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MORBIDITIES AND ITS RELATIONSHIP WITH DISABILITY AND PSYCHOLOGICAL WELLBEING AMONG ELDERLY IN VARANASI DISTRICT

Mohan Gupta[1], Kshitij Raj[2], S.C.Mohapatra[3]

ABSTRACT

Objective: To assess the pattern of morbidity, co-morbidity, and treatment-seeking behaviour among the elderly. To determine the relationship of specific medical and co-morbid conditions with disability and psychological well-being, and also morbidity with socio-demographic variables. **Methods**: This is across-sectional study, using a cluster sampling technique, with a sample of 200 subjects (elderly people over 60 years old) from the urban population of Varanasi City and the rural area of Harahua Block, Varanasi District. Analysis of variance (ANOVA) was used to determine relationship between various socio-demographic variables and morbidity. Variables that were independently associated with morbidity and perceived health were analyzed. **Results**: Females and the rural elderly were found to have higher mean morbidity. Asthma, COAD, hypertension, osteoarthritis, gastro-intestinal tract disorders, anemia, eye, psychological and neurological problems were significantly associated with both disability and distress. **Conclusion**: More geriatric facilities need to be provided in hospitals and dispensaries. The oldest of the old should be provided free treatment and medicines. Family members need to be educated about the harms of the elder abuse.

Key words: Geriatric Morbidity, Disability, Elderly psychology

INTRODUCTION:

A person ≥60 years is referred to as **'elderly'** in India. The elderly population account for 7.4% of total population in 2001, both the share and size of elderly population is increasing over time. It is projected to rise to 12.4% of population by the year 2026 (Govt. of India, 2001) and by the year 2050, the number of elderly people would be about 324 million.[1]

Majority of the problems that confront older persons are the result of priorities, policies and practices of society. Ageing is mainly associated with social isolation, poverty, apparent reduction in family support, inadequate housing, impairment of cognitive functioning, mental illness, widowhood, loss, deprivement, limited options for living arrangement and dependency towards end of life hence The care of the elderly is drawing more and more attention of the Government and public. In traditional Indian societies, joint family system used to take care of most of these social issues. However, with industrialization and urbanization, disintegration of traditional joint family has been the major social problem. Nevertheless family and the community are the most important caretaker of elderly in India. It is thus necessary to strengthen the traditional family system through community education and social intervention. In not so distant future, the elderly in the organized sector will be opting more and more for living arrangement namely old age homes and senior citizen homes. For the elderly in the unorganized sector the options remain limited due to poverty and destitution, in absence of family support.

1. PGDGM Scholar, 2. Resident, 3. Professor, Department of Community Medicine, IMS, BHU, Varanasi

In the words of Seneca: ***'Old age is an incurable disease.***' Sir James Sterling Ross commented" ***'You do not heal,' old age. You protect it; You promote it: You extend it***.' The decline of homeostatic reserve of every organ system often referred to ***'homeostenosis'*** appears to occur independently of changes in other organ system and is influenced by diet, environment and personal habits as well as by genetic factors.

Population ageing involves a shift from high mortality/high fertility to low mortality/low fertility and consequently an increased proportion of older people in the total population. India is undergoing such a demographic transition (EPW, Research Foundation, 1998)[2]. WHO launched a new program in 1995 on ageing and health The emphasis of the new program is on healthy ageing rather than on the elderly. Going on the same track United Nations declared the year 1999 to be "The International Year Of the Older Persons (IYOP)" and adopted the theme "towards a society for all ages" which implies that there is place and need for all-children, youth, and older person.[3] Rowe and Kahn have popularized the concept of "**Successful ageing"**. Successfully growing older involves not the absence of the disease or physiological change but effectively compensating for physiologic changes and disease associated with ageing. This, for want of a better term might be called, **"Effective Ageing".**[4]

The Senior Citizens (Maintenance, Care and Protection) Act is to enable senior citizens to obtain maintenance from their children to meet their basic requirements and lead a life with dignity. The most important provision of the Act is to make the maintenance of parents by their family a legal right. In this article we try to study to

- Assess the pattern of morbidity, co-morbidity, and treatment-seeking behaviour among the elderly population over 60 years old, and
- Determine the relationship of specific medical conditions and co-morbid conditions with disability and psychological well-being, and also morbidity with socio-demographic variables.

MATERIALS AND METHODS

Subjects and design: This cross-sectional study was carried out among elderly people over 60 years old in the urban slum areas of Varanasi District covering a population of 20342, which is an adopted area under the administrative control of Nagar Nigan and the RURAL area of Harahua Block in Varanasi District in India. The present study was conducted from October, 2013 to March, 2014.

