

# Quality of Life of Individuals with Type 2 Diabetes Mellitus in Southern India Using WHOQOL-BREF - A Cross-Sectional Study

Anu Kuriakose<sup>1</sup>, Anila Paul<sup>1</sup>, Nivedhya P S<sup>2</sup>, Asbi K A<sup>2</sup>, Viswajith E R<sup>2</sup>,  
Shalini Julie Mathew<sup>2</sup>

<sup>1</sup>Assistant Professor, BCF College of Physiotherapy, Indo-American Hospital, Vaikom, Kottayam, Kerala, India.

<sup>1</sup>Professor & HOD, Medical Trust Institute of Medical Sciences, College of Physiotherapy, Kochi, Kerala, India.

ORCID ID: 0009-0006-9509-7109

<sup>2</sup>Clinical Physiotherapist, Naisthika Rehab, Kuruppadanna, Kodungallur, Thrissur, Kerala, India.

<sup>2</sup>Clinical Physiotherapist, Vybhav's WellMax Physio, Gandhinagar, Kadavanthra, Kochi, Kerala, India.

<sup>2</sup>Physiotherapist, Sukino Stroke and Neuro Inpatient Rehabilitation and Recovery Center, Kochi, Kerala, India.

<sup>2</sup>Assistant Professor, Northern State University, 1200 S Jay St, Aberdeen, SD, 57401, US.

ORCID ID: <https://orcid.org/0000-0001-7640-8449>

Corresponding Author: Anila Paul

DOI: <https://doi.org/10.52403/ijhsr.20250101>

## ABSTRACT

**Background:** Diabetes mellitus (DM), a chronic metabolic disease, is highly prevalent in India especially in the southern region. The rapid changes in lifestyle, socio-cultural factors and lack of awareness may have contributed to the prevalence. Current study is designed to explore the quality-of-life of individuals with type 2 diabetes mellitus using the World Health Organization Quality of Life Brief Version (WHOQOL-BREF) questionnaire and its association with educational, economic and marital statuses and duration of diabetes.

**Methods:** A cross-sectional study with purposive sampling technique was conducted among 120 individuals from urban and semiurban community, with more than 35 years of age and with more than ten years of medically diagnosed DM. WHOQOL-BREF questionnaire, Malayalam version and a semi structured questionnaire was used to collect the data. Statistical analysis was conducted with SPSS software using descriptive and inferential statistics.

**Result:** Study reported that out of the four domains in WHOQOL-BREF, the social support domain was most affected ( $47.43 \pm 22.58$ ) and environmental domain was the least affected ( $52.97 \pm 22.58$ ). The study revealed significant association between quality of life with duration of DM, marital, education and economic statuses ( $p < 0.001, 0.05, 0.01, 0.001$ ).

**Conclusion:** This study highlights the urgent need to implement awareness programs addressing the physical, psychological, social, and environmental aspects within communities in southern India. The confounding factors need to be considered to ensure better quality of life among persons with DM.

**Keywords:** Diabetes Mellitus, Quality of Life, awareness, complications, marital status, educational status

## BACKGROUND

Diabetes Mellitus (DM) is a global public health concern due to its high prevalence rate and alarming statistics. The ranking for DM

has risen to a great extent in the global list of causes of death since 1990(1). The increasing prevalence of DM in developing countries like India could be due to the comparatively

faster transition in terms of socio economic status and demographic changes(2). The lifestyle changes, faster urbanization, changing nutritional preferences, increasing smoking and alcohol consumption and low level of physical activity could have contributed to the alarming rise in the prevalence of DM(3). Even though the health care system has achieved great appreciation across the globe, the type 2 DM is becoming highly prevalent in all sections of population in Kerala, the southern state in India(2).

The awareness about various aspects of DM and its prevention is found to be low in both urban and rural communities from different parts of the country(4). Early detection of DM through regular screening is important in prevention of complications. As a chronic non communicable metabolic disease, management of DM require continuous monitoring, health care implementation and good adherence to the treatments and recommendations(5). The National Family Health Survey which was conducted across all states in India revealed poor awareness, treatment and control of DM, mostly among poorer and uneducated population(6). Intensive intervention to improve awareness, adherence to treatment, implementation of preventive strategies and patient counselling are important in halting the rapid progress of this debilitating illness(5). The study conducted by Indian Council of Medical Research-India Diabetes reported that around 30-80% of people with DM remain undiagnosed and thus untreated(7). This could lead to development of serious complications which ultimately become great financial burden on people with DM and their families.

