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Original Research Article

SOCIO-DEMOGRAPHIC DETERMINANTS AND MORBIDITY PREDICTORS OF DEPRESSION IN THE ELDERLY: INSIGHTS FROM LUCKNOW DISTRICT

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ABSTRACT

Background: In India, the mean age of the population was 26.8 years in 2015, with an equal distribution above and below this age. Depression, affecting approximately 7% of the elderly population, represents one of the most prevalent mental health disorders among older adults. Despite its burden, this condition remains frequently underdiagnosed and under treated. The aim is to assess the prevalence of depression among elderly residents of Lucknow district and identify socio-demographic and morbidity-related factors associated with depression.

Materials and Methods: A cross-sectional study was carried out over a 24-month period (September 2018–October 2020) among 400 elderly individuals (≥60 years) residing in urban and rural areas of Lucknow district, located in the field practice areas of the Urban and Rural Health Training Centres, Department of Community Medicine, Era's Lucknow Medical College.

Results: In urban areas, most respondents were aged 60–69 years (73.2%), predominantly Muslim (87.5%), and from the General category (65.4%), whereas in rural areas, the majority were aged 60–69 years (58.3%), Hindu (80.0%), and married (90%). Depression was reported in 37.9% of the urban elderly and 52.5% of the rural elderly. Significant associations were observed between depression and occupation ($p<0.001$), with the highest prevalence among the unemployed (50.6%), and between depression and socioeconomic status ($p<0.001$), with the highest rates in Class V (60.9%) and Class IV (43.5%).

Conclusion: Depression was highly prevalent among the elderly in Lucknow, particularly in rural areas, and was significantly associated with unemployment and lower socioeconomic status. These findings highlight the urgent need for targeted mental health interventions and social support measures to improve the quality of life of older adults.

Keywords: Elderly, Depression, Mental health, Morbidity.

INTRODUCTION

The World Health Organization defines quality of life as an individual's perceived position in life in relation to their goals, aspirations, values, and concerns, within the context of their culture and value systems. It is a multidimensional concept, influenced by physical health, psychological well-being, personal beliefs, social relationships, and environmental factors.[1,2]

In India, the mean age of the population was 26.8 years in 2015, with half the population younger and half older; this was up from 19.3 years in 1970 and is projected to rise to 38.1 years by 2050.[3] With this demographic shift, health problems in the elderly are becoming increasingly significant. Dementia,

characterized by progressive loss of cognitive function, is a major concern, currently affecting 47.5 million people worldwide and expected to nearly triple by 2050.[4] Furthermore, approximately 15% of adults aged 60 years and above suffer from a mental disorder, with depression being among the most common, affecting about 7% of the elderly population.[5] Despite its prevalence, depression often remains underdiagnosed and undertreated, contributing to poor quality of life.

Addressing these challenges requires comprehensive strategies, including universal health coverage through programs such as Ayushman Bharat, as well as community-based interventions. Social support and engagement by health professionals and social workers are crucial in mitigating loneliness and depression, and in promoting daily activities such as walking, exercising, and cooking, which help maintain both mental and physical well-being.[6]

Aim: To assess the prevalence of depression among elderly residents of Lucknow district and identify socio-demographic and morbidity-related factors associated with depression.

Objective: To assess the association of common morbidities (e.g., diabetes, hypertension, osteoarthritis, COPD) with depression in the elderly population.

MATERIALS AND METHODS

Research Question: What is the relationship between common morbidities and depression in the elderly population?

This community-based cross-sectional study was carried out over a period of 24 months (September 2018-October 2020) in both urban and rural areas of Lucknow district, in the field practice areas attached to the Urban and Rural Health Training Centres of the Department of Community Medicine, Era's Lucknow Medical College and Hospital. A total of 400 elderly individuals (aged ≥60 years) were enrolled using a multistage random sampling technique. applying the appropriate statistical formula.[7]

$$\mathbf{n = \frac{ek(Z\alpha + Z\alpha\beta)^2 (\sigma 1^2/\sigma 2^2)}{d2}}$$

Where **σ1** = 14.79, **σ2** = 9.28. **d** = mean **(σ1+ σ2)**, **k** = 4,

Type I error **α** = 5 %, Type II error **β** = 10 % for 90 % power of study, **e** = 2, design effect

Data loss = 10 %. The sample size comes out to be **n** = **400**

Inclusion criteria were residents of Lucknow for ≥6 months, both genders, providing informed consent. Exclusion criteria were non-cooperation or refusal to participate.

