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Determinants of Multimorbidity among Elderly People in Jammu and Kashmir: Evidence from NSS 75th Round Survey

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Abstract: The study examines the determinants of multimorbidity among elderly people in Jammu and Kashmir. The analysis is based on 75th Round NSSO data on Social Consumption on Health. The study reveals that elderly people residing in urban areas, belonging to labour or other household types, following the Muslim religion, belonging to SC or other castes, lacking access to a latrine, having unsafe drinking water, and higher age statistically significantly increase the likelihood of multimorbidity. Conversely, being female, having higher education levels, being economically independent, and living with family are associated with lower odds of multimorbidity. The findings provide insights into the determinants of multimorbidity among the elderly in Jammu and Kashmir. Policymakers and healthcare providers can utilize this information to develop targeted interventions and strategies that address the specific risk factors and needs of different subgroups within the elderly population, ultimately improving their health outcomes and quality of life.

Keywords: Elderly People, Multimorbidity, Determinants

Introduction

Ageing of the population is a global demographic trend that has significant implications for countries all over the world. Better living conditions, better healthcare, and lower mortality rates have all contributed to raise the share of older people worldwide (Marengoni, 2009). This phenomenon presents both opportunities and challenges for countries, especially India. The strain population ageing can have on social welfare systems and healthcare infrastructure is one of the main issues it raises. There is a demand for healthcare services, long-term care facilities, and pensions as the percentage of elderly people increases (Grover, 2019). To ensure the wellbeing and quality of life for older people, governments need to adapt their policies and allocate resources effectively. Moreover, the shift in population structure also has implications for work force and economic productivity. Countries may experience a lack of workers and a drop in overall productivity levels due to a declining number of people who are working-age compared to older people. This may have an effect on economic development and growth (Mahwati, 2014). While India today benefits from a sizable young population and its potential for economic growth, the country will eventually see population ageing. In order to maintain economic growth as the country's elderly population increases, India will need to address its healthcare and social welfare demands as well as modify its labour market laws. It's crucial to remember, meanwhile, that population ageing also presents opportunities (Verma & Mishra 2019). Countries require comprehensive strategies that cover healthcare, social welfare, employment, and education if they are to effectively address the issues and seize the opportunities given by the ageing population. Despite the demographic changes, nations can work towards inclusive and sustainable development by making investments in healthcare systems, encouraging healthy ageing behaviours, supporting active ageing, and putting supportive social policies in place (Mini & Thankappan, 2017).

Population Projection by Age Group 2011-2036

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Table 1 Percentage Distribution of Projected Population By Age: 2011-2036

	Age Group	2011	2021	2031	2036
Jammu and Kashmir	(0-14)	34	23.6	17.9	17.7
	Projected Growth Rate		**-36.59**	**-24.15**	**-1.12**
	(15-59)	58.8	66.9	68.8	66.7
	Projected Growth Rate		**13.78**	**2.84**	**-3.05**
	60 and above	7.1	9.4	13.3	15.5
	Projected Growth Rate		**32.39**	**41.49**	**16.54**
India	Age Group	2011	2021	2031	2036
	(0-14)	30.9	25.7	21.9	20.1
	Projected Growth Rate		**-16.83**	**-14.79**	**-8.22**
	(15-59)	60.7	64.2	65.1	64.9
	Projected Growth Rate		5.77	1.4	-0.31
	60 and above	8.4	10.1	13.1	14.9
	Projected Growth Rate		**20.24**	**29.7**	**13.74**

Source: Authors Calculation from Population Projections for India and States 2011-2036 Report

The table 1 provides the percentage distribution of projected population by age from 2011 to 2036 for Jammu and Kashmir and India. In Jammu and Kashmir, the population aged 0-14 group is expected to decline significantly from 34 percent in 2011 to 17.7 percent in 2036, indicating a declining trend in the younger population. The population between the ages 15-59, on the other hand, is anticipated to modestly increase from 58.8 percent in 2011 to 66.7 percent in 2036, albeit with a dip in between. The number of people 60 and above is expected to increase significantly, from 7.1 percent in 2011 to 15.5 percent in 2036. A similar pattern appears throughout all of India. The percentage of the population between the ages of 0 and 14 is predicted to fall from 30.9 percent in 2011 to 20.1 percent in 2036. With a little decline from 60.7 percent in 2011 to 64.9 percent in 2036, the population aged 15 to 59 is anticipated to stay largely constant. It is anticipated that the population aged 60 and over would expand significantly, rising from 8.4 percent in 2011 to 14.9 percent in 2036. Therefore, this projection reflects a shift in age demographics towards an aging population in Jammu and Kashmir and India as a whole. This trend highlights the challenges associated with an aging population, such as healthcare, social security, and retirement planning.

