

CEPAR INTERNATIONAL CONFERENCE

Population Ageing: Causes, Consequences and Responses

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**CHILDHOOD SOCIO-ECONOMIC AND BEHAVIOURAL IMPACTS ON
MULTIMORBIDITY AMONG OLDER ADULTS IN INDIA: A LIFE-COURSE
PERSPECTIVE**

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Introduction

- What is life course perspective approach in epidemiology?
- Two general theoretical perspectives have been developed to describe the pathways through which health unfolds over the life course:

Direct



The critical period approach (Kuh and Ben-Schlomo, 1997)



Examples of critical period effects:
Barker hypothesis(Barker,1994) &
Biological Embedding(Hertzman, 1999)

Indirect



Cumulative Insult Model (Kuh & Ben-Shlomo, 1997).

Indicators used for lifecourse studies

- **Lifecourse financial/economic conditions** (parental occupation, parental educational attainment, home ownership and housing characteristics)
- **Childhood health status**
- **Childhood behavioral factors** (smoking, alcohol, dietary patterns)

- Substantial literature documents the positive association between poor childhood SES or poor childhood health and adult health.

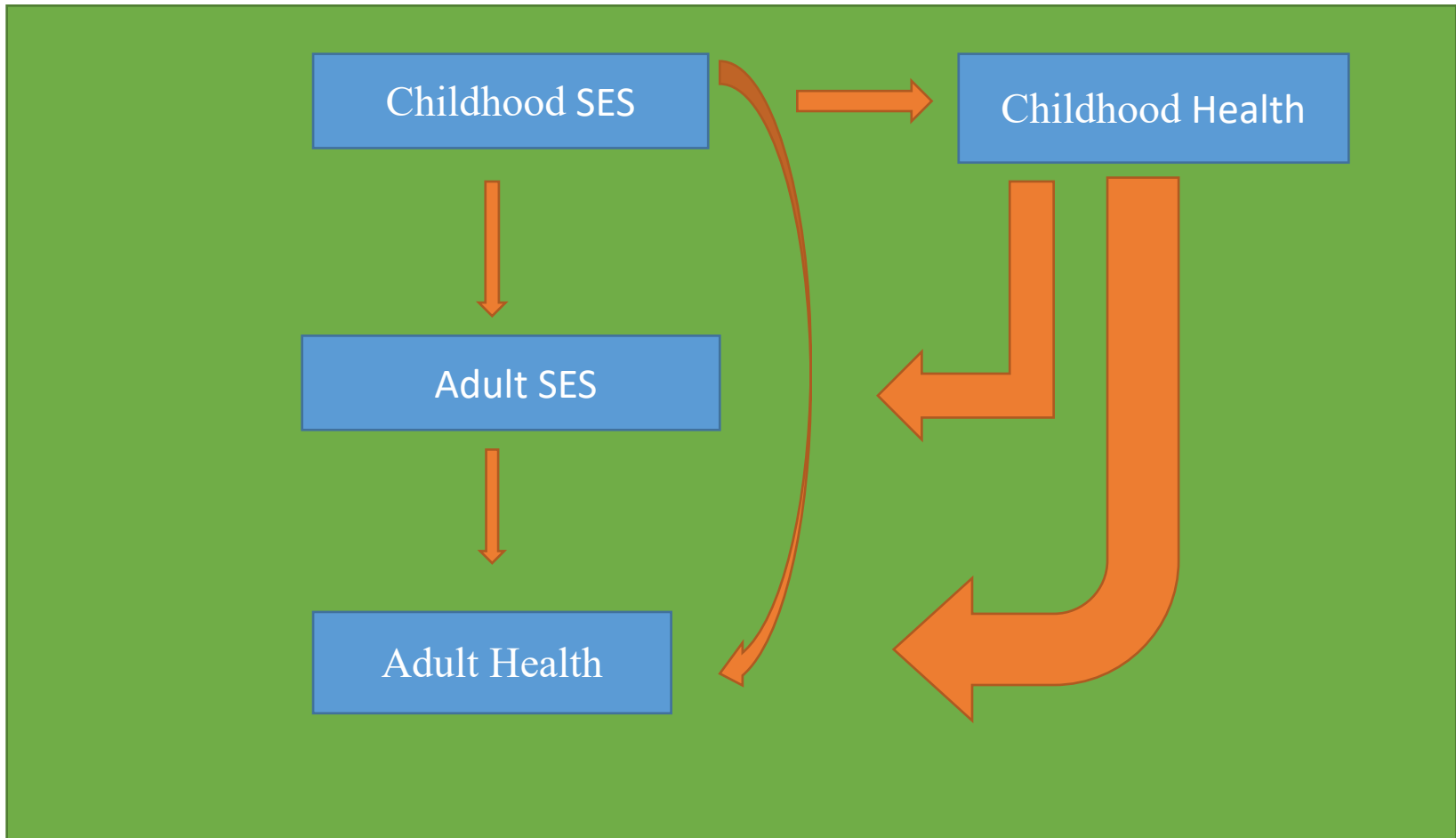
- Most studies are from high-income countries (Adler and Ostrove 1999; Brummett et al. 2011).

