

Association between Elderly Living Arrangement and Self-Assessed Health in India

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Abstract

Self-rated health (SRH) is a subjective evaluation of one's health status and is linked to decreased physical activity and a higher risk of chronic diseases in the elderly. The living arrangements of older adults exert a profound impact on both their mental and physical well-being. This study investigates the impact of living arrangements and other socio-demographic factors on the self-rated health of older adults in India. Data from the Longitudinal Ageing Study in India (LASI) 2017-18, involving 29,873 participants aged 60 and above, were analysed. This study employed bivariate analyses to delineate prevalence rates and establish associations between self-assessed health (dependent variable) and various confounding categorical factors. Binary logistic regression was used to examine the impact of living arrangements and other factors on self-rated health. Findings indicate that 27% of older adults living alone reported good SRH, whereas 73% reported poor health. The regression analysis showed a significant correlation between living arrangements and SRH, with those living with spouses less likely to report poor SRH (OR, 0.76; 95% CI, 0.67, 0.85). The study also identified a strong link between living alone after 70 and worse health outcomes. Other factors affecting SRH included age, education, wealth, chronic diseases, ADL, IADL, and experiences of mistreatment. The observed escalation in the trend of older adults living alone in India necessitates attention. Consequently, the findings from this analysis underscore the urgency for government intervention and policy formulation aimed at providing adequate health services and holistic support for the well-being of the elderly, particularly those living independently.

Keywords: Older adults; self-assessed health; living alone; health; living arrangement.

Introduction

India has seen a steady increase in the proportion of aged population in the last two decades. This shift in the demographic behaviour is the output of the decline in fertility and mortality rates. With utilization of improved health services and access to adequate level of basic amenities the longevity of Indian older adults have improved. However, older adults' health status is still not favourable. Older adults are at a high risk of experiencing health decline, whether functionally or cognitively, with a resulting substantial burden not only on elderly people themselves but also on their families and society (Zhou et al., 2018).

The Sustainable Development Goals for 2030 also aim to ensure healthy living and promote well-being for people of all ages, including the elderly. These goals advocate for the empowerment and inclusion of everyone, regardless of age, in social, economic, and political spheres (Cox C & Cox B., 2019). Therefore, efforts have been made to improve the health of older adults. Assessing an individual's subjective health can play a critical role in understanding healthy ageing of older persons in developing countries like India. Self-rated health (SRH or "self-perceived health") has become one of the most frequently utilised health measurements in social science research and it is considered to represent a

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global perception of one's current state of health, which is not necessarily identical with objective health status (Huohvanainen et al., 2016; Baidin et al., 2021).

Self-assessed health is a subjective evaluation of an individual's health condition and has been extensively documented as a significant predictor of decline in physical activity and chronic disease in older populations (Pijls et al., 1993; Idler et al., 2000; Lee., 2000; Heistaro et al., 2001; Sun et al., 2007). There are some studies that have shown self-rated health is a very impactful predictor of the health care utilization and expenditure on health care/services (Connelly et al., 1989; Long and Marshall, 1999; Ellis et al., 2013). Both developed and developing countries are using self-rated health as a tool to monitor the non-communicable disease in aged population. Country like India where nearly 17% of the world population are living, self-rated health can play a critical role to monitor health status of the individuals.

SRH is a multidimensional variable that covers multiple aspects of the relationship between physical health and socio-demographic and socioeconomic characteristics. Numerous studies have demonstrated that both community and individual factors, as well as undiagnosed diseases, influence self-rated health in the elderly population. A cross sectional study in Greece (Darviri et al., 2012) revealed that gender, older age, lower level of education and impaired health were all associated with poor SRH, accounting for 16.6% of SRH variance. Kumar & Pradhan, (2019) found that SRH is significantly determined by the socio-economic (education, religion, occupation, marital status) and demographic characteristics (age prevalence of the chronic diseases). Şenol et al. (2010) revealed in their

study that living with the large family, chronic disease and living single were factors affecting SRH. Rezaei et al. (2020) estimate concentration (C) index and C curve to determine the socioeconomic-related inequality in poor self-rated health, found that poor SRH was concentrated in the poor household and also with having a chronic health condition and smoking. One study from the India (Arokiasamy et al., 2015) used pilot survey data of LASI (2010) and found a strong relationship between SRH and prevalence of multi-morbidity, although wealth status and social groups did not show a clear relationship with SRH but higher level of education was negatively associated with self-perceived health status.

