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PATTERNS OF MULTIMORBIDITY AND ASSOCIATED SOCIO-DEMOGRAPHIC FACTORS AMONG RURAL OLDER ADULTS IN KURNOOL DISTRICT

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ABSTRACT

Population ageing poses significant health challenges in rural India, particularly due to the rising burden of multimorbidity among older adults. The present cross-sectional descriptive study examines the distribution of health problems and their association with selected socio-demographic factors among the rural elderly in Kurnool District, Andhra Pradesh. A total of 382 elderly persons aged 60 years and above were selected using proportionate random sampling based on the 2011 Census. Data were collected through a structured interview schedule and analyzed using descriptive statistics and chi-square tests. The findings reveal that a majority of respondents reported two or more health problems, indicating a high prevalence of multimorbidity. Housing condition and working status showed statistically significant associations with the number of health problems, while age, sex, caste, and religion did not exhibit significant relationships. The study highlights the importance of living conditions and economic engagement in shaping elderly health outcomes and underscores the need for integrated geriatric healthcare services and active ageing–oriented policies to promote healthy and dignified ageing in rural settings.

KEYWORDS: *Ageing; Elderly Health; Multimorbidity; Socio-demographic Factors; and Rural Area.*

INTRODUCTION

Population ageing has emerged as one of the most significant demographic and public health challenges of the twenty-first century. Improvements in medical care, nutrition, and living conditions, coupled with declining fertility rates, have led to a steady increase in life expectancy across the world. As a result, the proportion of older persons is growing rapidly, particularly in developing countries. Ageing is inherently associated with gradual physiological decline, increased susceptibility to chronic and degenerative diseases, functional limitations, and a higher risk of dependency. These biological challenges are further exacerbated by socio-economic disadvantages, inadequate social security systems, and unequal access to healthcare services. The growing burden of multimorbidity among the elderly not only diminishes individual quality of life but also places considerable strain on families, communities, and health systems (Barnett et al., 2012; Prince et al., 2015).

At the global level, population ageing is progressing at an unprecedented pace. According to the United Nations (2019), the population aged 60 years and above is projected to double by 2050, with the most rapid growth occurring in low- and middle-income countries. Elderly populations worldwide face a high prevalence of non-communicable diseases such as hypertension, diabetes, cardiovascular disorders, musculoskeletal conditions, respiratory illnesses, and sensory impairments. Multimorbidity has become a defining characteristic of old age, contributing to increased disability, healthcare utilization, and economic burden (World Health Organization [WHO], 2015).

In the Indian context, population ageing is occurring alongside persistent structural disadvantages. India is undergoing a rapid demographic transition marked by declining fertility and increasing life expectancy, resulting in a steady rise in the proportion of elderly population (Government of India, 2011). However, unlike developed nations, India faces ageing in a setting characterized by widespread poverty, limited pension and social security coverage, inadequate geriatric healthcare infrastructure, and pronounced socio-economic inequalities. The health system continues to prioritize maternal and child health, with insufficient focus on chronic disease management and geriatric care, thereby intensifying vulnerability in later life (Bloom et al., 2015; Rajan, Mishra, & Sarma, 2018).

At the local or micro level, elderly health outcomes are strongly shaped by living conditions, housing quality, employment status, and social stratification based on gender, caste, and religion. Poor housing conditions, such as thatched and semi-pucca dwellings, are often associated with inadequate sanitation, environmental exposure, and lack of basic amenities, leading to higher morbidity. Similarly, non-working elderly individuals frequently experience

economic insecurity, reduced social interaction, and declining physical activity, which negatively influence health. These micro-level determinants underscore the importance of localized studies for understanding the lived realities of ageing populations (NSSO, 2016; Subramanian et al., 2010).

Review of Key Literature

Existing literature indicates a high prevalence of chronic diseases among the elderly, with studies in India reporting common conditions such as hypertension, diabetes, cardiovascular diseases, musculoskeletal disorders, respiratory illnesses, and sensory impairments (Arokiasamy et al., 2012). The World Health Organization (2015) emphasizes that elderly health is increasingly marked by multimorbidity rather than isolated diseases, leading to functional limitations, dependency, and reduced quality of life. Socio-demographic factors significantly influence these health outcomes in later life. Elderly women tend to experience a higher burden of morbidity due to longer life expectancy, cumulative nutritional deprivation, and lifelong socio-economic disadvantages (Patel et al., 2018). Housing conditions reflect long-term economic status and environmental exposure and have been identified as an important determinant of elderly health (Subramanian et al., 2010). Working status also plays a role, as continued engagement in work is associated with better physical and mental well-being, while non-working status is often linked with increased morbidity. Furthermore, social stratification based on caste and religion continues to shape access to healthcare and resources, contributing to disparities in elderly health outcomes in India (Rajan et al., 2018).