Multimorbidity is defined as the coexistence of two or more chronic diseases in an individual, is an increasingly common phenomenon among elderly people worldwide, India is no exception to it. A significant growth elderly population with multimorbidity leads a greater burden on the health care system of a country. In India, geriatric care is limited to a handful of geriatricians and most of the care provided to the elderly is fragmented. Due to the increased likelihood of unfavourable health outcomes, such as functional decline, disability, hospitalisation, and mortality, multimorbidity is a significant public health concern. In India, little is known about the prevalence and determinants of multimorbidity among the elderly. Therefore, this study aims to provide a comprehensive assessment of the prevalence, patterns, and determinants of multimorbidity among elderly people in India. In this study, an attempt has been made to examine multimorbidity among elderly people in Jammu and Kashmir.

Review of Literature

Gupta et al. (2016) examines the morbidity pattern and health care-seeking behaviour of the elderly in the urban areas of North India. A community-based cross-sectional study was conducted in the urban field practice area. Multimorbidity affected nearly two-thirds of elderly people in intermediate socioeconomic position. The older population needs more primary health care due to the high frequency of multimorbidity in this population subgroup. Khaman et al. (2011) examine the prevalence and patterns of multimorbidity among elderly people in rural Bangladesh. The findings indicated a 53.8 percent multimorbidity prevalence in the study group, with considerably higher rates among women, illiterates, singletons, and those in the non-poorest quintile. Multimorbidity is more prevalent in women and the non-poorest elderly population than in men and the poorest individuals. Verma and Mishra (2019) investigate the multi-morbidity among the geriatric group. Only the elderly were the subject of a cross-sectional study that was done over a year in the districts of Allahabad. Visits to individual homes were used to gather data. The majority (31.8 percent) of people had two chronic problems, followed by 15.5 percent who had three, 4.8 percent who had four, and 1

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percent who had five chronic diseases condition. Agrawal and Keshri (2014) analyse the morbidity pattern and health seeking behaviour of older widows in India using NSS 60th round data. Age, economic independence, monthly per capita expenditure quintiles, and education all had a positive impact on the prevalence of diseases in older widows. Himanshu and Talukdar (2017) investigate the prevalence and contributing variables of self-reported chronic non-communicable diseases. In order to identify sociodemographic factors that are indicative of the presence of chronic NCDs, multinomial logistic regression was performed. According to Chronic non-communicable disease prevalence among elderly people was 58.02% of all the listed NCDs. Growing multimorbidity has a substantial impact on older people and places a large financial load on the healthcare system. However, additional demand for healthcare services is required due to the economic crisis. Age, financial security, monthly per capita expenditure quintiles, and education all had a positive impact on the prevalence of diseases in older people. Based on the reviewed literature, it has been found that factors such as gender, age, consumption expenditure, place of residence, age group, educational status, marital status, socio-economic status etc. associated with multi-morbidity.

Data Sources and Methodology

The study used 75th round of NSSO data on social consumption on health. The 75th round of survey adopted a multistage stratified sampling techniques to select the sample household. NSSO 75th round health survey provides information on details of mobility, living arrangement and economic independence of members aged 60 or more. In 75th round survey all India 113823 households, with 64552 rural and 49271 urban households were selected (A total of 555352 individuals with 326033 rural and 229319 urban individuals were included). In Jammu and Kashmir, 3315 households (17155 individuals), including 1955 rural (10437 individuals) and 1360 urban households (6718 individuals) were covered as a part of NSS 75th round survey.