The role of household structure in old-age support has been emphasised by a rich history of gerontology. India traditionally cherishes a strong familial obligation rooted in intergenerational co-residence. Older adults in extended family settings enjoyed significant health advantage through lower likelihood of illness but no clear gains in terms of treatment seeking behaviour. A study in India (Srivastava et al., 2020) has revealed significant association between SRH and living arrangement among older adults. However with urbanization and out-migration there has been a change in the Indian familial system which raises critical questions about the caregiving framework of older adults. As evidences has shown burden of infections and non-communicable diseases are shifting towards older adults with increasing population of elderly in total population in India. Apparently monitoring of elderly health status is poor in the India, so there is need to study each aspects of elderly health and SRH covers maximum causes of health status. Hence, this study investigates the correlation between the living arrangements of elderly individuals

and their self-assessed health, while considering various socio-demographic factors, within the context of India

Materials and Methods

Data for this study was utilized from the recent release of Longitudinal Ageing Study in India (LASI) wave 1. LASI is a full-scale national survey of scientific investigation of the health, economic, and social determinants and consequences of population ageing in India, conducted in 2017–18. The LASI is a nationally representative survey of over 72000 older adults aged 45 and above across all states and union territories of India. The main objective of the survey is to study the health status and the social and economic well-being of older adults in India. LASI adopted a multistage stratified area probability cluster sampling design to arrive at the eventual units of observation: older adults age 45 and above and their spouses irrespective of age. The survey adopted a three-stage sampling design in rural areas and a four-stage sampling design in urban areas. In each state/union territory (UT), the first stage involved the selection of Primary Sampling Units (PSUs), that is, sub-districts (Tehsils/Talukas), and the second stage involved the selection of villages in rural areas and wards in urban areas in the selected PSUs. In rural areas, households were selected from selected villages in the third stage. However, sampling in urban areas involved an additional stage. Specifically, in the third stage, one Census Enumeration Block (CEB) was randomly selected in each urban area. In the fourth stage, households were selected from this CEB. The detailed methodology, with the complete information on the survey design and data collection, was published in the survey report (IIPS & NPHCE et al., 2020). The present study is conducted on the

eligible respondent's aged 60 years and above. The total sample size for the present study is 29873 older adults aged 60 years and above.

Dependent Variable

The Longitudinal Ageing Study in India (LASI) provides subjective information of the older adult for India. Questions were asked to respondent about self-assessed health, which is a subjective assessment of health status. Likert scale is used to record respondent responses for assessment of general health, it was like very good, good, fair, poor and very poor. This study recoded these information into two category good ('very good' and 'good'), and poor ('fair', 'poor' and 'very poor').

Independent Variable

The key illustrative variable for exploring the determinants of general health among the older adult is the living arrangement of the elderly people. The other explanatory variable are follows: current age of the respondent, religion, caste, place of residence, level of schooling, MPCE quintile, depression, prevalence of chronic disease (hypertension, diabetes, cancer, chronic lung disease, chronic heart diseases, stroke, arthritis or rheumatism, osteoporosis or other bone/joint diseases, any neurological, or psychiatric problems and high cholesterol), activity of daily living (ADL includes dressing, putting on chappals or shoes, walking across a room, bathing, eating difficulties, getting in or out of bed and toilet use (any one or more)) and instrumental activity of daily living (IADL includes preparing a hot meal, shopping for groceries, making telephone calls, taking medications, doing work around the house or garden, managing money (paying bills and keeping track of expenses) and getting

around or finding address in unfamiliar place).