Data were collected using a predesigned and pretested interview schedule that included information on socio-demographic characteristics (age, sex, occupation, income, socioeconomic status as per BG Prasad's 2019 classification, family type, locality, marital status, and education) as well as depression severity). Anthropometric measurements and clinical examinations were also carried out. The interview schedule was pretested among 40 elderly individuals, and necessary modifications were made accordingly. Data entry and analysis were performed using MS Excel. Descriptive statistics were applied, and chi-square tests were used to assess associations between categorical variables, with a p-value <0.05 considered statistically significant. Independent variables included age, family type, religion, caste, socioeconomic status, marital status, education, and occupation.

RESULTS

[Table 1] Bio-Demographic Profile of Elderly Population

In the urban area, the majority of participants were in the 60–69 years' age group (73.2%).

Most of the respondents were Muslims (87.5%) and belonged to the General category (65.4%). Nearly three-fourths (72.9%) were married, and just over half (51.1%) lived in nuclear families. In the rural area, the majority were also in the 60–69 years' age group (58.3%). Most respondents were Hindus (80.0%). A higher proportion (90.0%) were married. Family type distribution showed that the majority (59.8%) lived in joint families.

[Table 2] In the urban area, the majority of respondents were illiterate (72.5%). Most were either unemployed (57.9%), engaged as semi-skilled workers (21.4%), or employed as clerical/shop owners (17.1%). In terms of socioeconomic status, the largest proportion belonged to Class IV (36.8%), followed by Class V (26.1%) and Class III (20.7%). In the rural area, illiteracy was even more pronounced, with 93.3% of respondents unable to read or write. A substantial proportion were unemployed (75.8%). With respect to socioeconomic class, the majority fell into Class IV (54.2%) and Class V (26.7%).

[Table 3] presents the prevalence of depression, which was higher among the rural elderly (52.5%) compared to the urban elderly (37.9%). Overall, 42.3% of the study participants were found to have depression. The difference between urban and rural populations was statistically significant (χ^2=7.38, p=0.007).

[Table 4] shows the association between socio-demographic factors and depression. A highly significant association was observed between age and depression (p<0.001), with the highest proportion of depression among participants aged ≥80 years, followed by those aged 70–79 years and 60–69 years. A significant association was also found between religion and depression (p<0.001), with a higher proportion of Hindus (56.5%) affected compared to Muslims (35.3%). Regarding marital status, depression was significantly higher among widows (65.5%), followed by married individuals (35.6%); the only unmarried participant also had depression

(p<0.001). Finally, family type was significantly associated with depression (p<0.001), with a higher proportion among those living in nuclear families (53.4%) compared to joint families (34.7%).

[Table 5] shows the association between occupation, socioeconomic class, and depression. A highly significant association was observed between occupation and depression (p<0.001), with the highest prevalence among the unemployed (50.6%), followed by unskilled workers (50.0%) and semi-skilled workers (40.3%). Similarly, a highly significant association was found between socioeconomic class and depression (p<0.001), with the highest proportion among participants in class V (60.9%) and class IV (43.5%).

[Table 6] shows the association of depression with various morbidities among the elderly. Depression was significantly associated with osteoarthritis (p=0.026), bronchial asthma (p=0.041), COPD (p=0.022), diabetes mellitus (p=0.004), and hypertension (p=0.039). The prevalence of depression was higher among those with these conditions compared to those without. No significant association was observed with cataract (p=0.330), hearing loss (p=0.194), or thyroid dysfunction (p=0.055).

[Table 7] presents the logistic regression analysis examining socio-demographic and morbidity predictors of depression. The analysis revealed that age, religion, socioeconomic status, family type, and diabetes mellitus were significant independent predictors of depression among the study population.