Research Gap

Despite the growing body of research on ageing and health in India, significant gaps remain. Most studies focus on the prevalence of individual diseases rather than examining the cumulative burden of multiple health problems or multimorbidity. Furthermore, limited empirical research has systematically analyzed the association between multimorbidity and a comprehensive set of socio-demographic factors such as housing conditions, working status, age, sex, caste, and religion, particularly at the micro or community level. This lack of integrated analysis restricts a holistic understanding of the social determinants influencing elderly health.

Rationale and Significance of the Study

In this context, the present study assumes considerable significance as it examines the distribution of multiple health problems among the elderly and analyzes their association with key socio-demographic variables. By incorporating housing conditions and working status alongside traditional factors such as age, sex, caste, and religion, the study offers a comprehensive perspective on vulnerability in later life. The findings are expected to contribute to evidence-based planning, strengthen geriatric healthcare services, and inform policies aimed at promoting healthy, active, and dignified ageing in India.

Review of Literature

Existing literature consistently documents a high prevalence of chronic diseases among the elderly, particularly non-communicable conditions such as hypertension, diabetes, cardiovascular diseases, musculoskeletal disorders, respiratory illnesses, and sensory impairments (Arokiasamy et al., 2012; WHO, 2015). Recent studies emphasize that elderly health is increasingly characterized by multimorbidity rather than isolated diseases, resulting in functional limitations, dependency, and reduced quality of life (Barnett et al., 2012; Prince et al., 2015). Socio-demographic factors such as gender, education, marital status, housing conditions, and working status significantly influence health outcomes in later life. Elderly women tend to experience a higher burden of morbidity due to longer life expectancy and cumulative socio-economic disadvantages (Patel et al., 2018). Poor housing conditions and non-working status have been linked to increased morbidity through long-term material deprivation and economic insecurity (Subramanian et al., 2010; NSSO, 2016). Social stratification based on caste and religion further contributes to disparities in elderly health outcomes by shaping access to healthcare and resources (Rajan et al., 2018). Despite extensive research, limited studies have examined the cumulative burden of multiple health problems in relation to diverse socio-demographic factors at the micro level, indicating a clear research gap.

Objectives of the Study

1. To assess the distribution of the number of health problems among the elderly population in the study area.

2. To examine the association between key socio-demographic factors (age, sex, caste, religion, type of house, and working status) and the number of health problems among the elderly.
3. To identify the socio-demographic factors that are significantly associated with multiple health problems among the elderly.

METHODOLOGY

The study employed a **cross-sectional descriptive research design** and was carried out in selected rural villages of Kurnool District, Andhra Pradesh, covering the Adoni, Kurnool, and Pattikonda revenue divisions. A sample of 382 elderly respondents (aged 60 years and above) was determined using the Krejcie and Morgan (1970) sample size table**.** The respondents were selected through a proportionate random sampling technique based on the 2011 Census population distribution of the three divisions in the ratio of 10:10:13**,** resulting in the selection of 116 respondents each from Adoni and Kurnool divisions and 150 respondents from Pattikonda division. Data were collected using a semi-structured interview schedule covering socio-demographic characteristics and self-reported health problems. The number of health problems was treated as the dependent variable, while age, sex, caste, religion, type of house, and working status were considered independent variables. Primary data were gathered through household-level personal interviews after obtaining informed consent. Data analysis involved descriptive statistics and chi-square tests to examine associations between socio-demographic factors and health problems. Ethical standards were strictly maintained, ensuring voluntary participation, confidentiality, and anonymity of respondents.

RESULTS

The distribution of health problems among the elderly respondents indicates a substantial burden of multimorbidity. Out of the total 382 elderly respondents, only 8.4% reported one health problem, while 31.2% reported two health problems, 30.1% reported three health problems, and 30.4% reported four or more health problems, highlighting the widespread prevalence of multiple morbidities among the rural elderly population. This pattern is consistent with previous studies that have documented multimorbidity as a common characteristic of ageing populations in India (Arokiasamy et al., 2012; WHO, 2015).

A statistically significant association was observed between type of house and number of health problems ($\chi^2 = 13.591$, df = 6, p = 0.035). Elderly persons residing in thatched houses reported a relatively higher proportion of four or more health problems (39.1%) compared to

those living in pucca houses (30.2%). Respondents living in semi-pucca houses also exhibited considerable morbidity levels. This result underscores the role of housing conditions as an important determinant of elderly health, aligning with findings from earlier studies that link poor housing and living conditions with adverse health outcomes (Subramanian et al., 2010; NSSO, 2016).