Statistical Method

The present study used bivariate analyses to show prevalence and measure relationship between self-assessed health (dependent) and confounding categorical variables. The outcome variable is a binary variable; so, this study performed multivariate logistic regression to estimate the factors associated with poor self-assessed health.

Result

Older adults who are living with their spouses 37.32% have good SRH, and 63% have a poor self-rated health (Figure 1). Those who are living alone, 27% of them reported good SRH, while 73% of them reported a poor SRH. Table 1 reports the self-assessed health of the older adults based on their background characteristics. Older adults above 70 years reported that 27% have a good SRH, while 73% have a poor self-assessed health. Older adults living in the urban areas reported that 36% have a good, while 64% have a poor self-assessed health. Among older adults who have no schooling 31% reported a good, and 69% poor self-assessed health. Older adults living in poor households 32% reported a good and 68% a poor self-assessed health. Older adults who

are suffering from the chronic disease 25% have a good and 75% have a poor self-assessed health. Among the older adults suffering from depression 16%, and 84% reported good and poor self-assessed health respectively. Those who have no ability to perform ADL, 18% have a good and 82% have a poor self-rated health. Similarly, those who have no ability to perform IADL, 23% reported a good and 77% a poor self-rated health. Among those older adults who experienced ill-treatment 23% had a good and 77% a poor self-assessed health.

Multivariate binary logistic regression shows association between self-rated health and confounding factors in table 2. Older adults who were living with their spouses were 0.76 likely to report poor (OR, 0.76; 95% CI, 0.67, 0.85) self-assessed health as compared with older adults who are living alone. Similarly, older adults who were living with their children were 0.84 less likely to report poor (OR, 0.84; 95% CI, 0.74, 0.96) self-assessed health as compared with those who are living alone. Odds ratios for reporting poor (OR, 1.33; 95% CI, 1.25, 1.41) and self-rated health was 33% higher in older adults 70 years and above than those in the age group of 60-65 years.