Table 1: Bio-Demographic Profile of Elderly Population

Bio Demographic Characteristics		Urban		Rural		Total	
		No.	%	No.	%	No.	%
Age	60 - 69 yrs.	205	73.2%	70	58.3%	275	68.8%
	70 - 79 yrs.	68	24.3%	48	40.0%	116	29.0%
	>= 80 yrs.	7	2.5%	2	1.7%	9	2.3%
Sex	Male	124	44.3%	59	49.2%	183	45.8%
	Female	156	55.7%	61	50.8%	217	54.3%
Religion	Hindu	35	12.5%	96	80.0%	131	32.8%
	Muslim	245	87.5%	24	20.0%	269	67.3%
Marital Status	Married	204	72.9%	108	90.0%	312	78.0%
	Unmarried	0	0.0%	1	.8%	1	.3%
	widow	76	27.1%	11	9.2%	87	21.8%
Category	General	183	65.4%	2	1.7%	185	46.3%
	SC	4	1.4%	36	30.0%	40	10.0%
	OBC	93	33.2%	82	68.3%	175	43.8%
Type of family	Nuclear	143	51.1%	18	15.0%	161	40.3%
	Joint	137	48.9%	102	85.0%	239	59.8%
Total		280	100.0%	120	100.0%	400	100.0%

Table 2: Social Characteristics of Elderly Population

Social Characteristics		Urban		Rural		Total	
		No.	%	No.	%	No.	%
Education	Illiterate	203	72.5%	112	93.3%	315	78.8%
	Primary	54	19.3%	2	1.7%	56	14.0%
	Middle	3	1.1%	2	1.7%	5	1.3%
	High School	13	4.6%	4	3.3%	17	4.3%
	Graduate	4	1.4%	0	0.0%	4	1.0%
	Post Graduate	3	1.1%	0	0.0%	3	.8%
Occupation	Unemployed	162	57.9%	91	75.8%	253	63.3%
	Unskilled Worker	0	0.0%	4	3.3%	4	1.0%
	Semi-Skilled Worker	60	21.4%	12	10.0%	72	18.0%
	Skilled Worker	7	2.5%	0	0.0%	7	1.8%
	Clerical/Shop-owner	48	17.1%	7	5.8%	55	13.8%
	Professional	3	1.1%	6	5.0%	9	2.3%
Socio Economic Class	I	22	7.9%	0	0.0%	22	5.5%
	II	24	8.6%	9	7.5%	33	8.3%
	III	58	20.7%	32	26.7%	90	22.5%
	IV	103	36.8%	65	54.2%	168	42.0%
	V	73	26.1%	14	11.7%	87	21.8%
Total		280	100.0%	120	100.0%	400	100.0%

Table 3: Distribution of Elderly Population According to Depression Scale as Per Short GDS Scale

GDS		Urban		Rural		Total		chi sq	p-value
		No.	%	No.	%	No.	%		
Depression	No	174	62.1%	57	47.5%	231	57.8%	7.38	0.007
	Yes	106	37.9%	63	52.5%	169	42.3%		
Total		280	100.0%	120	100.0%	400	100.0%		

Table 4: Association of Depression with Bio-Demographic Characteristics of Elderly Population

Bio Demographic		n	Depression (n =169)		No Depression (n =231)		chi sq	p-value
			No	%	No	%		
Age	60 - 69 yrs.	275	70	25.5%	205	74.5%	103.46	<0.001
	70 - 79 yrs.	116	90	77.6%	26	22.4%		
	>= 80 yrs.	9	9	100.0%	0	0.0%		
Sex	Male	183	62	33.9%	121	66.1%	9.69	0.002
	Female	217	107	49.3%	110	50.7%		
Religion	Hindu	131	74	56.5%	57	43.5%	16.19	<0.001
	Muslim	269	95	35.3%	174	64.7%		
Marital Status	Married	312	111	35.6%	201	64.4%	26.36	<0.001
	Unmarried	1	1	100.0%	0	0.0%		
	widow	87	57	65.5%	30	34.5%		
Category	General	185	83	44.9%	102	55.1%	13.55	0.001
	SC	40	26	65.0%	14	35.0%		
	OBC	175	60	34.3%	115	65.7%		
Type of family	Nuclear	161	86	53.4%	75	46.6%	13.77	<0.001
	Joint	239	83	34.7%	156	65.3%		