One of the objectives of this study is to estimate the determinants of multi-morbidity among elderly people in Jammu and Kashmir. In this study, multi-morbidity is a binary variable with presence or absence of multi-morbidity; therefore, we used a binary logistic regression model to identify factors influencing multi-morbidity among elderly people.

$$Y_i = \beta_0 + \beta_i X_i + \varepsilon_i \quad \textbf{(1)}$$

Where β_0= intercept term, β_i = slope coefficients, X_i=Set of explanatory Variables

Y_i=1 if the individual is having the problem of multimorbidity (Simultaneous existence ofmore than one disease) and Y_i= 0 otherwise. Here ε_i is the disturbance term, it is an independently distributed random variable, and follows zero mean and serial independence (or non-autocorrelation) assumptions. As Y_i takes on either 1 or 0 values, we can describe the probability distribution of Y_i by letting $P_i = P(Y_i = 1)$= Probability that the individual is having the problem of multimorbidity and $1 - P_i = Prob(Y_i = 0)$= Probability of not having multimorbidity. Now Pi/(1-Pi) is simply the odds ratio in favor of elderly having problem of multimorbidity, i.e., the ratio of elderly having problem of multimorbidity to the probability that elderly not having problem of multimorbidity.

Results and Discussion

Socioeconomic Characteristics of Elderly in Jammu and Kashmir

Table-2 represents the distribution of the elderly population based on socio-economic and demographic characteristics in Jammu and Kashmir. It shows that most of the elderly population is living with their families; 98.2 percent live with their families. Religion and Caste are the two important indicators of social status that constitute an essential component of the social system itself. Regarding religion, most elderly people belong to the Muslim religion, and 40.4 percent belong to the Hindu religion. Thus, we can clearly say that majority of elderly people are Muslim. The table also reveals that most of the elderly people are married (75.4 percent) while the unmarried is only 0.8 percent. If we go by the population's age structure, most of the elderly are in between 60-69 years (73.5 percent), people above 80 are just 5.7 percent. Thus, the majority of people reside in the rural area. Monthly consumption expenditure is used as a proxy indicator of standard of living. It has been found that (26.9 percent) of the elderly belong to poorest consumption class,

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followed by the middle (22.1 percent), poor class (18.6 percent), and upper-middle-class (18.3 percent). The percentage of wealthy and rich consumption class is very low compared to other classes. The proportion of the independent population is very high (47.0 percent), while the dependent population is 33.6 percent. The educational status among these people is low. The majorityof people are illiterate (67.6 percent) while the people with secondary (16.0 percent), higher education (2.7 percent), and percentage of graduation and above are (3.9 percent) very low.

Table 2 Socio-economic and Demographic Characteristics of the Elderly People in J &K

Background Characteristics		Percentage
Sector	Rural	73.8
	Urban	26.2
Religion Status	Hindu	40.4
	Muslim	56.4
	Other	3.2
Caste	ST	7.9
	SC	11.2
	Other	80.9
Consumption Class	Poorest	26.9
	Poorest	18.6
	Middle	22.1
	Upper Middle	18.3
	Rich	14.1
Gender	Male	54.4
	Female	45.6
Age Group	60-69	73.5
	70-79	20.8
	80 &Above	5.7
Marital Status	Unmarried	0.8
	Married	75.4
	Widow/Separated/Divorce	23.8
Education	Illiterate	67.6
	Primary	9.8
	Secondary	16
	High Sec	2.7
	Graduation& Above	3.9
State of economic independence	Dependent	33.6
	Partially Dependent	19.4
	Independent	47
Living Arrangement	With Family	98.2
	Not with Family	1.8

Source: Author's Calculation from NSSO 75th Round Data

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Table 3 Own Perception about their Current Status of Health for Elderly People in J&K