In recent years, increased attention is poured on health-related quality of life which is influenced by various factors including psycho-social, economic, educational and social support. People with DM have to face more demands and challenges in managing their medications and psycho-social matters which is crucial in diabetic care and prevention of long-term complications(8). This points to the need for evaluation of

psycho-social wellbeing and other domains of quality of life among persons living with DM.

Quality of life (QoL) aims to gather information on wellbeing of a population or individual based on the perception of reality which can be influenced by factors like the culture, social and value systems(9). The World Health Organization QoL group developed WHOQOL – 100 in order to measure health indicators in a much broader aspects, a globally acceptable assessment on QoL which can be implemented in various populations across the globe and to ensure a holistic approach to health and health care(10). The WHOQOL-BREF is one of the best-known instruments that has been developed for cross-cultural comparisons of quality of life and is available in more than 40 languages(11). The current study aims to evaluate the QoL using WHOQOL-BREF, Malayalam version among persons with type 2 DM in Kerala. The association of QoL with duration of DM, marital, educational and economic statuses were also evaluated. This would be helpful to understand the physical, psychological and environmental factors contributing to QoL among the population in Kerala, southern state of India.

## **MATERIALS AND METHODS**

Cross sectional study was conducted among 120 community dwelling individuals using purposive sampling technique. Individuals who were medically diagnosed with type 2 DM for more than ten years and more than 35 years of age were recruited for the study. Individuals with other medical illnesses affecting QoL, mentally unstable individuals with lack of orientation and those who could not understand Malayalam language were not considered for this study. Subjects were selected purposively from two districts in central part of Kerala. Informed consent was attained from all participants and all ethical principles were followed during the conduct of this study. The data was collected with WHOQOL BREF Malayalam version and a semi structured questionnaire for

demographic and other relevant information for the study.

The shorter version of WHOQOL-100, WHOQOL BREF questionnaire which has 26 items to explore physical, psychological, social and environmental domains was used in this study. WHOQOL BREF questionnaire has good validity, reliability and internal consistency and is a cross culturally valid tool to assess QoL(12). Responses to questions are on a one to five Likert scale where one represents disagree or not at all and five represents completely agree or extremely agree. Out of 26 questions, seven questions belong to physical domain, six to psychological domain, three to social, and eight to environment domains. There are two separate questions specifically about the individual's overall perception of their health and QOL(12,13). The mean score of each domain is considered as the domain score

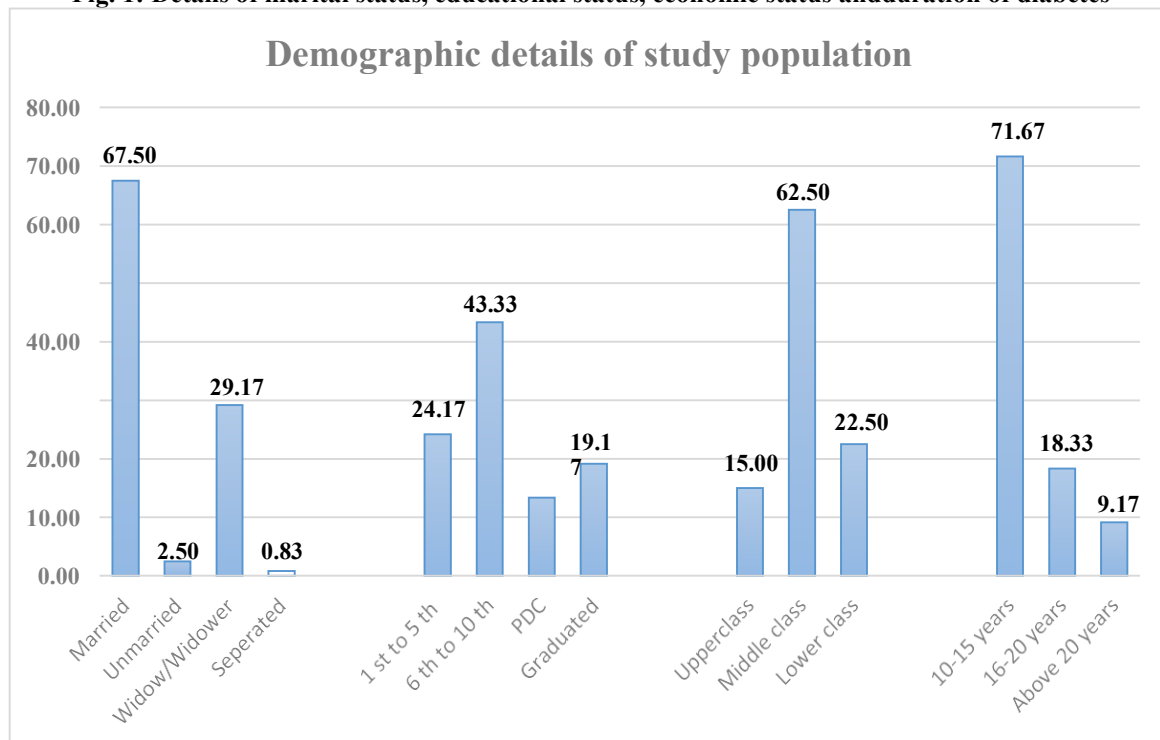
which is transformed to a zero to hundred scale where 100 is the highest and zero the lowest score(12).