Table 5: Association of Depression with Social Characteristics of Elderly Population

Social Characteristics		n	Depression (n=169)		No Depression (n=231)		chi sq	p-value
			No	%	No	%		
Education	Illiterate	315	142	45.1%	173	54.9%	10.80	0.055
	Primary	56	20	35.7%	36	64.3%		
	Middle	5	0	0.0%	5	100.0%		
	High School	17	7	41.2%	10	58.8%		
	Graduate	4	0	0.0%	4	100.0%		
	Postgraduate	3	0	0.0%	3	100.0%		
Occupation	Unemployed	253	128	50.6%	125	49.4%	32.19	<0.001
	Unskilled Worker	4	2	50.0%	2	50.0%		
	Semi - Skilled Worker	72	29	40.3%	43	59.7%		
	Skilled Worker	7	0	0.0%	7	100.0%		
	Clerical/Shop-owner	55	10	18.2%	45	81.8%		
	Profession	9	0	0.0%	9	100.0%		
Socio Economic Class	I	22	0	0.0%	22	100.0%	32.40	<0.001
	II	33	9	27.3%	24	72.7%		
	III	90	34	37.8%	56	62.2%		
	IV	168	73	43.5%	95	56.5%		
	V	87	53	60.9%	34	39.1%		

Table 6: Association of Depression with Morbidities amongst Elderly Population

Morbidities		n	Depression (n =169)		No Depression (n =231)		chi sq	p-value
			No	%	No	%		
Cataract	No	196	78	46.2%	118	51.1%	0.95	0.330
	Yes	204	91	53.8%	113	48.9%		
Osteoarthritis	No	250	95	56.2%	155	67.1%	4.94	0.026
	Yes	150	74	43.8%	76	32.9%		
Bronchial asthma	No	370	151	89.3%	219	94.8%	4.19	0.041
	Yes	30	18	10.7%	12	5.2%		
COPD	No	377	154	91.1%	223	96.5%	5.28	0.022
	Yes	23	15	8.9%	8	3.5%		
Hearing Loss	No	368	152	41.3%	216	58.7%	1.69	0.194
	Yes	32	17	53.1%	15	46.9%		
	Yes	15	8	53.3%	7	46.7%		
Diabetes Mellitus	No	253	93	36.8%	160	63.2%	8.51	0.004
	Yes	147	76	51.7%	71	48.3%		
Thyroid Dysfunction	No	336	135	40.2%	201	59.8%	3.69	0.055
	Yes	64	34	53.1%	30	46.9%		
Hypertension	No	104	35	33.7%	69	66.3%	4.26	0.039
	Yes	296	134	45.3%	162	54.7%		

Table 7: Logistic Regression Analysis to Find Association of Depression with Socio-Demographic and Morbidity Predictors

Depression	B	SE	p-value	Exp(B)/OR
Intercept	5.18	8661.08	1.000	
60 - 69 year	-22.27	0.42	<0.001	NA
70 - 79 year	-20.01	0.00		NA
>= 80 year	Ref.			
Male	-0.08	0.48	0.861	0.92
Female	Ref.			
Hindu	1.84	0.42	<0.001	6.29

