



Original Research Article

Self-rated Health (SRH) among Elderly Diabetics in an Urban Setting of Assam, India

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ABSTRACT

Introduction: Self-rated health (SRH) is considered as the global indicator of health and quality of life. Diabetes is serious chronic disease and it is emerging as a major public health problem among urban population. We aimed to examine the association between SRH and diabetes among elderly population (≥ 60 yr) in an urban setting of Assam.

Methods: A cross-sectional study was carried out among elderly individuals (≥ 60 yr) in two randomly selected wards of Dibrugarh urban area of Assam. Pre-tested questionnaire was used to collect data on self-rated health (SRH), sociodemographic and other information. Diabetes was defined as per criterion of American Diabetes Association (ADA).

Results: A total of 300 eligible persons (Male-149, Female-151) were recruited into the study. Prevalence of diabetes was found to be 23% (Male-26.2%, Female-19.9%). Higher proportion of diabetic individuals (61%) rated their health as poor as compared to their non-diabetic counterparts (37.7%). Presence of diabetes was found to be significantly associated with poor SRH both in univariate and multivariate logistic regression analysis. Among those with diabetes, sub-groups such as widow/widowers, older individuals, individuals with lower education, and those having higher numbers of morbidities were more likely to report poor SRH.

Conclusions: The findings indicate that diabetes is significant contributor of poor SRH among elderly individuals. The study emphasizes the need for developing urgent strategies for preventing/postponing diabetes in the population in order to improve quality of life at old age.

Key Words: Self-rated Health (SRH), Diabetes, Elderly

INTRODUCTION

The number of people with diabetes in India is increasing due to population growth, aging, urbanization, and increasing prevalence of obesity and physical inactivity. ⁽¹⁾ India is considered as the diabetes capital of the world with 41 million Indians having diabetes, every fifth diabetic

in the world is an Indian. ⁽²⁾ As per an estimate, 79.4 million individuals in India will be afflicted by diabetes mellitus by 2030. ^(1,2) Diabetes is more common in elderly population and is emerging as a major public health problem in India. Diabetes in elderly is associated with substantial morbidity from macro- and

microvascular complications, higher mortality, reduced functional status, and increased risk of institutionalization. (3-5)

Self-rated health is an important and widely used health indicator for measuring global health status in epidemiological and sociological studies. (6,7) It is an easily obtainable, simple, and global way of capturing perception of one's own health and is an indicator of well being and quality of life. (7, 8) In previous studies, presence of different chronic diseases including diabetes have been found to be associated with poor self-rated health in elderly. (9-13) Poor SRH has been found to be an important predictor of increased mortality, poor functioning and major complications in diabetic individuals. (14-17) Therefore evaluating the SRH in elderly diabetic individuals may help in taking measures for ameliorating their health and well-being.

Although, diabetes is a growing problem among elderly in India, little research has been carried out to understand the relationship between diabetes and SRH among elderly in India. The aim of this study is to investigate the association between diabetes and SRH among elderly in an urban setting of Assam, India and also to find out sub-groups of diabetics who are more prone to poor SRH among them.

MATERIALS AND METHODS

A cross sectional community based study was conducted in two randomly selected urban wards of Dibrugarh city, Assam, India during the period 2013-15. All the community dwelling individuals aged ≥ 60 years were eligible to participate in the study. Data were collected from the 300 eligible individuals (men-149 and women-151) who agreed to participate in the study by house to house visit. The Institutional Ethical Committee of Guwahati Medical College, Gauhati provided the ethical approval to carry out the study.

Data on sociodemographic variables, health habits, treatment seeking behaviours (treatment sought, medication held) were collected using a pre-designed and pre-tested questionnaire through face-to-face interview. Data on various illnesses were recorded based on clinical examination as per schedule and the available investigation and treatment records of the participants. Respondents were asked to show all the available medical records as far as possible. A person was considered as diabetic based on criterion of American Diabetes Association (ADA) i.e. fasting blood glucose level ≥ 126 mg/dl after an overnight fasting of at least 8 hours, and/or 2 hr post glucose value ≥ 200 mg/dl. (18) Those who were already under drug treatment for diabetes (i.e. insulin and/or oral hypoglycemic agents) were also considered as diabetics.