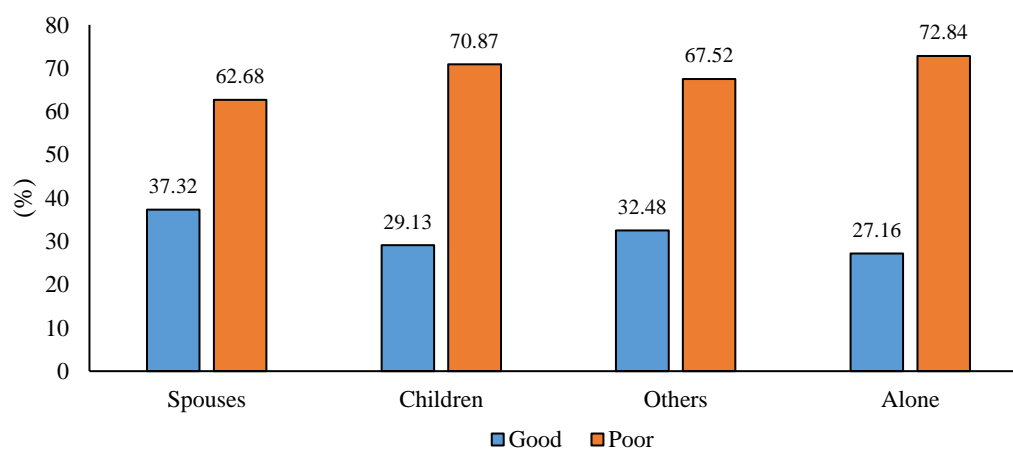


Figure 1 Self Assessed Health in Older Adults in India, 2016-19

Table 1 Result of Bivariate association for Self-rated health

Covariates	Good (%)	Poor (%)	Number	Chi ² (p-value)
<i>Living Arrangement</i>				
Spouses	37.32	62.68	12950	184.94(p<0.001)
Children	29.13	70.87	7938	
Others	32.48	67.52	7413	
Alone	27.16	72.84	1572	
<i>Age</i>				
60-65 Years	38.26	61.74	12789	317.71(p<0.001)
66-70Years	33.43	66.57	7557	
70 And Above	26.88	73.12	9527	
<i>Religion</i>				
Others	30.84	69.16	1469	169.28(p<0.001)
Christian	43.84	56.16	2995	
Muslim	30.66	69.34	3506	
Hindu	32.59	67.41	21903	
<i>Caste</i>				
Others	33.36	66.64	7755	58.97(p<0.001)
OBC	31.07	68.93	11320	
SC/ST	36.05	63.95	9804	
Missing	34.41	65.59	994	
<i>Place of Residence</i>				
Urban	35.54	64.46	10055	31.09(p<0.001)
Rural	32.32	67.68	19818	
<i>Level of Education</i>				
Secondary School	41.81	58.19	4549	205.74(p<0.001)
Middle Completed	35.25	64.75	2142	
Primary Completed	34.48	65.52	3590	
Less Than Primary	33.02	66.98	3598	
No Schooling	30.62	69.38	15994	
<i>MPCE Quintile</i>				
Richer	33.65	66.35	11516	18.86(p<0.001)
Middle	35.37	64.63	6095	
Poor	32.21	67.79	12262	
<i>Chronic Disease</i>				
No	42.97	57.03	13732	1600(p<0.001)
Yes	25.27	74.73	16141	
<i>Depression</i>				
No	34.66	65.34	27866	293.27(p<0.001)
Yes	15.99	84.01	2007	
<i>Activities of Daily Living (ADL)</i>				
No	37.48	62.52	23765	864.24(p<0.001)
Yes	17.58	82.42	6108	
<i>Instrumental Activities of Daily Living (IADL)</i>				
No	41.72	58.28	16880	1800(p<0.001)
Yes	22.61	77.39	12993	
<i>Ill treated</i>				
No	33.87	66.13	28613	64.84(p<0.001)
Yes	22.94	77.06	1260	
Total	33.41	66.59	29873	

Older adults of rural areas were 21% more likely to report poor (OR, 1.21; 95% CI, 1.13, 1.27) self-rated health as compare with older adult of urban areas. Those without schooling were 38% more likely to report poor (OR, 1.38; 95% CI, 1.27, 1.51) self-rate health as compared with older adults who had secondary and above schooling. Older

adults from the poor household were 16% more likely to report poor (OR, 1.16; 95% CI, 1.09, 1.23) self-rated health as compared with those from the richer household. Older adults who have chronic diseases were more likely to report poor (OR, 2.18; 95% CI, 2.07, 2.31) self-rated health as compared with older adults who were not suffering from

any chronic diseases. Older adults with depression were more likely to report poor (OR, 2.02; 95% CI, 1.78, 2.30) self-rated health as compared with reference individuals. Older adults who have no ability to perform activity of daily living were 76% more likely to have poor (OR, 1.76; 95% CI, 1.63, 1.91) self-rated health as compare with those who have no such difficulty. Older adults who

have no ability to perform activity of daily living without any instrumental help were 67% more likely to have poor (OR, 1.67; 95% CI, 1.57, 1.77) self-rate health as compare with those who have no IADL. Older adults who have experienced ill treatment were more 27% more likely to poor (OR, 1.27; 95% CI, 1.11, 1.46) self-rated health as compare with reference group.