Statistical analysis was conducted with descriptive and inferential statistics using SPSS (Statistical Package for Social Sciences). The findings of each domain were expressed in mean and standard deviations. The association of QoL with duration of DM, educational, economic and marital statuses were analysed with Chi-square test with level of significance kept as  $p \leq 0.05$ .

## RESULTS

The study was conducted among 120 individuals with type 2 DM which included 66 females and 54 males. Subjects with more than 35 years of age were considered for the study in which 19 persons were within 35-50 age group, 54 were in 51-65 years and 47 were above 65 years of age.

**Fig. 1: Details of marital status, educational status, economic status and duration of diabetes**



With respect to marital status, 81 subjects (68%) were married, three (2%) were unmarried, 35 (29%) were widowers and one (1%) with separated marital status. The information on educational status revealed that 29 (24%) subjects were pre-primary

qualified, 52 (43%) were high school graduates, 16 (13%) with higher secondary education and 23 (19%) were graduates. With respect to economic status, 18 (15%) were from upper class, 75 (63%) from middle class and 27 (23%) were from lower income

category. The duration of DM for 86 (72%) subjects were between 10 to 15 years, 22 (18%) subjects between 16 to 20 years and

11 (9%) subjects with more than 20 years of DM.

**Table 1: Scores of WHOQOL BREF domains**

Domain (Maximum score 100)	Mean	Sd
Physical	48.30	17.60
Psychological	48.40	16.35
Social	47.43	22.58
Environmental	52.97	15.17
Final Score	49.28	

The current study revealed that, out of the four domains of WHOQOL BREF, the most affected domain was the social support (47.43±22.58) and the least affected domain was environmental domain (52.97±22.58). The total score which is the average of mean

scores of all domains was 49.28 in the scale from zero to hundred.

The association of quality of life (QoL) with marital, educational, economic statuses and duration of diabetes was evaluated with Chi-square test with level of significance  $p \leq 0.05$ .

**Table 2: Association of quality of life (QoL) with marital, educational, economic statuses and duration of diabetes**

\Parameters		Quality of Life				$\chi^2$	df	p-value
		Very poor	Poor	Neither poor nor good	Good			
Marital status	Married	2	15	31	33	17.56	9	< 0.05
	Separated	0	1	0	0			
	Unmarried	0	2	0	1			
	Widow/widower	5	11	12	7			
Educationstatus	1st to 5th standard	3	13	8	5	23.59	9	< 0.01
	6 <sup>th</sup> to 10 <sup>th</sup> standard	4	9	22	17			
	Graduated	0	3	5	15			
	PDC	0	4	8	4			
Economicstatus	Lower class	5	17	4	1	48.66	6	< 0.001
	Middleclass	2	10	34	29			
	Upper class	0	2	5	11			
Duration of diabetes	10 - 15 years	5	13	35	34	22.58	6	< 0.001
	16 - 20 years	0	9	7	6			
	Above 20 years	2	7	1	1			

The statistical analysis revealed significant association of QoL with marital, educational, economic statuses and duration of diabetes among persons with type 2 DM. The general perception of quality of life and health was also found to be average.

## DISCUSSION

In the current study, all four domains of WHOQOL BREF expressed less than average score except the environmental domain and the overall score was average or at the middle of the total score of 100. The results are comparable with the findings of

the study conducted at Iran and controversial with the findings from studies conducted in India and Bangladesh(13–15). The scores of domains were found to be lesser than the scores in studies conducted in Nepal(16). Patil et al reported that the domain scores are significantly less among persons with uncontrolled diabetes compared to controlled DM(17).

