



# Unveiling the Nexus: Polymorbidity and Healthcare Accessibility among Pre-elderly and Elderly Population in India

*Prevalence and Determinants of Polymorbidity using Longitudinal Ageing Study in India: The Relative Risk Ratio Estimates*

Presented by

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# Highlights

- ❑ **Motivation:** An increasing count of individuals suffering from more than one chronic non-communicable disease gives rise to the problem of polymorbidity at the pre-elderly and elderly stage of life. Polymorbidity is the leading cause of morbidity and mortality, particularly in the aging population.
- ❑ **Objective:** To study the pattern, prevalence and determinants of polymorbidity among middle-aged and older adults in India.
- ❑ **Data & Methodology:** The study is based on an analysis of the Indian population aged 45 and older using data extracted from the 2017-18 Longitudinal Aging Study in India (LASI), a cross-sectional population-based data. The analysis uses the multinomial logit model (MNL) with their relative risk ratios (RRR).

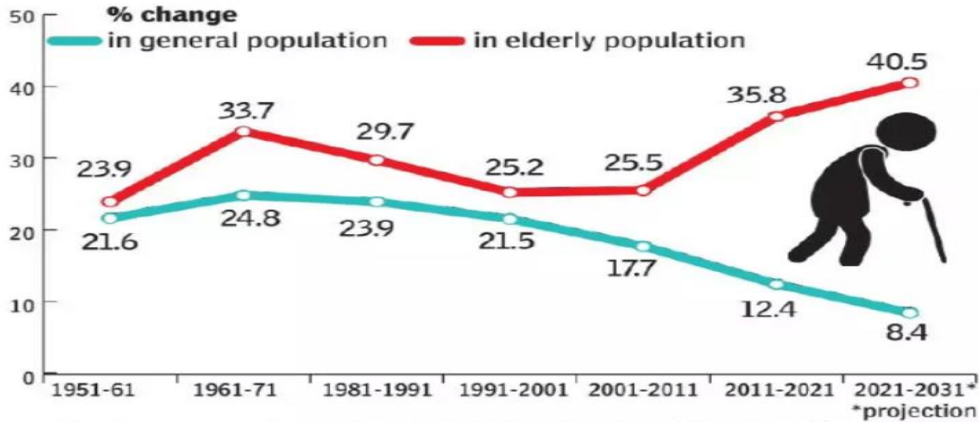
**The Multinomial Logit model takes the form as:-**

$$\text{Polymorbidity}_{ir} = \alpha + \beta_1 \text{age}_i + \beta_2 \ln\_household\_income_i + \beta_3 \ln OOPE_i + \beta_4 \text{gender}_i + \beta_5 \text{marital\_status}_i + \beta_6 \text{residence}_i + \beta_7 \text{education}_i + \beta_8 \text{caste}_i + \beta_9 \text{SDG\_state\_category}_i + \beta_{10} \text{health\_care}_i + \beta_{11} \text{parents\_medical\_care}_i + \beta_{12} \text{BMI}_i + \varepsilon_i$$

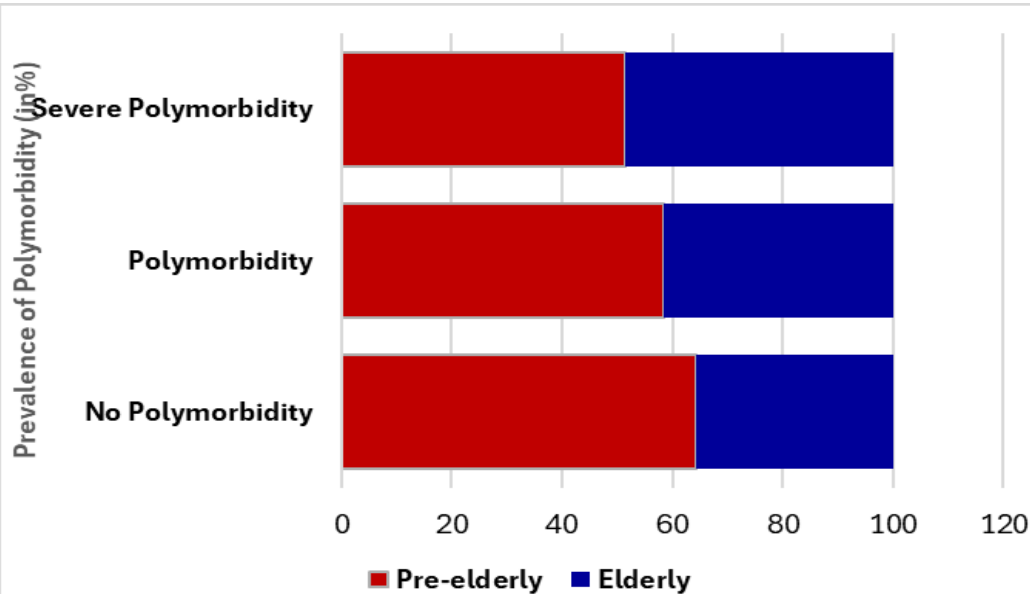
# Findings



## Decadal growth in elderly population compared to that of general population



Population Census Data, Report of the Technical Group on Population Projections November 2019, Population. Projections for India and States 2011-2036, Census of India 2011  
Source: MOSPI



