Comprehensive Analysis of Diabetes Profiles and Quality of Life among Urban Elderly: A Cross-Sectional Study in Koraput

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Abstract:

Introduction:

Diabetes, once perceived as a singular ailment, is now acknowledged as a diverse spectrum of diseases marked by persistent hyperglycemia. Rooted in the impaired production or function of insulin, it poses complications spanning cardiovascular, renal, neurological, ocular, and infectious conditions. Quality of life (QOL) is pivotal, reflecting healthcare objectives, with diabetes impacting QOL through various demographic and psychosocial factors. This study explores the diabetes profile and QOL in urban elderly, addressing the observed noncommunicable disease risk factors.

Methodology:

A cross-sectional study in Koraput from March 2022 to January 2023 included 220 individuals aged 60 and above. Prevalence estimates were based on reported data, and a multistage random sampling technique was used. Questionnaires covered biosocial characteristics, family history, diabetes symptoms, investigations, and WHO-QOL BREF scale. Statistical tools analyzed data and drew conclusions through comparative analysis.

Results:

Participants (mean age 64.57 ± 4.42 years) showed 20.45% diabetes prevalence. QOL scores varied across domains, with Psychological (43.45 ± 7.52) highest and Physical (39.56 ± 8.29) lowest. Significant differences occurred in overall, physical, and environmental domains. Relationships between diabetes and sociodemographic variables, family history, alcohol consumption, physical exercise, and family history of diabetes were significant.

Discussion:

Urban diabetes prevalence aligns with comparable studies, emphasizing the evolving understanding of diabetes complexity. QOL dynamics revealed diverse perspectives, notably in the Environmental domain (45.34) and Physical domain (38.10), contrasting with previous studies. These variations underscore the influence of population and setting on QOL domains.

Conclusion:

This study illuminates diabetes complexity and its impact on QOL in the urban elderly. Findings emphasize the need for personalized interventions to address unique challenges. Insights contribute to targeted healthcare strategies for specific subpopulations.

Keywords: Diabetes, Quality of Life, Urban Elderly, Cross-Sectional Study, Sociodemographic Factors

Introduction

Once viewed as a singular ailment, diabetes is now understood as a diverse spectrum of diseases characterized by persistent hyperglycemia, influenced by a range of etiological factors involving both genetic and environmental influences [1]. The impaired production or function of insulin, a hormone governing glucose, fat, and amino acid metabolism, is the root cause of diabetes. Prolonged hyperglycemia is implicated in various complications, including cardiovascular, renal, neurological, ocular, and recurrent infectious conditions [2,3].

Quality of life (QOL) serves as a crucial health metric, reflecting the ultimate objective of all healthcare interventions. It is assessed through evaluations of physical and social functioning, coupled with perceived physical and mental well-being. Individuals with diabetes may experience a lower QOL compared to those without chronic conditions but fare better than counterparts grappling with most other severe chronic ailments [4,5]. Notably, the duration and type of diabetes do not consistently correlate with QOL. Intensive treatment does not compromise QOL, and enhanced glycemic control aligns with an improved QOL. Complications arising from diabetes emerge as the foremost disease-specific determinant of QOL. Various demographic and psychosocial factors influence QOL and necessitate consideration when comparing subgroups [6,7]. Studies on clinical and educational interventions underscore that enhancing a patient's health status and perceived ability to manage their condition leads to an ameliorated QOL [8].

The elderly population exhibits an elevated susceptibility to diabetes, with glucose intolerance being a common occurrence in this demographic. Identifying disease symptoms in older individuals proves challenging, often resulting in undiagnosed diabetes manifesting with severe complications such as neuropathic foot lesions, peripheral neuropathy, vascular disease, nephropathy, and hypertension [9,10]. Overall, the QOL among diabetics is subpar and further compromised in the presence of chronic complications. This study explores the comprehensive diabetes profile and QOL among urban diabetics, prompted by the observed prevalence of noncommunicable disease risk factors in the urban elderly population.

Materials and Methods:

A cross-sectional study was conducted among individuals aged 60 years and above, residing within the municipal boundaries of Koraput, spanning from March 2022 to January 2023. The reported prevalence of diabetes in urban elderly individuals, as per ICMR 2016 India B (covering overall diabetes and prediabetes), was considered at 32%. With a relative margin of error set at 20%, the minimum calculated sample size was determined to be 204 (95% confidence interval). Ethical clearance for the study was obtained from the Ethical Committee of SLN Medical College and Hospital, Koraput, before enrolling a total of 220 subjects.

To achieve the optimal sample size, a multistage random sampling technique was employed. In the initial stage, four urban wards of Koraput were chosen using Simple Random Sampling without replacement. Subsequently, one street from each selected ward was chosen through Simple Random Sampling, and a house-to-house survey was conducted to ensure equal representation for each selected street.