The findings of the study is comparable with another research conducted on QoL among type 2 DM in the rural part of Kerala except the social domain which is lower than the previous study which was conducted in

2020(18). Over past four years, there is not much improvement on the QoL among persons with type 2 DM, which indicates the need to intervene this matter much more critically. Another study from the eastern part of India reported better score with total average of 60 which is much better than the results of current study(19). The quality of life of persons with type 2 DM is affected by various factors which needs to be considered meticulously for better therapeutic outcome. Only diabetic medications may not be sufficient to ensure the success of therapy, but the satisfaction and perception of individuals also may influence the outcome. Awareness needs to be given to persons with DM for better coping strategies to deal with diabetic complications and other socio-economic factors. Along with physical health, the mental well-being, social relationships and environmental factors like financial resources, accessibility of care, recreation or leisure activity and home environment needs to be emphasised(13,17).

In current study, the environmental domain reported highest score, which could be due to the satisfaction in environmental conditions, transportation facilities and medical services in the urban and semi urban parts of Kerala, which is known for excellent health care system within the country. The lowest score was with social domain which could be due to poor personal relationships, sexual activity and poor use of social support system. Persons may be unaware about the facilities and government policies available in the community for persons with DM. Providing more awareness to the public through the electronic social media, newspapers and medical camps would be helpful.

In earlier decades, the joint family system ensured more family support and personal attention among family members. But currently the scenario is rapidly changing in Kerala, especially in the urban parts which have changed to nuclear family system. The below average score in physical domain could be due to excessive fatigue, increased dependence and low self-esteem among people with DM. The anxiety, depression and

psychological and cognitive decline among persons with DM have a negative impact on the mental health. The associated comorbidities also may contribute to decline on mental domain score(19).

The current study reported significant association between QoL with duration of DM, marital, economic and educational statuses in persons with type 2 DM. As the duration of DM increases, there are more possibilities for developing complications and comorbidities which can negatively affect the QoL of the person. The financial dependence on family members, lack of awareness about prevention and management of complications, lack of family support and social isolation can deteriorate the functional levels of persons with DM and affect the QoL.

## CONCLUSION

The care for the persons with DM needs to be considered in a holistic way. Along with physical health, the mental wellbeing, socio economic factors and environmental factors need to be attended to ensure better QoL in persons with DM. Awareness on physical activity and exercises are significant in prevention of deterioration of function and daily activities.

### *Declaration by Authors*

**Ethical Approval:** Approved

**Acknowledgement:** None

**Source of Funding:** Self-funded

**Conflict of Interest:** Nil

## REFERENCES

1. Bhutani J, Bhutani S. Worldwide burden of diabetes. *Indian J Endocrinol Metab.* 2014 Nov;18(6):868–70.
2. Vijayakumar G, Manghat S, Vijayakumar R, Simon L, Scaria LM, Vijayakumar A, et al. Incidence of type 2 diabetes mellitus and prediabetes in Kerala, India: results from a 10-year prospective cohort. *BMC Public Health [Internet].* 2019 Dec [cited 2024 Dec 12];19(1):140. Available from: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-019-6445-6>



