes important to assess the quality of life for better care and control.

Methods: Cross sectional study conducted in Field practice areas Rural and Urban centres, Puducherry. The total sample size estimated to be 360. Diabetic patients attending the NCD clinic was selected by systematic random sampling. Data was collected by (WHO) QOL-BREF questionnaire, under domains of Quality of life-physical health, psychological health, social relationships and environment.

Results: The mean age group was 57.5±10.8, and there was a statistically significant difference in the mean quality of life (QOL) between urban and rural areas in terms of psychological and social scores. The study participants' social score peaked at 227 (63%) for good QOL, while their psychological score was 166 (46%) for poor QOL. All four QOL domains showed a significant correlation when multivariate analysis was performed after controlling for gender, education, family income, and place of residence.

Conclusion: Diabetes does impair the QoL of patients, there is a significant difference was found between urban and rural population need to focus on requirements of care equally in both urban and rural area.

Keywords: Quality of Life, Diabetes Mellitus, WHOQoL-BREF

Introduction

Diabetes is a potentially disabling disease and an important public health concern in both developed and developing countries. According to World Health Organization, Diabetes Mellitus is one among the targeted priority noncommunicable diseases. Worldwide, the number of people with diabetes has increased almost four times in less than four decades, from 108 million in 1980 to 537 million in 2021. Globally, one in every 10 adults (20- 70years) is living with Diabetes and one death due to Diabetes occurs every 5 seconds. In South East Asia region, 1 in 11 adults are living with diabetes with 747,000 deaths caused by diabetes in 2021. India, being the diabetes capital of world, is predicted to have a large burden of 109 million diabetics by 2035 [1-3].

In India, which is home to 77 million diabetic patients where 70% of the population lives in rural areas, the burden of diabetes care falls to primary care physicians, as specialists are available only in tertiary care set-ups [4]. India plays a unique role in the diabetes picture of the world. Compared to any other ethnic groups, Asian Indians have a higher propensity to insulin resistance, diabetes mellitus and coronary artery disease. In this milieu of high prevalence of diabetes in India, significant research happens to improve the quality of care for the patients. Health care professionals are becoming increasingly aware of the need to assess and monitor the quality of life as an important outcome of diabetes care [5]. Diabetes is a chronic disease related to lifestyle. It has a negative impact on the affected individual's perception of wellbeing. 'Wellbeing' is presently considered difficult to measure because of the subjective nature of perception and responses. Consequently, T2DM affects a person not only physically but also psychologically, socially, and economically, exerting a negative impact on their QoL [6]. Proper drug

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therapy, social support, health education, and psychological care in diabetes are essential but are usually deficient, especially in developing countries [7]. Hence, a coordinated effort of health care personnel, patients, and their families are required to achieve desirable control of the disease [6]. Quality of life is defined by WHO as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns [8]. The impact of diabetes on patients' QoL has been studied extensively, and T2DM was proven to reduce patients' health-related quality of life (HR-QoL). The majority of these studies focused on the physical and mental aspects of QoL patients. However, the short form of the World Health Organization Quality of Life assessment instrument (WHOQOL-BREF) probes QoL in four domains, namely, physical, psychological, social, and environmental domains. As diabetes affects a person's life in every direction, this study aimed to explore these four domains of QoL in people with T2DM using WHOQOLBREF and determine its associated factors [6]. Puducherry being highly urbanized, and the prevalence of diabetes being 8.9% (Urban 5.6% and Rural 5.8%), of diabetes in India are attributed to the lifestyle changes along with rapid urbanization and industrialization [9,10]. Quality of life is increasingly recognized as an important health outcome, representing the ultimate goal of health for all interventions. With increase in prevalence of Diabetes in India, it becomes important to assess the quality of life. Hence in this study was done to assess the QoL among diabetic's patients in Urban and rural area Puducherry. In the present study we attempted to measure the quality of life (QOL) of diabetics through a personal interview and the WHO-BREF questionnaire.

Methodology

Study Setting: A community-based cross-sectional study was carried out in the field practice areas of the Rural Health Center (PHC) and the Urban Health Center (PHC) Puducherry, with consent from the Institute Ethics Committee. A selection was made from the Type 2 Diabetics in the NCD register who are older than or equivalent to thirty years of age, regardless of gender in the selected urban and Rural health centre.

Sample Size: The calculation of sample size is based on prior research, which took into account mean S.D. values of 50.5, 11.5, and 45.2, S.D. values from another study. Using Open Epi software, the final sample size is predicted to be 360 (approximately 180 in each group of urban and rural participants) with a precision-5% nonresponse rate of 10%, a power of 80%, and a confidence limit of 95%.

Sample Technique: in Rural centre, nearly 60 diabetes patients attend the NCD Clinic on Tuesday (each week). Systematic Random sampling technique will be used &every 2nd patient attending the NCD clinic will be selected, 30 patients will be selected each week, so therefore 180 study participants will be selected over 6 weeks, sample size of 180 is achieved In Urban centre, nearly 150 diabetic patients attend the NCD Clinic on Tuesday (each week). Systematic Random sampling technique will be used & every 5th patient attending the NCD clinic will be selected,30 patients will be selected each week, so therefore 180study participants will be selected over 6 weeks, sample size of 180 is achieved.