Background Characteristics		Health Status		
		Excellent/Very Good	Good/Fair	Poor
		%	%	%
Sector	Rural	9.6	68.1	22.4
	Urban	11.1	64	24.8
ReligionStatus	Hindu	12	62.2	25.9
	Muslim	8	71	21
	Other	20.2	57.3	22.5
Caste	ST	10.2	80.9	8.9
	SC	6.6	81.9	11.5
	Other	10.4	63.6	26
Consumption Class	Poorest	6.5	71.3	22.2
	Poor	10.2	68.1	21.6
	Middle	16.2	69.4	14.4
	Upper Middle	5.4	65	29.6
	Rich	12.5	56.1	31.4
Gender	Male	12.9	70.5	16.6
	Female	6.5	62.8	30.6
AgeGroup	60-69	11.6	73	15.4
	70-79	6.8	53.9	39.3
	80 &Above	0.6	37.8	61.6
MStatus	Unmarried	0	48.2	51.8
	Married	12.5	70.3	17.2
	Widow/Sepated/Divorce	2.4	57.1	40.5
Education	Illiterate	5.9	69	25.1
	Primary	13.1	65.6	21.3
	Secondary	17.3	64.2	18.6
	High Sec	30.2	48.8	21.1
	Graduation& Above	29.3	60.2	10.4
State of economic independence	Dependent	20.4	65.7	13.9
	Partially Dependent	4.8	79.3	15.9
	Independent	4.7	62.8	32.5
LivingArrangement	With Family	10.1	67.3	22.5
	Not with Family	1.2	49.1	49.7
Household Type	Agriculture	1.8	47.9	50.3
	Self emplyoyed	8.1	60.5	31.4
	Regular wages/salaried	1	63.7	35.3
	Labour	4.5	57.4	38.1
	Other	8.8	55.9	35.3
	Total	10	67	23

Source: Author's Calculation from NSSO 75th Round Data

The Table-3 provides an analysis of the own perception of health status among elderly people in Jammu and Kashmir (J&K). Rural and urban areas exhibit a similar distribution in terms of their perceived health, with a higher percentage of older people rating their health as "Good/Fair" (64 percent and 68 percent in urban and rural respectively) and "Excellent/Very Good" (9.6 percent and 11.1 percent in urban and rural respectively). When considering religion, the "Good/Fair" health perception is higher among Hindus (62.2 percent) and Muslims (71 percent) compared to other religious groups (57.3 percent). Regarding caste, people who are Scheduled Tribes (ST) are more likely to perceive their health as "Good/Fair" (80.9 percent) than those who are from other castes (26 percent), who are more likely to perceive their health as "Poor." In terms of consumption class, the middle-class sector reports a higher percentage (69.4 percent) of people who consider their health to be "Good/Fair," whereas the upper-middle class has a higher percentage (29.6 percent) of people who consider their health to be "Poor." Men are more likely than women to rate their health as

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"Good/Fair" (70.5 percent) compared to women (62.8 percent). However, a greater percentage of women (30.6 percent) consider their health to be "Poor." Higher levels of education are linked to greater percentages of respondents evaluating their health as "Good/Fair" when taking education into account. The table also offers information on how financially independent seniors are. A higher percentage of those who are fully or partially reliant describe their health as "Good/Fair," while a bigger number (32.5 percent) of those who are independent describe their health as "Poor." In terms of living arrangements, those who live with family members have a larger percentage (67.3 percent) of people who see their health as "Good/Fair," whereas those who do not live with family have a higher percentage (49.7 percent) of people who perceive their health as "Poor." Regarding household type, more respondents (63.7 percent) who work a normal job with a salary perceive their health as "Good/Fair," compared to more respondents who work in agriculture and manual labour, who perceive their health as "Poor." It suggests that factors including education, financial independence, living situation, and work affect how the elderly population perceives their health status.

Table 4 Patterns of Chronic Morbidity among Elderly People in Jammu and Kashmir

	Gender	
	Male	Female
Diseases	%	%
Heart disease: Chest pain, breathlessness	12.9	12.4
HYPERTENSION	8.7	5.8
Pain in abdomen: Gastric and peptic ulcers/ acid reflux/ acute abdomen	7.8	13.1
Joint or bone disease/ pain or swelling in any of the joints, or swelling or pus from the bones	6.6	4.8
Bronchial asthma/ recurrent episode of wheezing and breathlessness with or without cough over long periods or known asthma)	6.4	6.3
DIABETES	5.3	6.8
Respiratory infections	4.7	3.7
(Fevers of unknown origin, all specific fevers that do not have a confirmed diagnosis)	2.4	1.1
TUBERCULOSIS	2.3	0.8
Decreased vision (chronic) NOT including where decreased vision is corrected with glasses	2.1	2.8
Any difficulty or abnormality in urination	2.1	1.2
CANCERS (known or suspected by a physician) and occurrence of any growing painless lump in the body	1.9	1.5
Weakness in limb muscles and difficulty in movements	1.8	2.1
Stroke/ hemiplegia/ sudden onset weakness or loss of speech in half of body	0.9	0.8
Symptom not fitting into any of above categories	0.8	0.4
Earache with discharge/bleeding from ear/ infections	0.7	0.4
Pain the pelvic region/reproductive tract infection/ Pain in male genital area	0.6	0.2
GLAUCOMA	0.5	0.8
Seizures or known epilepsy	0.5	0.4
Cataract	0.5	0.8