- However, effects of poor childhood circumstances can be compensated by creating favourable conditions in adulthood (Ben-Shlomo & Kuh, 2002; Graham, 2002; Luo & Waite, 2005).

Need for the study

- As per the census of India, 2011, older adults accounted for 8.6% of the overall population.
- Between 2011 and 2050, the number of older people in age 60+ will raise from 104 million to 340 million in India (UN Population Projection).
- Along with demographic transition, there is a shift in the disease burden of adults from communicable to non-communicable diseases (Arokiasamy, 2018).
- In India, more than half of the burden of non-communicable disease (NCD) and 25% of total disease burden occur in the 45+ age group (Chatterji et al., 2008).
- Considering both childhood and adult socio-economic conditions is more appropriate (Hayward & Gorman, 2004).
- Therefore, exploring the influencing factors of the health status of the older adults is important for policy formulation.
- One of the few studies in India to examine the influence of childhood conditions on health at older ages.

Conceptual Framework of the study



Objective of the study

To examine the association of NCD multi-morbidity among older adults in India aged 45 years and more with:

- Childhood SES,
- Behavioural risk factors
- Family history and
- And to assess whether it is independent of current socio-economic factors

Data sources and Methodology

Data Source

- Longitudinal Ageing Study of India (LASI), Wave 1 (2017-2018)
- First nationally representative longitudinal survey on older population.
- Harmonized with the health and retirement studies that are on-going in 46 other countries which facilitate cross-country and cross-state comparisons such as **HRA, SHARE, ELSA, CHARLS, KLoSA, JSTAR, MARS, TILDA etc.**
- Multistage stratified area probability cluster sampling was adopted.
- All the states of India and 6 Union Territories were selected except Sikkim.
- All individuals, married or unmarried who were 45 years and older including spouses regardless of any age and residing in the same household.

- Sample size was 72 250 individuals aged 45 and older and their spouses less than 45 years.
- including over 31 000 elderly aged 60 and above;
- follow-up waves are planned every 2–3 years for the next 25 years.

The total sample size for this study was 65,562 among older adults aged 45 years and older.

Methodology

- Bivariate analysis has been applied.
- Two multinomial logistic regression:
 - Unadjusted with current socio-economic conditions and
 - Adjusted with current demographic and socio-economic conditions such as sex, age, place of residence, educational level, caste, religion, marital status, living arrangements, wealth quintile

Data sources and Methodology (Cont...)

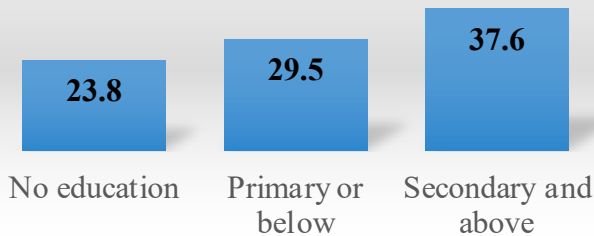
Dependent variable:

- The question asked for each of the illnesses was, "Has any health professional ever told you that you have a (particular) disease?" and each response was coded as yes and no.
- A score was calculated from the 13 morbidities reported by the participants.
- The main outcome variable i.e. multi-morbidity was created as a categorical variable:
 - **0:** indicates respondents with no disease;
 - **1:** indicates respondents with one non-communicable diseases;
 - **2:** indicates respondents with more than one non-communicable diseases.