Data Collection Method

Structured questions about social demographics, diabetes status, length of sickness, glycemic status, and coexisting illnesses were included in the initial questionnaire.A pretested and structured questionnaire was used to obtain the information on socio- demographic profile, diabetic history. The quality of life was assessed by WHOQOLBREF5 scale. The WHOQOL-BREF (World Health Organization Quality of Life - Brief) is a validated tool to assess QoL in people with type 2 diabetes and it is also appropriate for use across different nationalities. The four domains measured are physical, psychological, social and environment, through a set of 26 items that can be self-administered. Responses to the questions use a 5point Likert scale, inquiring 'how much', 'how satisfied' or 'how completely' the respondent felt in relation to the domain being investigated. The WHOQOL-BREF has been validated to measure the psychometric properties and is reliable. The scores obtained were transformed to 0-100The four domains of the (WHO) QOL-BREF questionnaire include environment, social interactions, psychological health, and physical health.

Statistical Method: MS Excel 2007 was used to enter the data. Version 16.0 of the SPSS software was used for the analyses. Mean ± SD was used to represent numerical variables, whereas percentages and proportions were used to represent categorical variables. The student test and the chi-square test were employed, respectively, to compare numerical and categorical variables. A p-value of less than 0.05 is deemed statistically significant.

Results

Table 1: Socio Demographic Characteristics of Study Participants N=360

S.no	Variable	Category	Urban	Rural	Total	p value*
1.	Age	30-50	55(15.4)	54(15)	109(30.4)	0.94
		50-70	107(30)	106(29.4)	213(59.4)	
		>70	18(5)	20(5.2)	38(10.2)	
2.	Gender	Male	90(25)	98(27.2)	188(52.2)	0.07
		Female	91(27.3)	81(20.5)	172(47.8)	
3.	Education	Literate	121(33.6)	105(29)	226(62.7)	0.08
		Illiterate	55(15.2)	79(22.1)	134(37.3)	
4.	Occupation	Working	98(27.2)	84(22.3)	178(49.5)	0.11
		Not working	83(23.5)	99(27)	182(50.5)	

5.	Monthly Income	<10000	22(6.1)	44(12.2)	66(18.3)	0.00
		10000-20000	60(17)	109(30)	169(47)	
		>20000	98(27.2)	27(7.5)	125(34.7)	

***chiquare test applied p value<0.005 significant**

Out of the 360 respondents; their mean age was 57.3+10.8, and 52.2% of them were men and 47.8% were women. Sixty percent of the respondents were in age group 50 to 70 years. Among 360 respondents, 50.5% were Unemployed & 62.7% were literate. The majority of study participants Family Income ranges between Rs10,000–Rs20,000 were statistically significant present among Urban and Rural populations. Table1 A large proportion of study participants 280 (80%) have had diabetes for less than ten years. The median duration of disease among the respondents was 6 years. Among the study participants, Comorbidity was present in 67(19%) where most common comorbidity was Hypertension. Approximately 54% have their Blood Sugar under control (Random<200mg/dl). Table 2 The WHO BREF was used to measure quality of life. It consists of 26 items that are rated on a scale of 1 to 5 Likert scale, evaluating four areas: environment, social interactions, psychological health, and physical health using Mean score. Table 3 Displays QOL scores of the study participants. The Total QoL mean scores between Urban and Rural areas 6.7+1.5 and 6.2+1.7respectively, scores were found to have statistically significant. Table 3 displays the comparison of the QoL scores with the other domains of the QOL between urban and rural areas, with statistical significance seen in the Social and Psychological scores. Among all four QoL domains, the mean value of than >50, considered as Good QoL, and less than 50, considered as Poor QoL among study participants. Within QOL Domains the Social score reached a maximum of 227 (63%) for Good QOL and Psychological score were found to have 166 (46%) for Poor QOL among the study participants (Table 4). Good & Poor Quality of life ratings across domicile were compared, Rural area found to have Good QOL>50% mean score 169 (71%) of the study participants, whereas Poor QOL<50% mean score 101 (56%) observed over Urban area. Table 5 shows Multivariable analysis adjusting for Gender, Education, Family income, domicile was found to have significant association across all four domains QOL.