Table 2 Result of Multivariate Logistic Regression for Self-rated health

Covariates	(OR)	(95% C.I)
<i>Living Arrangement</i>		
Alone		
Spouses	0.76***	0.67, 0.85
Children	0.84***	0.74, 0.96
Others	0.87***	0.77, 0.97
<i>Age</i>		
60-65 Years		
66-70Years	1.12**	1.05, 1.19
70 And Above	1.33***	1.25, 1.41
<i>Religion</i>		
Others		
Christian	0.64***	0.5, 0.74
Muslim	0.93	0.81, 1.07
Hindu	0.89**	0.79, 1.01
<i>Caste</i>		
Others		
OBC	1.04	0.97, 1.11
SC/ST	0.96	0.89, 1.03
Missing	0.90	0.77, 1.04
<i>Place of Residence</i>		
Urban		
Rural	1.21***	1.13, 1.27
<i>Level of Education</i>		
Secondary School		
Middle Completed	1.35***	1.21, 1.51
Primary Completed	1.28***	1.16, 1.41
Less Than Primary	1.29***	1.17, 1.43
No Schooling	1.38***	1.27, 1.51
<i>MPCE Quintile</i>		
Richer		
Middle	0.96	0.91, 1.03
Poor	1.16***	1.09, 1.23
<i>Chronic Disease</i>		
No		
Yes	2.18***	2.07, 2.31
<i>Depression</i>		
No		
Yes	2.02***	1.78, 2.30
<i>Activities of Daily Living (ADL)</i>		
No		
Yes	1.76***	1.63, 1.91
<i>Instrumental Activities of Daily Living (IADL)</i>		
No		
Yes	1.67***	1.57, 1.77
<i>Ill treated</i>		
No		
Yes	1.27**	1.11, 1.46

Discussion

The present study examines the association between living arrangement and self-rated health among elderly (60 years and above) in India using LASI survey data (2017-18). The current study lists the following major finding from the binary logistic regression. First is self-rated health was strongly associated with the elderly living arrangement and current age of the older adults. Second, level of school attainment was also a strong predictor of the self-rated health among older adults. Third, place of residence and wealth quintile were significantly associated with the self-rated health. Fourth presence of chronic disease and physical limitation had a positive relationship with poor self-rated health. Finally, self-rated health was associated with ill-treatment in the past 12 months with older adults.

The correlation between living arrangements and the well-being of the elderly is a topic that's drawn considerable attention. Waite and Hughes (1999) and Sereny (2011) emphasized the pivotal role household living plays in shaping social roles and providing essential support and interaction for older adults. It's intriguing how this dynamic affects the self-assessed health of the elderly, particularly when comparing those living alone versus with their spouses. The present study, mirroring previous research, highlighted a strong association between living alone among the elderly and poorer self-assessed health. Srivastava et al. (2021) found similar patterns in India, underscoring that older adults living alone tend to report poorer self-rated health. However, it's not just the solo living situation that impacts well-being. Ladusingh & Ngangbam (2016) shed light on the positive association between joint family setups and the well-being of the elderly. Additionally,

Zunzunegui et al. (2001) found a compelling link between living with children or others and better self-assessed health among widowers, even after controlling for various factors like age, sex, level of education and functional limitations. The root causes behind this relationship between poor self-rated health and living alone among the elderly are multifaceted. Factors like higher prevalence of infectious diseases (Agrawal, 2012), chronic diseases (Park et al., 2014), poor dietary habits, reduced food intake (Davis et al., 1985; Vedantam et al., 2010), and poverty (Srivastava and Mohanty, 2012) are contributors. These elements interplay in influencing the health outcomes of elderly individuals living alone.

Moreover, the age factor plays a significant role. Findings consistently show that those aged 70 years and above are more prone to report poor self-rated health compared to younger older adults. This aligns with past research like Kumar and Pradhan (2019) and Selvamani & Singh (2018), indicating a direct association between older age brackets and poorer self-assessed health among the elderly in India. The higher level of education in elderly were associated with the reporting of the poor self-rated health in the present study. Previous studies shows the similar kind of findings that level of schooling affects the perceived health status of older adult in India (Darviri et al., 2012; Selvamani & Singh., 2018; Kumar and Pradhan., 2019; Srivastava et al. 2021). Findings of this study suggested that elderly of rural area and from the poor household were strong predictor of the poor self-rated health. Findings of the current study are consistent with one of the study (Arokiasamy et al., 2015) that revealed elderly from the richer household are less likely to report poor self-rated health.