Data was collected through a pre-designed questionnaire consisting of three parts. The first part gathered information on biosocial characteristics, the second part covered family history, diabetes symptoms, and relevant investigations like fasting blood glucose, while the third part utilized the WHO-QOL BREF scale to assess quality of life scores across physical, psychological, social, and environmental domains. The collected data from direct personal interviews were compiled into a master table, and appropriate statistical tools were applied to analyze the data, leading to conclusions drawn through a comparative analysis with previous study results.

Results:

The mean age of the study subjects was 64.57 ± 4.42 years, with 139 (63.18%) males and 36.82% females. Among the participants, 161 (73.18%) identified as Hindus, while 26.82% belonged to other religions. A majority (53.18%) fell under the OBC category, and regarding social class, most subjects (67.27%) were classified under social class II, with the smallest proportion (1.81%) belonging to social class IV based on Modified BG Prasad (AICPI 2019). The majority of participants (90%) lived in joint families.
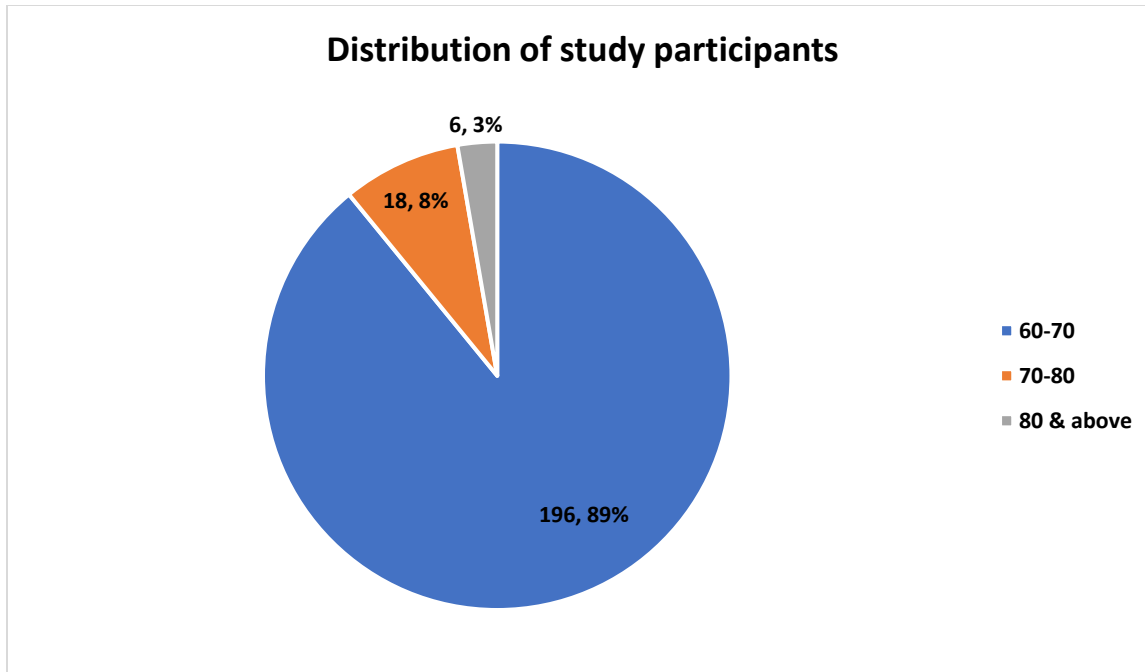
Figure 1 Distribution of Study Subjects according to age

The prevalence of diabetes was determined to be 20.45%. The highest overall score (43.45 ± 7.52) was observed in the Psychological domain, while the lowest was in the Physical domain (39.56 ± 8.29). Significant differences (p-value < 0.05) were found in overall, physical, and environmental domain scores. The relationship between the presence of diabetes and various socioeconomic variables, as well as personal and family history, alcohol consumption, physical exercise, and family history of diabetes, was found to be significant.

Table 1 Quality of Life Scores of study participants

QOL SCORE	MEAN	STANDARD DEVIATION
OVERALL SCORE	39.8	5.44
PHYSICAL DOMAIN	38.76	8.42
PSYCHOLOGICAL DOMAIN	44.45	7.59
SOCIAL DOMAIN	38.89	9.21
ENVIRONMENTAL DOMAIN	38.63	7.42

The assessment of Quality of Life (QOL) among the study participants unveiled a nuanced perspective across multiple domains. The overall QOL score, with a mean of 39.8 and a standard deviation of 5.44, suggested a moderate level of perceived well-being among the participants. Within the Physical domain, the mean score of 38.76, coupled with a standard deviation of 8.42, indicated a notable variability in individual responses regarding physical aspects of QOL. In contrast, the Psychological domain exhibited the highest mean score at 44.45, reflecting a relatively higher level of satisfaction and well-being in psychological aspects among the participants. The Social and Environmental domains recorded mean scores of 38.89 and 38.63, respectively, portraying moderate levels of satisfaction in the social and environmental dimensions of QOL.