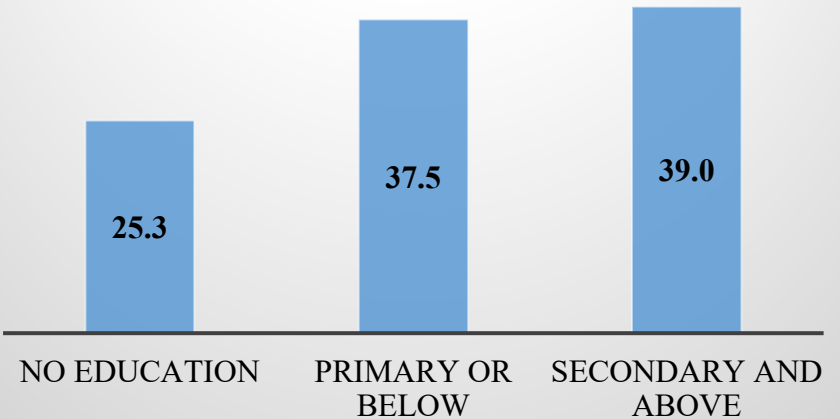
Results and Findings

Prevalence of Multimorbidity

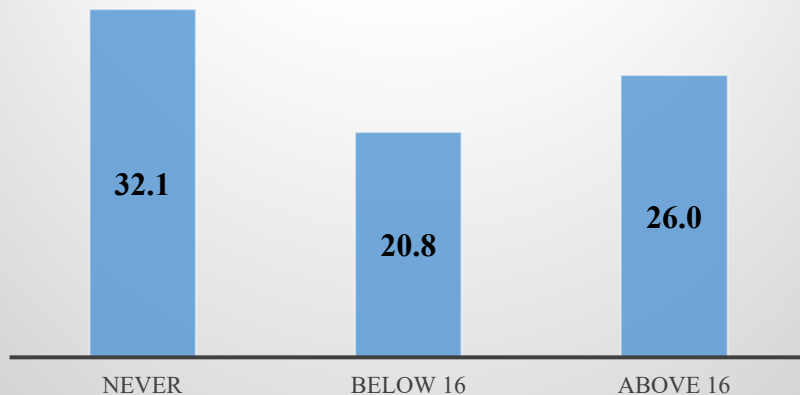
Father's educational level



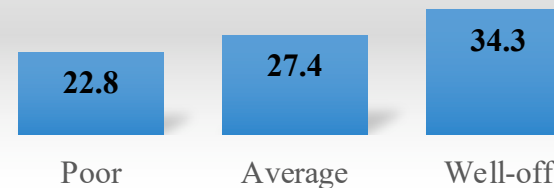
Mothers's educational level



Age at work



Childhood financial status

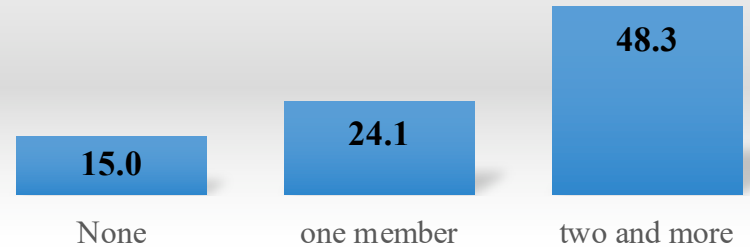


Prevalence of Multimorbidity (Cont...)

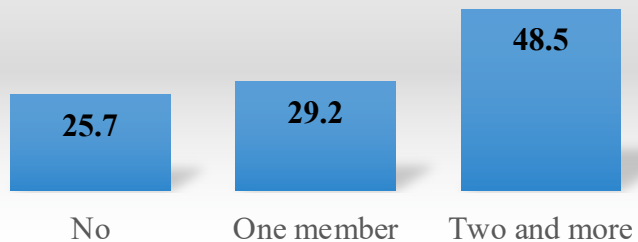
Childhood self-rated health



Family history(chronic diseases)