Working status showed a strong and statistically significant association with the number of health problems among the elderly ($\chi^2 = 13.623$, df = 3, p = 0.003). A higher proportion of non-working elderly reported four or more health problems (38.3%) compared to working elderly (22.7%). In contrast, working elderly were more likely to report two or three health problems. This finding highlights the potential protective role of continued engagement in work during old age, which has also been reported in earlier studies emphasizing the health benefits of economic activity and social engagement in later life (Rajan et al., 2018; Bloom et al., 2015).

Table-1: Health Problems and Socio-Demographic Correlates among Rural Elderly in Kurnool District

Variables	Response	Number of Health Problems				Total n (%)	Statistical Values
		one n (%)	Two n (%)	Three n (%)	Four & Above n (%)		
Type of House	Pucca	14 (6.0%)	68 (29.3%)	80 (34.5%)	70 (30.2%)	232 (100.0%)	χ^2=13.591 df=6 p=035*
	Semi-Pucca	12 (14.8%)	30 (37.0%)	20 (24.7%)	19 (23.5%)	81 (100.0%)	
	Thatched	6 (8.7%)	21 (30.4%)	15 (21.7%)	27 (39.1%)	69 (100.0%)	
	Total	**32 (8.4%)**	**119 (31.2%)**	**115 (30.1%)**	**116 (30.4%)**	**382 (100.0%)**	
Working Status	No	17 (9.0%)	46 (24.5%)	53 (28.2%)	72 (38.3%)	188 (100.0%)	χ^2=13.623 df=3 p=.003**
	Yes	15 (7.7%)	73 (37.6%)	62 (32.0%)	44 (22.7%)	194 (100.0%)	
	Total	**32 (8.4%)**	**119 (31.2%)**	**115 (30.1%)**	**116 (30.4%)**	**382 (100.0%)**	
Age	60–62 Years	3 (2.9%)	28 (26.9%)	34 (32.7%)	39 (37.5%)	104 (100.0%)	χ^2=11.206 df=6 p=.082@
	63–65 Years	12 (10.1%)	45 (37.8%)	32 (26.9%)	30 (25.2%)	119 (100.0%)	
	66 Years & above	17 (10.7%)	46 (28.9%)	49 (30.8%)	47 (29.6%)	159 (100.0%)	
	Total	**32 (8.4%)**	**119 (31.2%)**	**115 (30.1%)**	**116 (30.4%)**	**382 (100.0%)**	

Sex	Male	14 (6.7%)	70 (33.3%)	62 (29.5%)	64 (30.5%)	210 (100.0%)	χ^2=2.395 df=3 p=.495@
	Female	18 (10.5%)	49 (28.5%)	53 (30.8%)	52 (30.2%)	172 (100.0%)	
	Total	**32 (8.4%)**	**119 (31.2%)**	**115 (30.1%)**	**116 (30.4%)**	**382 (100.0%)**	
Religion	Hindu	23 (8.0%)	97 (33.7%)	81 (28.1%)	87 (30.2%)	288 (100.0%)	χ^2=6.000 df=6 p=.423@
	Christian	5 (10.6%)	12 (25.5%)	14 (29.8%)	16 (34.0%)	47 (100.0%)	
	Muslim	4 (8.5%)	10 (21.3%)	20 (42.6%)	13 (27.7%)	47 (100.0%)	
	Total	**32 (8.4%)**	**119 (31.2%)**	**115 (30.1%)**	**116 (30.4%)**	**382 (100.0%)**	
Caste	Scheduled Tribe	4 (7.4%)	26 (48.1%)	13 (24.1%)	11 (20.4%)	54 (100.0%)	χ^2=9.831 df=9 p=.364@
	Scheduled Caste	8 (9.6%)	23 (27.7%)	24 (28.9%)	28 (33.7%)	83 (100.0%)	
	Backward Class	13 (8.2%)	45 (28.5%)	48 (30.4%)	52 (32.9%)	158 (100.0%)	
	Forward Category	7 (8.0%)	25 (28.7%)	30 (34.5%)	25 (28.7%)	87 (100.0%)	
	Total	**32 (8.4%)**	**119 (31.2%)**	**115 (30.1%)**	**116 (30.4%)**	**382 (100.0%)**	

With respect to age, although an increasing trend in the number of health problems was observed with advancing age, the association between age groups and number of health problems was not statistically significant ($\chi^2 = 11.206$, df = 6, p = 0.082). Elderly respondents aged 60–62 years reported the highest proportion of four or more health problems (37.5%), followed by those aged 66 years and above (29.6%). Similar age-related trends without statistical significance have been noted in earlier Indian studies (Saikia & Bora, 2016).