Table 2: Disease Characteristics of Study Participants N=360

S.no	Variable	Category	N %
1.	Duration of diabetes	<10	289(80)
		11-40	71(19.7)
2.	Comorbidity	Yes	67(19)
		No	293(81)
3.	Glycemic status	Controlled	194(54)
		Uncontrolled	166(46)

Table 3: Domains of Quality of Life in Comparison with Urban and Rural Area N=360

S.no	Quality of Life	Urban (Mean S.D)	Rural (Mean S.D)	p value#
1.	Total QOL score	6.7± 1.5	6.2± 1.7	0.005
2.	Physical score	22.6± 3.91	22.5± 3.88	0.994
3.	Social score	8.7± 2.57	9.83± 2.30	0.001
4.	Psychological score	18.9± 3.79	17.5± 3.48	0.00
5.	Environment score	25.1± 4.73	24.9± 4.88	0.826

#Unpaired student T test is applied p value<0.05 statistically significant

Table 4: Score Percentage on Domains Quality of Life Score N=360

S.no	Domains	Score(>mean) N% Good	Score(<mean) N% Poor	p value#
1.	Physical score	207(57.5)	153(42)	0.09
2.	Social score	227(63)	133(37)	
3.	Environment score	205(57)	155(43)	
4.	Psychological score	194(53)	166(46)	

#chi square test applied p value<0.005 significant

Table 5: Linear Regression Analysis Between QOL Domains and Characteristics of Participants

Variable	QOL		Physical		Social		Environment		Psychological	
	B	p value	B	p value	B	p value	B	p value	B	p value
Domicile	0.3	0.04	-0.2	0.50	0.50	0.00	-0.2	0.6	1.2	0.02
Education status	-0.4	0.01	-1	0.00	-0.7	0.00	-0.9	0.01	-0.6	0.03
Age	-0.4	0.05	-1	0.02	-0.8	0.01	-2.6	0.00	-2	0.00
Monthly income	0.4	0.05	0.3	0.56	0.4	0.15	1.4	0.02	0.3	0.45

Discussion

In our study 360 participants in all were questioned; their mean age was 57.3+10.8, and 52.2% of them were men and 47.8% were women. Of them, 62.7% were literate. About 50.5% was observed as Unemployed. The majority of study participants 280 (80%) have had diabetes for less than ten years. The median duration of disease 6 years. The comorbidity was present in 67(19%) were Hypertension most common. Study had a mean age 55.8+13.2 [6]. Family income between 5000-25000 about (59.2%). Among the study participants, 51% were males

and 49% were Females [3]. About 69% of the respondents were unemployed [5,11]. About one-third (31.3%) were Illiterate [12]. More than one third (37.2%) of the total patients were graduate and above followed by Illiterates (17.2%). Half (50.2%) the study patients were employed. Most (91.6%) of the patients did not have any complication. Among patients, hypertension was found to be the most common (24.6%) co-morbidity. The mean duration since diagnosis of diabetes was 7.82 ± 6.0 years() [13]. In our study The QoL scale's mean overall scores in urban and rural areas were 6.7+1.5 and 6.2+1.7, respectively. An unpaired T test was used to determine statistical significance. Table 3 displays the comparison of the QoL scores in the other domains of the scale between urban and rural areas, with statistical significance seen in the Social and Psychological scores. For all four QoL dimensions, the mean value was more than 50, indicating Good QoL, and less than 50, indicating Poor QoL among study participants. Within the Psychological score domain, the social score reached a maximum of 227 (63%) for Good QOL and 166 (46%) for Poor QOL. In our study Quality of life ratings by residence Good QOL>50% mean score 169 (71%) of the population was observed in Rural areas, whereas only 101 (56%) were observed in Urban areas. Multivariable analysis adjusting for Gender, Education, Family income domicile significant association observed across all four domains QOL. Similarly in study Domains of the Whoqol-bref with the highest scores, indicating better quality of life, were Social Relations and Psychological, while a worse quality of life was observed in Environment [14]. The mean total score of the QoL scale was 58.05 [5]. It was seen that 68% of the patients had an overall good QoL score(4). Domain-wise, 63% had good physical, 69% had good psychological, 27% had good social and 85% had good environmental. The mean QOL-BREF instrument score, indicating the QoL of the patients, was 57.80 [12]. Domain-wise, 55% of the patients revealed good physical QoL, 47% good psychological QoL, 55% good social QoL, and 45% good environmental QoL [7]. Multiple regression analysis the patient's level of education and monthly family income were significant determinants of the QoL score in different domains [6]. Multiple logistic regression, gender and age groups were found to have statistically significant ($p < 0.05$) association with QOL of study participants [11]. Quality of life domains and other Continuous variables showed that there is significant positive correlation between age and physical, psychological, social and environmental domains $p<0.001$) [8]. Patient perceived good QoL was found to be 35.6% Bivariate analysis QoL against other exposure variables revealed a significant association ($p< 0.05$) with higher educational status [4-9].

Ethical Consideration

Ethical approval for the study was obtained from the Institute Ethics committee (IEC) Indira Gandhi medical college & Research Institute (No. 347/IEC-32/IGMC&RI/PP-27/2021). Informed consent was obtained from all participants before their inclusion in the study. Participants were informed that they could withdraw from the study at any point without consequences.

Conclusion

QoL has become an important outcome measurement in the success of treatment which in diabetic patients is affected by many factors social, environment, physical, phschological, there is a significant difference was found between urban and rural population need to focus on requirements of care equally in both urban and rural area. Hence it is important to improve the quality of life among diabetics with proper treatment regimens ensuring good glycemic control.

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