Self-rated Health

Self-rated health was used as the dependent variable in this study. After collecting socio-demographic and behavioural data, individuals were asked to rate their present health status. To obtain information on *self-rated health* all the participants were asked the following question-“In general, what do you think about your present health status?” There were five response categories-‘*excellent*’, ‘*very good*’, ‘*good*’, ‘*fair*’ and ‘*poor*’?”. Data on self-assessed health status was obtained before asking health related questions to the individuals because of probable adverse influence on the response. In our analysis, any of the first three responses (i.e. -‘*excellent*’, ‘*very good*’ or ‘*good*’) were considered as good SRH and last two responses (i.e. *fair*’ or ‘*poor*’) were considered as the poor SRH.

Statistical Analysis

All the analysis of data was performed using Statistical Package for Social Sciences (SPSS). Univariate binary logistic regression analysis was performed

to produce crude Odds Ratio (cOR) with 95% CIs to examine the crude association between poor SRH and diabetes. Then, we also performed multivariate logistic regression to calculate adjusted odds ratio (aOR) with corresponding 95% CI for determining independent association between poor SRH and diabetes after adjustment of other explanatory variables

such as age, sex, educational status, marital status, smoking, alcohol use and numbers of chronic morbidities. Chi-square test was also performed to assess the characteristics of diabetic individuals with poor SRH. A p-value less than 0.05 was considered as statistically significant for all the statistical procedures.

Table 1: Distribution of the participants according to some important background characteristics

Characteristics	Male=149 n (%)	Female=151 n (%)	Total (N=300) n (%)
Age (Years):			
60-69	74 (49.7)	105 (69.5)	179 (59.7)
70-79	51 (34.2)	39 (25.8)	90 (30)
80+	24 (16.1)	7 (4.6)	31 (10.3)
Mean age (s.d)	70.45 (7.7)	66.75 (6.4)	68.59 (7.3)
Education:			
Illiterate	3 (2.0)	26 (17.2)	29 (9.7)
Primary	3 (2.0)	5 (3.3)	8 (2.7)
High School	19 (12.8)	55 (36.4)	74 (24.7)
Up to Collage	75 (50.7)	50 (33.1)	125 (41.8)
Graduation Completed	37 (25.0)	11 (7.3)	48 (16.1)
University/professional	11 (7.4)	4 (2.6)	15 (5.0)
Marital Status:			
Married	129 (86.6)	89 (59.9)	218 (72.7)
Widowed/Widower	19 (12.8)	59 (39.1)	78 (26.0)
Divorced/Separated	0 (0.0)	1 (0.7)	1 (0.3)
Unmarried	1 (0.7)	2 (1.3)	3 (1.00)
Smoking:			
Current	24 (16.1)	1 (0.7)	25 (8.3)
Past	24 (16.1)	1 (0.7)	25 (8.3)
Never	101 (67.8)	149 (98.7)	250 (83.3)
Alcohol Use:			
Yes	62 (41.6)	20 (13.2)	82 (27.3)
No	87 (58.4)	131 (86.8)	218 (72.7)
Numbers of morbidities			
<3	60 (40.3)	56 (37.1)	116 (38.7)
3-5	72 (48.3)	73 (48.3)	145 (48.3)
>5	17 (11.4)	22 (14.6)	39 (13)
Self-rated Health (SRH)			
Excellent	1 (0.7)	1 (0.7)	2 (0.7)
Very Good	5 (3.4)	4 (2.6)	9 (3.0)
Good	81 (54.4)	79 (52.3)	160 (53.3)
Fair	52 (34.9)	59 (39.1)	111 (37.0)
Poor	10 (6.7)	8 (5.3)	18 (6.0)
Diabetes			
Yes	39 (26.2)	30 (19.9)	69 (23)
No	110 (73.8)	121 (80.1)	2131 (77)