Source: Author's Calculation from NSSO 75th Round Data

The gender-specific patterns of chronic illness among the elderly in Jammu and Kashmir are shown in the table-4. Heart disease, including chest pain and breathlessness, shows a similar prevalence among males (12.9 percent) and females (12.4 percent). The prevalence of hypertension, a common chronic illness, is marginally higher in males (8.7 percent) than in women (5.8 percent). Females are more likely than males to experience abdominal pain, including gastric and peptic ulcers, acid reflux, and acute abdomen (13.1 percent vs. 7.8 percent). Females (4.8 percent) are more likely than males (6.6 percent) to suffer from joint or bone illnesses, which are characterised by discomfort or swelling in the joints or bones. Male and female prevalence rates for bronchial asthma, diabetes, and respiratory infections are similar, with

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female rates in some cases somewhat higher. The prevalence of tuberculosis, visual issues, urinary difficulties, limb muscle weakness, and stroke is relatively low among both male and female. Females tend to have a higher prevalence of abdominal pain and joint/bone diseases, while males have a higher prevalence of hypertension. The data, certain chronic diseases are more common in some genders than others among the older population in Jammu and Kashmir.

Table 5 Morbidity Profile of the Elderly People in Jammu and Kashmir

Background Characteristics		Single Morbidity		Double Morbidity		Triple Morbidity	
		Yes	No	Yes	No	Yes	No
		%	%	%	%	%	%
Sector	Rural	28.3	71.7	22.4	77.6	4.6	95.4
	Urban	22.7	77.3	15.7	84.3	4.8	95.2
ReligionStatus	Hindu	8	92	4	96	2.4	97.6
	Muslim	40.9	59.1	32	68	7.1	92.9
	Other	31.2	68.8	31.2	68.8	0	100
Caste	ST	29.7	70.3	29	71	0.3	99.7
	SC	5.7	94.3	0	100	3.6	96.4
	Other	32.1	67.9	25.1	74.9	5.4	94.6
Consumption Class	Poorest	27.7	72.3	20.6	79.4	5.8	94.2
	Poorest	24.9	75.1	23.5	76.5	1.3	98.7
	Middle	41.3	58.7	21.7	78.3	10.4	89.6
	Upper Middle	22	78	20.7	79.3	0.9	99.1
	Rich	23.1	76.9	12.8	87.2	9.7	90.3
Gender	Male	24.1	75.9	18.9	81.1	3.8	96.2
	Female	28.7	71.3	21.4	78.6	5.4	94.6
AgeGroup	60-69	23.4	76.6	19.1	80.9	3.5	96.5
	70-79	30.6	69.4	22.1	77.9	6.5	93.5
	80 &Above	42.8	57.2	23.7	76.3	9.5	90.5
MStatus	Unmarried	0	100	0	100	0	100
	Married	23.8	76.2	18.1	81.9	4.6	95.4
	Widow/Sepated/Divorce	35	65	26.8	73.2	4.8	95.2
Education	Illiterate	31.3	68.7	22.4	77.6	6.5	93.5
	Primary	21.8	78.2	21.8	78.2	0	100
	Secondary	12.7	87.3	10.8	89.2	1.8	98.2
	High Sec	23.7	76.3	23.7	76.3	0	100
	Graduation& Above	23.5	76.5	23.5	76.5	0	100
State of economic independence	Dependent	21.7	78.3	17	83	4.6	95.4
	Partially Dependent	19.5	80.5	17.9	82.1	1.2	98.8
	Independent	30.1	69.9	22.1	77.9	5.5	94.5
LivingArrangement	With Family	25.7	74.3	19.9	80.1	4.1	95.9
	Not with Family	81.5	18.5	39.7	60.3	41.9	58.1
Household Type	Agriculture	31.2	68.8	22.2	77.8	6.6	93.4
	Self emplyoyed	23.5	76.5	20	80	2.1	97.9
	Regular wages/salaried	20.9	79.1	13.7	86.3	7.2	92.8
	Labour	28.7	71.3	28.7	71.3	0	100
	Other	29.8	70.2	19.2	80.8	7.3	92.7
	Total	26.5	73.5	20.2	79.8	4.7	95.3