Muslim	Ref.			
Married	-0.28	0.49	0.565	0.76
Unmarried	17.63	0.00		NA
Widow	Ref.			
General	0.65	0.39	0.099	1.91
SC	0.21	0.60	0.728	1.23
OBC	Ref.			
Illiterate	-8.11	9959.22	0.999	0.00
Primary	-6.78	9959.22	0.999	0.00
Middle	-19.75	11574.47	0.999	NA
High School	-3.29	9959.22	1.000	0.04
Graduate/PG	-8.47	12843.57	0.999	0.00
Profession	Ref.			
Unemployed	25.30	4916.48	0.996	NA
Unskilled Worker	22.61	4916.48	0.996	NA
Semi Skilled Worker	25.79	4916.48	0.996	NA
Skilled Worker	4.72	6857.99	0.999	112.41
Clerical/Shop-owner	22.10	4916.48	0.996	NA
Profession	Ref.			
I	-19.83	3020.28	0.995	NA
II	-1.37	0.79	0.083	0.25
III	-1.50	0.50	0.003	0.22
IV	-0.45	0.42	0.279	0.64
V	Ref.			
Nuclear	0.77	0.37	0.038	2.16
Joint	Ref.			
Cataract	-0.36	0.32	0.267	0.70
Osteoarthritis	0.57	0.35	0.109	1.77
Bronchial asthma	-0.74	0.64	0.252	0.48
COPD	1.23	0.98	0.212	3.41
Hearing Loss	-0.59	0.75	0.431	0.55
Diabetes Mellitus	1.08	0.35	0.002	2.93
Thyroid Dysfunction	0.36	0.48	0.448	1.44
Hypertension	-0.33	0.41	0.415	0.72

DISCUSSION

In the present study, 54.3% of respondents were females and 78% were married. The majority belonged to the general (46.3%) and OBC (43.8%) categories. Most urban respondents lived in joint families (85%), while nuclear families predominated in rural areas (51.1%). The mean age was 67.05 years, with 73.3% aged above 60 years. These findings are comparable to Al-Surimi et al. (2019),[8] who reported a higher proportion of females (63%) and a mean age similar to ours, though they found male predominance in contrast, also, Verma V et al,[9] (2019) observed 56.25% respondents were literate and 43.75% were illiterate.

Regarding education and occupation, most respondents were illiterate (72.5% urban, 93.3% rural) and unemployed (57.9% urban, 75.8% rural). Semi-skilled workers (21.4%) and clerical/shop owners (17.1%) formed smaller proportions. Socioeconomically, the majority belonged to class IV and V in both settings. Similar illiteracy and unemployment trends were observed by Al-Surimi et al,[8] (2019) and Gupta A. et al,[10] (2014) in Lucknow, Srivastava MR et al,[11] (2014) observed in their study at Lucknow, that majority of respondents were married (64.16%) belonged to lower SES (71.12%). Whereas Onunkwor et al,[12] (2016) reported higher education levels in their population.

In the present study, 42.3% of the elderly were found to have depression, with a significantly higher prevalence in rural (52.5%) than urban areas (37.9%). Depression was significantly associated with older age (particularly 70–79 years, 77.6%), Hindu religion (56.5%), widowhood (65.5%), nuclear family type (53.4%), unemployment (50.6%), lower socioeconomic status (class IV, 60.9%), and comorbidities such as osteoarthritis, bronchial asthma, COPD, diabetes, and hypertension. Comparable findings have been reported across diverse settings: Qamar et al,[13] (2020) found 24.1% with depression, Amara et al,[14] (2018) 27.3%, and Padayachey et al,[15] (2017) 39.6%, with widowhood strongly linked to depression. Grover et al,[16] (2018) highlighted gender differences, with women showing higher psychiatric comorbidity, while Kakrani et al,[17] (2015) and Jacob et al,[18] (2015) observed depression in 52.4% and 58.2% respectively, especially among females and those with poor health perception. Similarly, Singh et al,[19] (2018) reported 50.1% prevalence, with 15.5% severe cases, and Chopra et al,[20] (2018) noted even higher rates (70.4%), with severe depression more common among females (63.9%). Gupta et al,[10] (2015) in Lucknow also found a high prevalence, particularly among those ≥80 years (34%). These consistent findings underscore that depression among the elderly is a widespread public health problem, strongly influenced by socio-demographic vulnerabilities and chronic morbidities.

CONCLUSION

In urban area depression was present in 37.9% subjects while in rural area it was present in 52.5% individuals. The significant association of depression was found with age, religion, marital status, type of family, occupation, socio-economic class. Further significant association of depression was found with morbidities Osteoarthritis, Bronchial asthma, COPD, Diabetes Mellitus and Hypertension.

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