RESULTS

Table I presents some of the important characteristics of the participants. Out of total 300 elderly participants, 149 were males and 151 females. The overall mean age of participants was 68.59 ± 7.3 with a range from 60 years to 95 years. About 60% of total participants were in the

age group of 60-69 years and 15% were in the age group of 80 years and above. Most of the participants were currently married (72.7%) and 26% were widow/widower. Overall, nearly 10% of them were illiterate and 21.1% of them were graduate/postgraduate/ professionals. Smoking was mainly confined to male individuals.

Alcohol use in last 12 months was reported by about 27% of individuals (Male-41.6%, Female-13.2%). Overall prevalence of diabetes was found to be 23% (Male-26.2%, Female-19.9%). A total of 129 (43%) individuals rated their health as “poor” or “fair” (poor SRH), and 171 (63%) individuals rated their health as “excellent”, “very good” or “good” (good SRH). Table 2 shows that a higher proportion of diabetic individuals (61%) rated their health as “poor” or “fair” (poor SRH) as compared to their non-diabetic counterparts (37.7%).

Table 3 presents the results of logistic regression analysis showing relationship between diabetes and poor SRH. In unadjusted logistic regression analysis, presence of diabetes was found to be significantly associated with poor SRH in elderly individuals (cOR, 2.57, 95% CI: 1.48, 4.47). Those with diabetic were 2.57 times more likely to rate their health as poor compared to non-diabetic individuals. In the

multivariate logistic regression analysis after adjust for age, gender, educational status, marital status, numbers of chronic morbidities, smoking and alcohol use, the association between diabetes and poor SRH remained statistically significant (cOR, 2.59, 95% CI: 1.37, 4.93).

Table 2: Comparison of poor SRH between Diabetics and non-diabetics

Variables	Poor SRH N (%)	p-value
Diabetes*		
Yes (n=69)	42 (60.9)	.001
No (n=231)	87 (37.7)	

*statistically significant (p-value < 0.01)

Table 3: Logistic regression analysis to show the relationship between diabetes and poor SRH

Variables	cOR (95% CI)	aOR (95 CI)**
Diabetes		
Yes	2.57 (1.48, 4.47)*	2.59(1.37, 4.93)*
No	1 (Reference)	1 (Reference)

*statistically significant (p-value < 0.01)

** Adjusted for age, sex, marital status, educational status, numbers of morbidities, smoking and alcohol use

Table 4 Sociodemographic comparison of poor vs good SRH among diabetes (N=69)

Characteristics	Poor SRH (N=41) n (%)	Good SRH (N=24) n (%)	p-value
Age (in years)			
60-69	25 (54.3)	21 (45.7)	0.09
70-79	11 (64.7)	6 (35.3)	
80+	6 (100)	0 (0.0)	
Mean Age (±SD)	69.12 (7.6)	65.29 (5.3)	0.021
Sex			
Male	21 (53.8)	18 (46.2)	0.173
Female	21 (70)	9 (30)	
Educational status			
Illiterate /Primary	10 (99.9)	1 (9.1)	0.047
High School	8 (61.5)	5 (38.5)	
Up to Collage	16 (64)	9 (36)	
Graduation and above	8 (40)	12 (60)	
Marital Status			
Married	27 (54)	23 (46)	0.05
Widowed/Widower	15 (78.9)	4 (21.1)	
Divorced/Separated*	--	--	
Smoking status			
Current	3 (50)	2 (50)	0.818
Past	4 (57.1)	3 (42.9)	
Never	35 (62.59)	21 (37.5)	
Alcohol Use (12 months)			
Yes	8 (40)	12 (60)	0.023
No	34 (69.4)	15 (30.6)	
Numbers of morbidities			
<3	7 (33.3)	14 (66.7)	0.005
3-5	24 (68.6)	11 (31.4)	
>5	11 (84.6)	2 (15.4)	