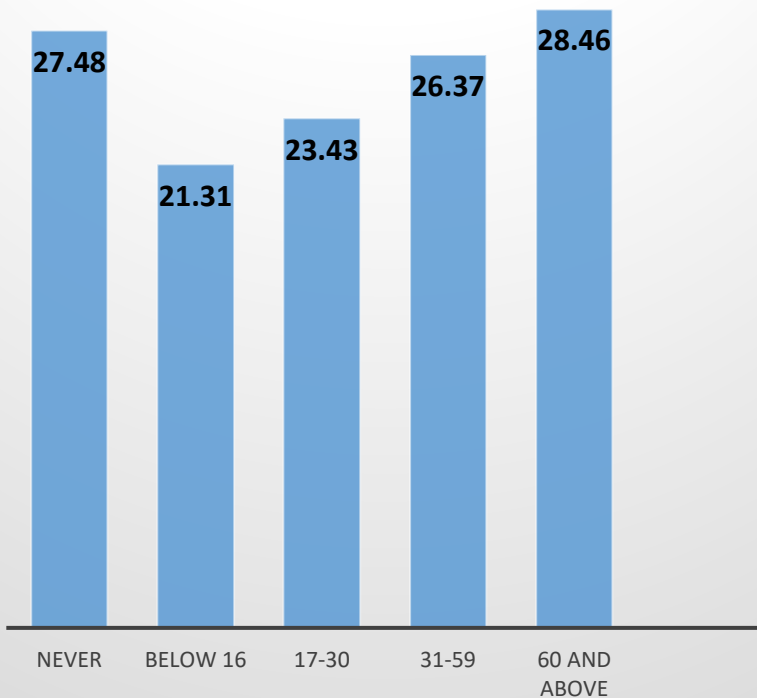


Family history(birth defects and others)

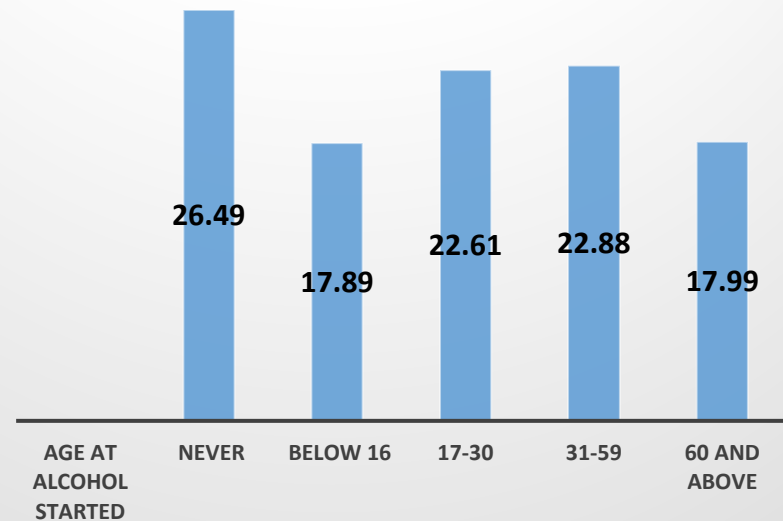


Prevalence of Multimorbidity (Cont...)

Prevalence of multimorbidity for age at start of smoking



Age at which alcohol consumption started



Results: Relative Risk Ratio for various life course factors and multimorbidity

Risk Ratio: Background characteristics

	Model 1 No morbidity(base outcome)				Model 2 No morbidity(base outcome)			
Independent variables	One morbidity		Multimorbidity		One morbidity		Multimorbidity	
	RRR	[95% CI]	RRR	[95% CI]	RRR	[95% CI]	RRR	[95% CI]
Father's education								
No education								
Primary or below	1.18***	1.12-1.25	1.38 ***	1.30-1.45	1.15***	1.09-1.21	1.28***	1.21-1.35
Secondary and above	1.13***	1.03-1.23	1.43 ***	1.31-1.56	1.08 *	0.98-1.19	1.24***	1.13-1.37
Mother's education								
No education								
Primary or below	1.03	0.95-1.12	1.15***	1.06-1.24	1.03	0.95-1.12	1.10***	1.01-1.19
Secondary and above	1.19	0.98-1.45	1.13*	0.94-1.37	1.18	0.96-1.44	1.05	0.86-1.28
Worked during childhood								
Never								
Below age 16	0.76***	0.73-0.80	0.58***	0.54 -0.61	0.90 ***	0.95-1.12	0.78***	0.07-1.88
Above age 16	0.81***	0.77-0.85	0.69***	0.67-0.73	0.93***	0.96-1.44	0.82***	0.08-1.92
Childhood financial condition								
Poor								
Average	0.93***	0.89-0.96	1.02	1.01 -1.11	0.91***	0.87-0.94	0.92***	0.88-0.97
Well-off	1.09 ***	1.01-1.17	1.37 ***	1.29 -1.53	1.00	0.93-1.09	1.10***	1.02-1.20

