Prevalence of diabetes among the older adult population in India using LASI data

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Abstract

The complications resulted Diabetes is one of the significant health issues among the older adult population in India. The higher risks of diabetes prevalence among older adult people in the countries were due to social-cultural changes such as growing urbanization, eating changes, lacking physical movement, and changing lifestyles. The present research analyzes the prevalence and related risk factors of diabetes among older adults in India. **Methods:** The initial wave of the Longitudinal Ageing Study (LASI) in India 2017-2018 has been used to achieve the study objectives. A chi square test with multinomial logistic regression models was used to carry out the related risk factors of diabetes prevalence among older adults.

Results: The findings of the study indicate that the overall prevalence of diabetes among the study participants was found to be 12.4%, which was significantly higher in urban areas (19%) compared to rural areas (8%). The socio-economic and demographic factors like educational status, richest family background, marital status, obesity, and family history of diabetes were significantly associated with higher risks of diabetes prevalence among the older adult population in India. The risks of diabetes in the richest adults were significantly higher than in the poorest adults.

Material and Method

The present study data has been used for the Longitudinal Ageing Study in India (LASI), which was conducted in 2017-18 [1]. A total of 72,000 samples of the aged 45 and above were surveyed in India's state and union territories. The survey was done through multistage stratified cluster sampling techniques. Whereas in rural areas data were collected through a three-stage sampling method and in urban areas a four-stage method. In the initial stage, the Primary Sampling Unit (PSU) was selected; after that, villages were selected in rural areas, and wards were selected in urban areas (LASI, 2020). In the third stage, from the rural areas, families were selected in several communities and randomly chosen from the Census Enumeration Block (CEB) from the urban areas, respectively. The households were chosen from each CEB in the residence (LASI, 2020).

Dependent variable A dependent variable utilized for the present study is 'Diabetes' among the aged people 45 years and older. The code is 1 for yes and 0 for no, if respondents are ever diagnosed with diabetes.

Independent variable The effective definitions of this variable contain bio-demographic variables like sex of the respondents (male; female), age (45–54, 55–64, 65–74, and 75+ years), socio-economic variables including place of residence (rural; urban), religion (Hindu; Muslim; Christian and others), caste (SC; ST; OBC and others), marital status (Currently married; Widowed and others), education (no education; primary; secondary and higher secondary), and quintile (poorest; poorer; middle; richer and richest).

Statistical methods: To examine the association between outcome and explanatory variables, a chi-square test was used in the study. The binary logistic regression analyses were used for outcome variables (i.e., diabetes) and explanatory variables (i.e., age, sex, marital status, education, religion, caste, wealth status, working status, alcohol, tobacco, and smoking consumption) with 95% confidence intervals in the study. All the analysis has been done by statistical software STATA version 17.0, respectively.

Results

Table 1: Chi Square Test to show the relationship between diabetes and economic situation

Ever diagnosed diabetes	MPCE quintile					
	Poorest	Poorer	Middle	Richer	Richest	Total
Yes	1,192	1,447	1,716	2,052	2,448	8,855
No	13,183	13,271	13,014	12,825	12,052	64,345
Total	14,375	14,718	14,730	14,877	14,500	73,200

Pearson chi2(4) = 622.0722 Pr = 0.000

In the above table, the probability is less than 0.05 with 95 percent confidence; there is no significant difference between two variables. In the above table, the probability is less than 0.05 with 95 percent confidence. Evidence from the sample shows that there is a significant difference in the prevalence of diabetes among poor individuals. Diabetes is not associated with the poor economic background population. Therefore, the null hypothesis has been rejected.

Table 2: Logistic regression of diabetes prevalence by selected background characteristics in India

Ever diagnosed diabetes	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Marital status	.045	.034	1.31	.189	-.022	.111	
Religion	-.023	.03	-0.78	.435	-.081	.035	
Education	.029	.009	3.35	.001	.012	.046	***
Sex	-.166	.074	-2.24	.025	-.31	-.021	**
MPCE Quintile	.137	.025	5.53	0	.089	.186	***
Alcohol Consumption	-.036	.097	-0.37	.713	-.227	.155	
Tobacco Consumption	.457	.083	5.49	0	.294	.62	***
Smoking Consumption	-.024	.044	-0.56	.577	-.11	.061	
Constant	-2.829	.24	-11.79	0	-3.299	-2.358	***
Mean dependent var		0.150	SD dependent var			0.357	
Pseudo r-squared		0.016	Number of obs.			7716	
Chi-square		105.957	Prob > chi2			0.000	
Akaike crit. (AIC)		6440.838	Bayesian crit. (BIC)			6503.397	

**** p<.01, ** p<.05, * p<.1*

The log likelihood of the model is -3211.4188; this number can be used to help compare nested models. In this case, the overall model is statistically significant because the p-value is less than 0.000 with 95% confidence. Education, economic category, and tobacco consumption have a significant correlation with diabetes prevalence. The coefficient for the variable economic category is 0.137. This means that for a one-unit increase in economy, we expect a 0.137 increase in the log-odds of the dependent variable prevalence of diabetes, holding all other independent variables constant. For every one-unit increase in education score, we expect a 0.029 increase in the prevalence of diabetes. As regards tobacco consumption, for every one unit of tobacco consumption, we expect a 0.457 unit increase in the prevalence of diabetes. In this case also, we are rejecting our null hypothesis.

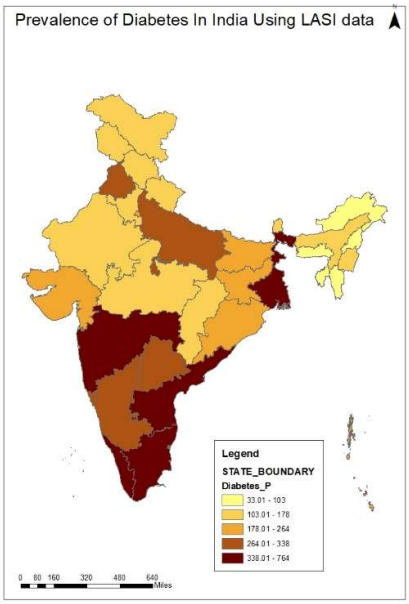

Figure 1: Prevalence of diabetes among the older adult population in India

In case the spatial distribution of ever-diagnosed diabetes is considered, it is observed that southern states of India have higher cases among adults and old people than that of northern states of India. Highest cases found in Tamil Nadu Followed by Kerala.

References:

Longitudinal Ageing Study in India (LASI) Wave 1, Harvard TH. International Institute for Population Sciences (IIPS), Mumbai, India, NPHCE, MoHFW. Chan School of Public Health (HSPH), and the University of Southern California (USC); 2020.