*Not included in the analysis because of insufficient numbers

A comparative analysis of some of the important background variables according to SRH status (Poor SRH vs good SRH) among diabetics has been presented in the Table 4. The average age of diabetic individuals with poor SRH are significantly higher compared to those diabetics with good SRH (mean age: 69.12 years vs 65.29 years). It is also observed that those who were older in age, those who were lower educated, those who were widow/widowers or had higher numbers of morbidities were more likely to report their health as poor ($p < 0.05$).

DISCUSSION

In this study, the prevalence of diabetes was found to be 23% among the population aged 60 years and above in an urban setting of Assam. The prevalence of diabetes among elderly population in this study is found to be higher in comparison to the prevalence reported in an earlier study among elderly population from the same setting indicating a rising trend of diabetes among the elderly population in this region.⁽¹⁹⁾ The observed prevalence is also found to be higher compared to those reported from rural areas, but more or less similar to those reported from different urban areas in India.⁽¹⁹⁻²⁴⁾

Consistent with the reports of previous studies, the study also shows strong association between diabetes and poor self-rated health in elderly population. Those with diabetic were almost 2.6 times more likely to rate their health as poor compared to those without diabetes.^(9-13,25) The association between diabetes and poor SRH even remained statistically significant after adjustment for other potential confounding variables such as age, sex, educational status, marital status and numbers of chronic morbidities indicating a strong independent relationship. The concurrence between diabetes and poor self-rated health likely reflects the effects of diabetes and its

complications on quality of life⁽²⁵⁾ Various diabetic complications and comorbid chronic conditions are considered as the most important determinant of quality of life among diabetics^(26,27) In this study too, we have found that those diabetics with higher numbers of comorbidities were more likely to report their health as poor. Thus, this finding of this study suggests that presence of other comorbid conditions can exert negative influence on quality of life among elderly diabetics.

In this analysis, we have also observed that some of the demographic sub-groups among diabetics such as lower educated individuals, widow/widowers and older-age were more likely to report their health as poor. There is a significant difference in the SRH status between higher and lower educated elderly individuals in this study. This disparity between higher and lower educated individuals probably reflects differences in their level of health awareness, access/utilization of health services for disease screening and treatment, and many other behavioral and social factors^(19,25) The negative effects of widowhood on psychological well-being and physical health have been well documented^(28,29) But, there is need to carry out more research in Indian settings to understand why widows/widowers with chronic diseases such as diabetes are particularly more vulnerable to poor SRH. The age trend of poor SRH observed in this study indicates that the adverse impact of chronic diseases such as diabetes on SRH may increase with increasing age⁽¹⁹⁾ This result of the study implies that better quality of life at older age may be attained if chronic diseases such as diabetes can be prevented or postponed as long as possible.

In interpreting the findings of the study, limitations of the study should also be kept in mind. The study is a cross sectional one, hence it is difficult to draw a causal inference from a cross-sectional study.

Further, non-inclusion of some the potentially important confounders of self-rated health in the multivariate analysis such as functional status, BMI, psychological factors, social support, duration, treatment and severity of diabetes might have also influenced our estimates in multivariate analysis. Some of the important risk factors have not been found to be associated with poor SRH in this study which may be because of survival bias or smaller sample size. Therefore, it is important to find out the factors that determine the poor SRH among elderly diabetics in subsequent studies with bigger sample size.

CONCLUSION

However despite several limitations of the study, the present population-based study has shown that diabetes is emerging as an important public health problem among urban elderly in this region and the study further shows that presence of diabetes is a significant contributor of poor SRH among elderly population. The findings of the study emphasize the need for developing urgent strategies for preventing/postponing diabetes in the population particularly among the younger cohorts in order to improve quality of life at old age.

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