Outcomes of current study reveals that presence of chronic disease in older adults and elderly with depression depressed had higher probability to report poor self-rated health. In additions, finding of this study also show that the ADL and IADL were significantly associated with the poor self-rated health in elderly population. In a study based on the Korean National Health and Nutrition Examination Survey, chronic disease were associate with the poor self-perceived health status (Shim et al., 2021); in the same study (2021), elderly who were ADL and IADL had significantly higher risk to report poor self-assessed health of older adult living alone. A study from Chian (Dong et al., 2017) estimated that physical health and chronic disease influenced the poor scoring of self-rate health in older adults. Findings from study in Indian context are also consistent with the outcomes of the present study, Ladusingh & Ngangbam, (2016) found that normal activity of daily life and poor health are strongly associated and both decline with the ageing process that significantly affects the well-being of the older adults. Similarly a study using WHO data also (Cullati et al., 2018) found that chronic disease and other health behaviours were associated with the poor self-rated health among the older population.

The present study demonstrated that older adults who experienced mistreatment in the households and out of household in the past years had higher chance to report poor self-rated health. A study using longitudinal data (Acierno et al., 2017) revealed that mistreatment with elderly were associated with poor emotional and physical health of older adults. Mistreatment with the older adults was positively associated with their subjective health status and depression (Chokkanathan., 2015). Cisler et al. (2010)

found similar kind of findings that stated mistreatment with older people was independently associated with their poor self-assessed health. Srivastava and Muhammad (2020) revealed that older adults who have experienced mistreatment reported poor self-rate health.

The present study is also not free from the limitations. The current study used cross sectional data in nature that can show only association between dependent and independent covariate not causality between them. Moreover, cross-sectional data does not allow for identification of the duration of subjective health status of elderly and there is chance of biased reporting regarding current health status in ageing that can affect the outcomes of this study. Similarly, there is no information on duration of living alone that also can influence the level of significance of the relationship between dependent and independent variables. In addition, there is no data on the reasons for living alone.

Conclusion

The present study underlines a significant finding: older adults (aged 60 and above) who live alone in India are more likely to report a poorer health status compared to their counterparts who reside with their spouses, other family members, or relatives. This association between solitary living arrangements and diminished health highlights a critical area of concern within the demographic fabric of India, where the pattern of older adults living alone is on the rise. In addition to living arrangements, the study identifies several other factors that are intricately linked with self-rated health outcomes among the elderly. These include the individual's current age, their level of educational attainment, wealth status, the presence of chronic diseases, and their ability

to perform activities of daily living (ADL) and instrumental activities of daily living (IADL). Moreover, experiences of ill-treatment also emerge as a significant determinant of poor self-rated health among older adults, pointing towards a broader spectrum of socio-economic and personal well-being factors that influence health perceptions in old age.

The growing trend of older adults living alone poses profound implications for social and health policies in India. This demographic shift underscores the urgent need for targeted policy interventions and government action to address the unique challenges faced by this segment of the population. The findings advocate for the development and implementation of suitable policies aimed at safeguarding the well-being of the elderly, particularly those who find themselves in solitary living conditions. Such policies should not only ensure the provision of adequate health services but also address the broader determinants of health, including social support systems, financial security, access to education, and protection against maltreatment. In light of these findings, the study calls for a holistic approach to policy-making that considers the multifaceted needs of the elderly population in India. By doing so, it aims to enhance the quality of life and health outcomes for older adults, fostering an environment where they can lead fulfilling lives irrespective of their living arrangements.

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