Risk Ratio: Health related variables

Independent variables	Model 1 No morbidity(base outcome)				Model 2 No morbidity(base outcome)			
	One morbidity		Multimorbidity		One morbidity		Multimorbidity	
	RRR	[95% CI]	RRR	[95% CI]	RRR	[95% CI]	RRR	[95% CI]
Childhood self-rated health								
Poor								
Fair	0.71***	0.60 -0.83	0.65***	0.55-0.77	0.72***	0.61-0.85	0.64***	0.56-0.79
Good	0.68***	0.58 -0.81	0.61***	0.52-0.71	0.69***	0.59-0.81	0.60***	0.51-0.70
Family medical history(chronic diseases)								
None								
One member	1.08	0.77-1.52	1.44**	0.99-2.12	1.16	0.82-1.63	1.61***	1.25-1.61
More than one member	1.70***	1.20-2.39	3.85***	2.61-5.67	1.81***	1.28-2.55	4.09***	2.74-6.09
Family history(birth defects or congenital disorders)								
None								
One member	1.38***	1.22-1.55	1.46***	1.29-1.64	1.35***	1.20-1.52	1.42***	1.25-1.61
More than one member	1.05	0.75-1.47	1.67***	1.23-2.27	1.09	0.78-1.53	1.77***	1.28-2.45

Risk Ratio: Behavioural risk factors

	Model 1 No morbidity(base outcome)				Model 2 No morbidity(base outcome)			
	One morbidity		Multimorbidity		One morbidity		Multimorbidity	
Independent variables	RRR	[95% CI]	RRR	[95% CI]	RRR	[95% CI]	RRR	[95% CI]
Age at consumption of alcohol								
Never								
Below 16	0.68***	0.59-0.79	0.72***	0.62-0.84	0.86**	0.74-0.99	1.04	0.89-1.23
17-30	0.87***	0.81-0.92	0.81***	0.75-0.87	1.05*	0.98-1.27	1.09**	1.01-1.17
31-59	0.91*	0.80-1.03	0.93	0.82-1.07	1.04	0.92-1.18	1.15**	1.00-1.32
60 and above	0.87	0.48-1.55	0.71	0.36-1.41	0.83	0.46-1.49	0.64	0.32-1.27
Age at smoking								
Never								
Below 16	1.04*	0.97-1.12	0.96	0.88-1.04	1.10***	1.02-1.19	1.05*	0.97 -1.15
17-30	1.05**	0.99-1.10	0.93 **	0.89-0.99	1.12***	1.06-1.19	1.04*	0.98-1.11
31-59	1.06*	0.97-1.17	0.99	0.89-1.09	1.07*	0.97-1.18	1.02	0.92-1.13
60 and above	1.44**	1.07-1.94	1.45**	1.06-1.98	1.20	0.89-1.62	1.05	0.76-1.45

Summary

- Childhood socio-economic conditions have both independent and adjusted effects on adult health.
- Positive association between poor childhood health and multimorbidity at older ages.
- Family history of chronic diseases and birth and congenital disorders had a positive association with multimorbidity at older ages.
- Age at smoking and alcohol consumption were significant risk factors to an extent.

Summary (Cont...)

- However, contrasting to studies of high income countries, this study found that higher childhood SES conditions had a higher prevalence of multimorbidity.
- Burden of self-reported chronic diseases is much higher among the educated and non-poor groups in India as education and financial ability leads to better awareness and capacity to afford health care (Mukesor et al., 2018).
- Also, the numbers of outpatient visits were found to be higher among the educated people in a study on multimorbidity in India (Pati et al., 2020).

Conclusion

- Interventions should target specific socio-economic pathways to reduce the burden of multimorbidity.
- The health care policies targeted for children such as maternal and child health program should be designed in such a way that can have considerable, long term benefits in adulthood also.
- The results highlight for the need of an integrated health care policy over the entire life course rather than on focusing on health of specific age-groups.

Thank You!