No statistically significant association was found between sex and number of health problems ($\chi^2 = 2.395$, df = 3, p = 0.495). However, female respondents reported a slightly higher proportion of four or more health problems (30.2%) compared to males (30.5%), indicating marginal gender differences in morbidity patterns. Previous research has also reported mixed evidence regarding gender differentials in elderly morbidity (Bora & Saikia, 2015; Patel et al., 2018).

Similarly, religion did not show a statistically significant association with the number of health problems ($\chi^2 = 6.000$, df = 6, p = 0.423). Although variations were observed across Hindu, Christian, and Muslim elderly respondents, these differences were not statistically meaningful. The association between caste and number of health problems was also not statistically significant ($\chi^2 = 9.831$, df = 9, p = 0.364). Nevertheless, Scheduled Caste and

Backward Class elderly showed relatively higher proportions of four or more health problems compared to other caste groups, suggesting underlying social disparities. Comparable patterns have been reported in earlier studies examining caste-based health inequalities in India (Arokiasamy et al., 2012; Subramanian et al., 2010).

DISCUSSION

The findings of the study reveal a high burden of multiple health problems among the rural elderly of Kurnool District, indicating that multimorbidity is a common feature of later life. A majority of respondents reported two or more health problems, highlighting the cumulative nature of health challenges in old age. Among the socio-demographic variables examined, type of house and working status showed statistically significant associations with the number of health problems. Elderly persons residing in thatched and semi-pucca houses experienced a higher burden of morbidity compared to those living in pucca houses, suggesting that poor housing conditions and environmental deprivation adversely affect health. Similarly, non-working elderly reported significantly more health problems than their working counterparts, indicating that continued engagement in work may have a protective influence on physical and mental health. These findings are consistent with earlier studies that emphasize the role of living conditions and economic engagement in shaping elderly health outcomes (Subramanian et al., 2010; Bloom et al., 2015; Rajan, Mishra, & Sarma, 2018).

Although age, sex, caste, and religion did not show statistically significant associations with the number of health problems, observable variations were evident across these categories. The absence of statistical significance may be attributed to the relatively homogeneous rural context of the study area, where shared socio-economic and environmental conditions potentially reduce group-level differences. Similar findings have been reported in community-based studies where age and gender differences in morbidity exist but do not always reach statistical significance (Saikia & Bora, 2016; Bora & Saikia, 2015). From a public health perspective, the results underscore the need for integrated geriatric healthcare services that address multimorbidity rather than single diseases. Policy interventions focusing on improving housing conditions, strengthening rural sanitation, and promoting active ageing through livelihood and social participation opportunities can contribute significantly to improving health outcomes among the rural elderly.

CONCLUSION

The study demonstrates a high prevalence of multiple health problems among the rural elderly in Kurnool District, indicating that multimorbidity is a dominant health concern in later life. The findings show that a substantial proportion of elderly respondents suffer from two or more health problems. Among the socio-demographic variables examined, type of house and working status emerged as statistically significant factors associated with the number of health problems, while age, sex, caste, and religion did not show significant associations, though observable variations were present. These results highlight the importance of living conditions and economic engagement in shaping elderly health outcomes.

The study adequately fulfills its research objectives by assessing the distribution of health problems among the elderly and examining their association with key socio-demographic factors. The findings suggest that beyond biological ageing, social and economic determinants play a decisive role in influencing health in old age, particularly in rural settings. In broader terms, the study underscores the need for a shift toward integrated and socially responsive geriatric healthcare, emphasizing improvements in living conditions, active ageing, and community-based support systems to promote healthy and dignified ageing among the rural elderly.

Recommendations

There is a need to strengthen geriatric healthcare services at the primary level. Specific focus should be placed on the prevention and management of multimorbidity among the elderly. Integrating housing improvement schemes with elderly welfare programs can mitigate health risks. Improved sanitation initiatives are essential to address illnesses arising from poor living conditions. Policies promoting active ageing through livelihood support should be encouraged. Social participation of older persons can enhance physical and mental well-being in later life. Community-based geriatric care initiatives require strengthening at the programmatic level. Regular health screening, chronic disease management and health education should be emphasized. Training and capacity building of frontline health workers are vital for early identification and management. Future research should adopt longitudinal and qualitative approaches across urban and diverse regions.

Limitations of the Study

The study has certain limitations that should be considered while interpreting the findings. Being cross-sectional in nature**,** the study cannot establish causal relationships between socio-demographic factors and health problems among the elderly. The reliance on self-reported health information may have introduced recall bias or underreporting of certain conditions. As the study was confined to selected rural villages of Kurnool District, the findings may have limited generalizability to urban areas or other regions. Additionally, the assessment of health problems was based on the number of reported conditions rather than clinical diagnosis or severity, which may not fully capture the complexity of elderly health status.

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