3. Hu FB. Globalization of diabetes: the role of diet, lifestyle, and genes. *Diabetes Care*. 2011 Jun;34(6):1249–57.
4. Sathish T, Thankappan KR, Panniyammakal J, Oldenburg B. Knowledge of Diabetes among Adults at High Risk for Type 2 Diabetes in the Trivandrum District of Kerala, India. *Diabetology* [Internet]. 2023 Feb 16 [cited 2024 Dec 12];4(1):76–85. Available from: <https://www.mdpi.com/2673-4540/4/1/9>
5. Mathur P, Leburu S, Kulothungan V. Prevalence, Awareness, Treatment and Control of Diabetes in India From the Countrywide National NCD Monitoring Survey. *Front Public Health*. 2022; 10:748157.
6. Maiti S, Akhtar S, Upadhyay AK, Mohanty SK. Socioeconomic inequality in awareness, treatment and control of diabetes among adults in India: Evidence from National Family Health Survey of India (NFHS), 2019–2021. *Sci Rep* [Internet]. 2023 Feb 20 [cited 2024 Dec 13];13(1):2971. Available from: <https://www.nature.com/articles/s41598-023-29978-y>
7. Narayan KMV, Chan J, Mohan V. Early identification of type 2 diabetes: policy should be aligned with health systems strengthening. *Diabetes Care*. 2011 Jan;34(1):244–6.
8. Rubin RR, Peyrot M. Quality of life and diabetes. *Diabetes Metab Res Rev* [Internet]. 1999 May [cited 2024 Dec 13];15(3):205–18. Available from: [https://onlinelibrary.wiley.com/doi/10.1002/\(SICI\)1520-7560\(199905/06\)15:3<205:AID-DMRR29>3.0.CO;2-O](https://onlinelibrary.wiley.com/doi/10.1002/(SICI)1520-7560(199905/06)15:3<205:AID-DMRR29>3.0.CO;2-O)
9. Teoli D, Bhardwaj A. Quality Of Life. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 [cited 2024 Dec 13]. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK536962/>
10. WHOQOL-BREF and Scoring Instructions. <https://www.who.int/tools/whoqol/whoqol-bref>
11. Vahedi S. World Health Organization Quality-of-Life Scale (WHOQOL-BREF): Analyses of Their Item Response Theory Properties Based on the Graded Responses Model. *Iran J Psychiatry*. 2010;5(4):140–53.
12. Skevington SM, Lotfy M, O’Connell KA, WHOQOL Group. The World Health Organization’s WHOQOL-BREF quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. *Qual Life Res*. 2004 Mar;13(2):299–310.
13. Abbasi-Ghahramanloo A, Soltani-Kermanshahi M, Mansori K, Khazaei-Pool M, Sohrabi M, Baradaran HR, et al. Comparison of SF-36 and WHOQOL-BREF in Measuring Quality of Life in Patients with Type 2 Diabetes. *IJGM* [Internet]. 2020 Aug [cited 2024 Dec 13]; Volume 13:497–506. Available from: <https://www.dovepress.com/comparison-of-sf-36-and-whoqol-bref-in-measuring-quality-of-life-in-pa-peer-reviewed-article-IJGM>
14. Amin MF, Bhowmik B, Rouf R, Khan MI, Tasnim SA, Afsana F, et al. Assessment of quality of life and its determinants in type-2 diabetes patients using the WHOQOL-BREF instrument in Bangladesh. *BMC Endocr Disord* [Internet]. 2022 Dec [cited 2024 Dec 15];22(1):162. Available from: <https://bmcendocrdisord.biomedcentral.com/articles/10.1186/s12902-022-01072-w>
15. Kumar S G, Majumdar A, G P. Quality of Life (QOL) and Its Associated Factors Using WHOQOL-BREF Among Elderly in Urban Puducherry, India. *J Clin Diagn Res*. 2014 Jan;8(1):54–7.
16. Mishra SR, Sharma A, Bhandari PM, Bhochhibhoya S, Thapa K. Depression and Health-Related Quality of Life among Patients with Type 2 Diabetes Mellitus: A Cross-Sectional Study in Nepal. *PLoS One*. 2015;10(11): e0141385.
17. Patil S, Patil Y, Patil SK. Assessment of quality of life in type 2 diabetes mellitus patients using World Health Organization quality of life-BREF questionnaire and appraisal of diabetes scale - a cross-sectional study. *Ital J Med* [Internet]. 2021 Oct 5 [cited 2024 Dec 15];15(3). Available from: <https://www.italjmed.org/index.php/ijm/article/view/itjm.2021.1444>
18. Jose SD, Mishra S, Mini GK. Health-Related Quality of Life and Associated Factors Among Adults with Type-2 Diabetes Mellitus: A Community-Based Cross-Sectional Study in Rural Kerala, India. *Indian J Endocrinol Metab*. 2022;26(6):530–6.
19. Sahoo SS, Sahoo JR, Taywade M, Patro BK. Quality of life and its determinants among

ambulatory diabetic patients attending NCD prevention clinic: A cross sectional study from Eastern India. *Clinical Epidemiology and Global Health* [Internet]. 2023 May [cited 2024 Dec 15]; 21:101275. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S2213398423000623>

How to cite this article: Anu Kuriakose, Anila Paul, Nivedhya P S, Asbi K A, Viswajith E R, Shalini Julie Mathew. Quality of life of individuals with type 2 diabetes mellitus in southern India using WHOQOL-BREF – a cross-sectional study. *Int J Health Sci Res.* 2025; 15(1):1-7. DOI: [10.52403/ijhsr.20250101](https://doi.org/10.52403/ijhsr.20250101)

\*\*\*\*\*