Table 2 Correlates of Biosocial and socio-demographic characteristics with Quality of life Scores

S.NO.	Sociodemographic variables		QOL SCORES OF DIABETICS		P value
			MEAN	**S.D**	
1	Gender	Male	41.27	7.39	0.102
		Female	39.05	6.55	
2	Marital Status STATUS	MARRIED	41.4	6.55	0.272
		UNMARRIED/OTHER	39.57	7.21	
3	SOCIOECONOMIC STATUS	I	42.2	6.53	0.718
		II	40.56	6.99	
		III	40.42	5.77	
		IV	0	0	
		V	36.63	7.21	
4	PHYSICAL ACTIVITY	REGULAR	42.21	6.25	0.208
		OCASSIONAL	39.77	7.21	

		NEVER	38.45	5.47	
5	FAMILY H/O	PRESENT	39.28	7.12	
	DIABETES	ABSENT	41.23	5.88	0.326
6	ALCOHOL	YES	36.57	7.27	
		NO	42.52	6.23	0.0007

For gender, males exhibited a mean QOL score of 41.27 (SD 7.39), while females had a mean score of 39.05 (SD 6.55) with a p-value of 0.102. Marital status distinctions revealed that married individuals scored a mean of 41.4 (SD 6.55), whereas unmarried or other status individuals scored a mean of 39.57 (SD 7.21) with a p-value of 0.272. Socioeconomic status delineated categories I, II, III, IV, and V, with mean QOL scores of 42.2 (SD 6.53), 40.56 (SD 6.99), 40.42 (SD 5.77), 0 (SD 0), and 36.63 (SD 7.21), respectively. The corresponding p-value was 0.718. Physical activity levels, categorized as regular, occasional, and never, revealed mean QOL scores of 42.21 (SD 6.25), 39.77 (SD 7.21), and 38.45 (SD 5.47) with a p-value of 0.208. Family history of diabetes exhibited a mean QOL score of 39.28 (SD 7.12) for those with a family history present and 41.23 (SD 5.88) for those with an absent family history, yielding a p-value of 0.326. Notably, alcohol consumption showcased distinctive QOL scores with a mean of 36.57 (SD 7.27) for individuals who consumed alcohol and a mean of 42.52 (SD 6.23) for non-consumers, with a significant p-value of 0.0007.

Discussion

In the current investigation, the prevalence of diabetes in urban areas was determined to be 20.45%. Comparable studies by Jai Prakash Singh et al (2011) in the urban slums of Nagpur among the geriatric population reported an overall prevalence of 17.75%, while Goswami AK. et al (2016), focusing on the urban population aged over 60 years in South Delhi, documented a prevalence of 24.04%. Mohan et al (2007) explored the epidemiology of type 2 diabetes and found a prevalence of 33.6% in the elderly aged 60-69 years. MR Chhetri et al (2009) surveyed Kathmandu, Nepal, revealing an overall prevalence of diabetes of 25.9% in the elderly.[7-10] Meshram et al (2015), in their study on the prevalence and correlates of diabetes in urban India, reported a prevalence of 11.5%. Notably, the prevalence figures in these studies closely align with the findings of the present study.[11,12]

Regarding the Quality of Life (QOL) scores in urban diabetics, our study observed the highest mean score in the Environmental domain (45.34) and the lowest in the Physical domain (38.10). In contrast, a study by Prathay Pratim Dutta et al (2015) in the southern part of West Bengal, focusing on the association of quality of life in urban elderly individuals, reported the maximum QOL score in the Environmental health domain (48.36) and the minimum in the social relationship

domain (39.62).[13-15] Additionally, a study by S.E. Thadatil et al (2015) assessed domain-wise QOL scores in the elderly population using WHO QOL – BREF in the rural area of Kerala. In this study, mean scores of QOL domains were highest in physical health (42.44) and social relationship (42.16), differing from the present study.[16-18] The lowest mean score in that study was noted in the psychological domain (26.95), whereas in our investigation, it was the social domain that recorded the lowest score (39.22). These variations underscore the diverse perspectives on QOL domains in different populations and settings.

Conclusion

In conclusion, this study sheds light on the evolving understanding of diabetes as a complex group of diseases, characterized by diverse etiologies and impacting the quality of life in the urban elderly population. The investigation revealed a prevalence of diabetes in urban areas, aligning with comparable studies. Quality of Life (QOL) scores among urban diabetics displayed nuanced dynamics across sociodemographic variables, emphasizing the intricate relationship between these factors and QOL. The study underscores the need for personalized interventions to address the unique challenges faced by individuals with diabetes in different populations and settings. Overall, these findings contribute valuable insights into diabetes profiles and quality of life, providing a foundation for targeted healthcare strategies within specific subpopulations.

Acknowledgments

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