Source: Author's Calculation from NSSO 75th Round Data

The Table-5 presents the morbidity profile of elderly people in Jammu and Kashmir based on various background characteristics, highlighting the presence of single, double, and triple morbidity conditions. Women (28.7 percent) have a higher prevalence of single morbidity than men (24.1 percent). However, the variation is barely noticeable. Females have a marginally higher rate of double morbidity (21.4 percent) than males (18.9 percent). Triple morbidity follows the same trend, with somewhat more among females (5.4 percent) than males (3.8 percent) experiencing it. Compared to rural areas, urban areas have a lower prevalence of morbidity in all categories. This shows that morbidity is a greater burden on the rural population. In terms of religion, Muslims have a higher frequency of morbidity than Hindus and people of other faiths in all categories. Morbidity rates differ across castes, consumption classes, educational levels, and

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levels of economic independence. These comparisons, however, show no clear pattern. Morbidity is significantly influenced by living arrangements, with people who do not live with family having a far greater prevalence of double and triple morbidity. In summary, the analysis shows that there is a significant rate of morbidity among the elderly in Jammu and Kashmir, with distinct patterns seen depending on the background characteristics.

Table 6 Determinants of Multimorbidity among Elderly People in Jammu and Kashmir

Dependent Variable=Multimorbidity		B	Exp(B)	S.E.	Wald	df	Sig.
	Constant	1.163	3.199	0.213	29.756	1	0.000
	Rural#						
Sector	Urban	-0.390	0.677	0.028	187.750	1	0.000
	Agriculture#				56.185	2	0.000
	Labour	0.107	1.113	0.026	17.308	1	0.000
Household Types	Others	0.312	1.367	0.045	48.360	1	0.000
	Hindu#				2821.170	2	0.000
	Muslim	-1.100	0.333	0.057	366.225	1	0.000
Religion	Others	0.994	2.701	0.050	390.287	1	0.000
	ST#				883.284	2	0.000
	SC	-1.118	0.327	0.058	368.303	1	0.000
Caste	Others	-1.768	0.171	0.071	614.369	1	0.000
	Yes#						
Access to Latrine	No	0.356	1.428	0.041	74.099	1	0.000
	Unsafe#						
Drinking Water	Safe	-3.322	0.036	0.080	1744.021	1	0.000
MCE	Household_usually_monthly_consum	0.000	1.000	0.000	36.430	1	0.000
	Male#						
Gender	Female	-0.193	0.825	0.025	57.492	1	0.000
Age (years)	Age of the elderly	0.033	1.034	0.002	218.854	1	0.000
	Married#				137.455	2	0.000
	Unmarried	-20.720	0.000	2508.680	0.000	1	0.993
Marital Status	Separated/Widow/Divorce	-0.312	0.732	0.027	137.455	1	0.000
	Illiterate#				418.334	4	0.000
	Primary	-0.520	0.594	0.067	60.160	1	0.000
	Secondary	-0.379	0.685	0.071	28.156	1	0.000
Educational Status of	High Sec	-1.144	0.319	0.069	274.514	1	0.000
Elderly	Graduation& Above	-0.779	0.459	0.125	38.689	1	0.000
	Dependent#				213.755	2	0.000
Economic	Partially Dependent	0.101	1.106	0.033	9.365	1	0.002
Independence	Independent	-0.465	0.628	0.036	170.311	1	0.000
	With Family#						
Living Arrangement	Not with Family	-0.933	0.393	0.089	109.085	1	0.000