Variable	Model 1 Pre-elderly	Model 2 Pre-elderly	Model 3 Elderly	Model 4 Elderly
<b>Reference Category (No-Polymorbidity)</b>	<b>Polymorbidity</b>	<b>Severe Polymorbidity</b>	<b>Polymorbidity</b>	<b>Severe Polymorbidity</b>
Age	1.00*** (0.00)	1.00*** (0.00)	1.00 (0.00)	1.00 (0.00)
Household Income (log)	0.97** (0.01)	0.98 (0.03)	1.00(0.01)	0.96* (0.01)
Out-of-pocket expenditure (log)	1.02 (0.04)	1.09*** (0.06)	1.00 (0.01)	1.08*** (0.02)
Gender (female@)	1.07 (0.29)	0.72** (4.23)	1.01 (0.13)	1.22 (0.22)
Marital status	0.96 (0.11)	1.33 (0.25)	0.83 (0.09)	0.99 (0.18)
Residence (rural@)	0.89 (0.23)	0.78 (0.24)	0.76** (0.09)	0.81 (0.13)
<b>Education (Primary or less@)</b>				
Middle School completed	0.97 (0.14)	1.53** (0.32)	0.96 (0.22)	0.77 (0.22)
Secondary completed	0.99 (0.15)	2.05*** (0.42)	1.58** (0.32)	1.75** (0.44)
Higher secondary or more completed	0.99 (0.16)	1.20 (0.30)	1.11 (0.22)	1.02 (0.23)
<b>Caste (SCs@)</b>				
STs	1.18 (0.31)	0.99 (0.73)	0.89 (0.22)	0.36** (0.16)
OBCs	1.02 (0.26)	1.02 (0.33)	0.97 (0.16)	1.09 (0.24)
None of them	1.23 (0.28)	0.94 (0.28)	1.10(0.24)	1.15* (0.28)
<b>SDGs State Category (Aspirant@)</b>				
Performer	1.19(0.19)	1.23 (0.30)	1.07 (0.16)	1.68** (0.39)
Front runner	1.47*** (0.21)	1.94*** (0.40)	1.19(0.16)	2.76*** (0.58)
<b>Health Care (Nowhere@)</b>				
Only private	1.74*** (0.21)	2.20*** (0.47)	1.64*** (0.26)	0.99 (0.21)
Only Public	1.44** (0.21)	2.24*** (0.55)	1.83*** (0.34)	1.06 (0.27)
Both private and public	2.10*** (0.36)	3.74*** (0.90)	1.71** (0.41)	1.83*** (0.51)
<b>Parents' Medical History (No medical history@)</b>				
Father	1.14 (0.18)	0.84 (0.22)	1.32 (0.27)	1.24 (0.34)
Mother	1.08 (0.14)	1.06 (0.22)	1.50* (0.32)	1.90** (0.49)
Both	1.68*** (0.24)	2.02*** (0.41)	1.30 (0.30)	1.96** (0.53)
<b>Body Mass Index (Underweight@)</b>				
Healthy	1.35 (0.28)	2.53** (1.03)	1.23 (0.23)	2.14*** (0.61)
Overweight	1.61** (0.38)	4.30*** (1.64)	1.92*** (0.38)	4.33*** (1.35)
Obesity	2.51*** (0.50)	6.31*** (2.33)	1.88** (0.63)	5.20*** (1.96)
Constant	0.07*** (0.03)	0.00*** (0.00)	0.21*** (0.09)	0.02*** (0.01)
Pseudo-R <sup>2</sup>	0.05	0.05	0.06	0.06

Source: Authors' calculation using LASI data

Notes: @ Reference category. Figures in parentheses are standard errors. Abbreviations: NCDs: Non-Communicable Diseases; LASI: Longitudinal Ageing Study in India; SDGs: Sustainable Development Goals; SCs: Scheduled Castes; STs: Scheduled Tribes; OBCs: Other Backward Classes. \*p < .01, \*\*p < .05, \*\*\*p < .10

# Key takeaways

- ❑ The study revealed that individuals accessing private and public health service centers, having parents with a medical history of NCDs, or respondents residing in leading states are most susceptible to polymorbidity.
- ❑ More years of schooling made people more likely to suffer from polymorbidity, authenticating that the Education System direly needs to implement strategies that directly impact health information-seeking behavior at an early age.
- ❑ Overweight and obese people are more likely to have severe polymorbidity than underweight or healthy people at any age.
- ❑ The risk of polymorbidity is twice as high for individuals who visit both public and private healthcare services or centers as for those who do not consult anywhere.
- ❑ The residents of performer and front-runner states (SDGs categorization) have an increased chance of being polymorbid than residents of aspirant states.
- ❑ Importance of practicing appropriate health-seeking and appropriate preventive health behavior from the beginning of the pre-elderly stage of life.
- ❑ To promote prevention among older adults, age-friendly healthcare initiatives must focus on training and equipping professionals like psychologists, physiotherapists, and care workers.

**Thank you**

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