The table-6 presents the results of a logistic regression analysis examining the determinants of multimorbidity among elderly people in Jammu and Kashmir. The dependent variable, "Multimorbidity," the dependent variable, denotes the existence or absence of multiple chronic illnesses. The study identifies a number of important determinants multimorbidity. Firstly, elderly living in urban areas have a lower likelihood of experiencing multimorbidity compared to those in rural areas. Urban elderly people have a lower odds ratio (0.677) of having several chronic diseases, as shown by the negative (-0.390) coefficient for the "Urban" category. This implies that urban areas might provide easier access to healthcare or healthier living conditions. Multimorbidity is also influenced by particular household types and socioeconomic factors. Elderly People belong to household types agriculture and those categorised as "Others" among household types exhibit a favourable association with multimorbidity. Regarding religion and caste, being Muslim or belonging to the "Others" category increases the odds of having multiple chronic conditions, while being a member of a Scheduled Tribe (ST) or Scheduled Caste (SC) decreases the lowers the likelihood. Multimorbidity is also influenced by access to basic facilities. Multimorbidity is more likely when a toilet is unavailable, whereas drinking safe water significantly decreases the odds. Access to a latrine and drinking water safety are important determinants. Not having access to a latrine increases the odds of multimorbidity (odds ratio: 1.428). Additionally, unsafe drinking water significantly increases the likelihood of multiple health conditions (odds ratio: 0.036). The analysis also emphasises the significance of demographic considerations. There may be a gender difference in the health issues experienced by men

and women, since females had slightly lower probabilities of multimorbidity than males. Age-related multimorbidity is strongly associated with greater odds, indicating that as people age, the likelihood of having numerous chronic diseases rises. Increasing age is associated with higher odds of multimorbidity, as indicated by the positive coefficient (0.033) and odds ratio (1.034) for age (years). Females have a slightly lower likelihood of multimorbidity compared to males, with an odds ratio of 0.825. Marital status and level of education also found to be significant factors of multimorbidity. Compared to being married, being single, separated, widowed, or divorced had lower odds of multimorbidity. In terms of educational levels, primary and secondary education are associated with higher odds of multimorbidity, whereas illiteracy and higher education (high secondary, graduation, and above) are associated higher odds of multimorbidity. Unmarried or separated/widowed/divorced is associated with lower odds ratios (0.000 and 0.732, respectively) compared to being married. Regarding education, illiteracy has a higher odds ratio (0.594) compared to other educational levels. Lastly, economic independence and living arrangement have significant effects. Being economically independent and living with family are associated with lower odds of multimorbidity. Being partially dependent or independent decreases the odds of multimorbidity, as indicated by odds ratios of 1.106 and 0.628, respectively. Living without family members (not with family) is associated with lower odds (0.393) of experiencing multiple health conditions. Overall, the analysis reveals that elderly people residing in urban areas, belonging to labour or other household types, following the Muslim religion, belonging to SC or other castes, lacking access to a latrine, having unsafe drinking water, and higher age statistically significantly increase the likelihood of multimorbidity. Conversely, being female, having higher education levels, being economically independent, and living with family are associated with lower odds of multimorbidity.

Conclusions and Policy Implications

The likelihood of having multimorbidity conditions is significantly influenced by factors such urban residence, occupation, religion, caste, access to basic utilities, age, gender, marital status, education level, financial independence, and living arrangement. In order to enhance the health outcomes and well-being of the elderly population in the Jammu and Kashmir, it can be useful to understand these determinants in order to develop targeted interventions and policies. The findings provide insights into the determinants of multimorbidity among the elderly in Jammu and Kashmir. Policymakers and healthcare providers can utilize this information to develop targeted interventions and strategies that address the specific risk factors and needs of different subgroups within the elderly population, ultimately improving their health outcomes and quality of life. The study highlights the importance of access to facilities such as latrines and safe drinking water, hence policy initiatives should focus on improving infrastructure and ensuring that all elderly individuals, regardless of their location or socioeconomic status, have access to these basic amenities. The analysis shows a link between multimorbidity and educational status. Policies should prioritise encouraging education among the senior population with a focus on raising their health literacy and knowledge. Multiple health disorders can be prevented by raising awareness of preventative measures, good lifestyle choices, and early disease detection. Given the association multimorbidity and age, strategies should emphasise encouraging healthy ageing among the elderly. This may involve programmes like regular health check-ups, preventive care programs, physical activity promotion, and nutrition education. The study indicates that living situation has a big impact on multimorbidity. Age-related social support networks should be strengthened for older people, especially for those who do not live with their family. The policy makers should focus on improving the health and well-being of its elderly population, reducing the burden of multimorbidity, and promoting healthier and more fulfilling lives for its senior citizens.

References

1. Agrawal, G., & Keshri, K. (2014). Morbidity Patterns and Health Care Seeking Behavior among Older Widows in India. Plos ONE, 9(4), e94295. doi: 10.1371/journal.pone.0094295
2. Census of India (2011). Population Projections for India and States 2011-2036, National Commission on Population, Ministry of Health and Family Welfare, New Delhi.
3. Chobe, M., Chobe, S., Dayama, S., Singh, A., Metri, K., Basa, J., & Raghuram, N. (2022). Prevalence of non-communicable diseases and its associated factors among urban elderly of six Indian states. Cureus. https://doi.org/10.7759/cureus.30123

4. Grover, S. (2019). Multimorbidity in the elderly: Are we prepared for it!. Journal Of Geriatric Mental Health, 6(2), 35. doi: 10.4103/jgmh.jgmh_1_20
5. Gupta, A., Girdhar, S., Chaudhary, A., Singh Chawla, J., & Kaushal, P. (2016). Patterns of Multimorbidity among Elderly in an Urban Area of North India. Journal of Evolution of Medical and Dental Sciences, 5(19), 936-941. doi: 10.14260/jemds/2016/218.
6. Himanshu and Talukdar (2017). Prevalence of multimorbidity (chronic NCDS) and associated determinants among elderly in India**.** Demography India, Sepcial Issue, 69-76.
7. Keetile, M., Navaneetham, K., & Letamo, G. (2020). Prevalence and correlates of multimorbidity among adults in Botswana: A cross-sectional study. PLOS ONE, 15(9), e0239334. doi: 10.1371/journal.pone.0239334
8. Khanam, M. A., Streatfield, P. K., Kabir, Z. N., Qiu, C., Cornelius, C., & Wahlin, Å. (2011). Prevalence and patterns of multimorbidity among elderly people in rural Bangladesh: A cross-sectional study. Journal of Health, Population and Nutrition, 29(4). https://doi.org/10.3329/jhpn.v29i4.8458
9. Kshatri, J., Palo, S., Bhoi, T., Barik, S., & Pati, S. (2020). Associations of multimorbidity on frailty and dependence among an elderly rural population: Findings from the AHSETS study. Mechanisms of Ageing and Development, 192, 111384. doi: 10.1016/j.mad.2020.111384
10. Kshatri, J., Palo, S., Bhoi, T., Barik, S., & Pati, S. (2020). Prevalence and Patterns of Multimorbidity among Rural Elderly: Findings of the AHSETS Study. Frontiers in Public Health, 8. doi: 10.3389/fpubh.2020.582663
11. Mahwati, Y. (2014). Determinants of Multimorbidity among The Elderly Population in Indonesia. Kesmas: National Public Health Journal, 9(2), 187. doi: 10.21109/kesmas.v9i2.516
12. Marengoni, A., Rizzuto, D., Wang, H., Winblad, B., & Fratiglioni, L. (2009). Patterns of Chronic Multimorbidity in the Elderly Population. Journal of The American Geriatrics Society, 57(2), 225-230. doi: 10.1111/j.1532-5415.2008.02109
13. Mini, G., & Thankappan, K. (2017). Pattern, correlates and implications of non- communicable disease multimorbidity among older adults in selected Indian states: a cross-sectional study. BMJ Open, 7(3), e013529. doi: 10.1136/bmjopen-2016-013529
14. Orueta, J., Nuño-Solinís, R., García-Alvarez, A., & Alonso-Morán, E. (2013). Prevalence of multimorbidity according to the deprivation level among the elderly in the Basque Country. BMC Public Health, 13(1). doi: 10.1186/1471- 2458-13-918
15. Verma, V., & Mishra, N. (2019). A Study on Multi-morbidity among Geriatric Group in a District of Northern India: A Cross Sectional Study. International Journal of Medicine and Public Health, 9(4), 137-140. doi: 10.5530/ijmedph.2019.4.29
16. Yadav, U., Ghimire, S., Mistry, S., Shanmuganathan, S., Rawal, L., & Harris, M. (2021). Prevalence of non-communicable chronic conditions, multimorbidity and its correlates among older adults in rural Nepal: a cross-sectional study. BMJ Open, 11(2), e041728. doi: 10.1136/bmjopen-2020-041728