Sampling: In urban area from each part, one house was selected randomly. Starting from this house, every next nearest house was surveyed until five subjects were enrolled. A minimum sample size of 100 elderly people was selected.

In rural area, five randomly chosen villages were geographically divided into four parts. From the centre of each geographical part, a direction was chosen at random. All houses in the chosen direction were given numbers. From these houses one house was chosen randomly and starting from this house every next nearest house was surveyed till five subjects were enrolled. The same procedure was used in other geographical parts of

the village. Thus, from each sampled village, 20 subjects were selected. A similar sampling procedure was applied in the remaining four villages.

The eligible subjects who agreed to participate were interviewed at home, by a physician, between October, 2013 to March, 2014. After recording their socio-demographic data, the illness/disease status of the elderly subjects was inquired from their family members. The interviewees were also asked to display the containers/packs of all the medications they were taking and to show all the medical reports they possessed. Subsequently, their symptoms were noted and a general physical examination was carried out. Based on reported illness, clinical features, medical records, and the medication they had with them, a provisional clinical diagnosis was made and coded according to the International Classification of Diseases, 10th Revision (ICD-10). Information on treatment-seeking behaviour, any surgical operation, and history of fall, with its outcome, after 60 years old was also obtained. Socio-demographic variables used were age, gender, marital status, education, occupation, and family income.

Since the median and mean family income of the 200 elderly subjects was Rs 6000, those with income <Rs 6000 were classified as the low-income group. Proxy interviews of family members were conducted for individuals incapable of being interviewed due to mental or physical incapacity. Four subjects refused to participate in the study without giving any specific reason for non-participation.

For assessment of disability, the standardized Rapid Disability Rating Scale-2[5] was used. It consists of 18 items divided into two parts; Part A deals with Activities of Daily Living (ADL) and focuses on eight basic activities: walking, mobility, bathing, dressing, toileting, grooming, adaptive tasks, and eating, and Part B assesses the degree of disability which occurs as a result of the natural process of ageing, basically in communication, hearing, sight, diet, locomotion, continence, physical health making a person dependent on medication, and mental efficiency.

According to the scale, elderly people with minimal disability are those who do not require major assistance or care, the moderately disabled are those who require some form of hospitalization for treatment, and the severely disabled are those elderly people who need to be transferred to nursing homes or other institutions to receive major care assistance or continuous supervision. Psychological distress in the elderly subjects was assessed using a standardized, PGI Health Questionnaire-N-1.[6] It consists of 38 items divided into two parts. Part A assesses the physical distress and Part B assesses the mental distress among the elderly subjects and is presented as proportion of those distressed and not distressed.

Statistical methods: Based on the provisional clinical diagnosis, the morbidity profile of the subject is presented. The relationship between various socio-demographic variables and morbidity was assessed using analysis of variance (ANOVA). Multivariate analysis was carried out to find the variables that were independently associated with morbidity status after controlling for the confounding factors. Also, the relationship between morbidity and each medical condition with disability and perceived health is assessed using Kruskal Wallis H test.

The χ^2 square test was used to test the significant difference in categorical variables and the unpaired 't' test was used to test significant difference in quantitative variables. Correlation coefficient was used to assess the association between number of morbidities and age, disability, and psychological distress. Analysis was done using the SPSS computer software package.

RESULTS

The various socio-demographic characteristics of the study population are tabulated according to sex and locality (Table 1). The majority of the population is in 7th decade of life and married. In urban area majority are literate (63.5% males graduate) while in rural majority are illiterate with maximum in females (90.1%). 55.1% males in urban area are retired in contrast to 8.2% males in rural areas.

Table- 1 : Socio-demographic profile of elderly people over 60 years of age

Socio-demographic characteristics		Urban (n = 100)				Rural (n = 100)			
		Male		Female		Male		Female	
		No.	%	No.	%	No.	%	No.	%
Age group (years)	61–72	30	61.2	38	74.5	27	55.1	35	68.6
	73–84	14	28.5	9	17.6	18	36.7	11	21.5
	85+	5	10.2	4	7.8	4	8.1	5	9.8
Marital status	Married	35	71.4	28	54.9	36	73.4	33	64.7
	Not married	14	28.5	23	45.0	13	26.5	18	35.2
Educational status	Illiterate	4	8.1	15	29.4	24	48.9	46	90.1
	Literate	13	26.5	28	54.9	22	44.8	3	5.8
	Graduate	32	65.3	8	15.6	3	6.1	2	3.9
Occupation	House Worker	4	8.2	40	78.4	2	4.1	39	76.5
	Farmer	0	0.0	0	0.0	19	38.8	1	2.0
	Service	9	18.3	2	3.9	3	6.1	1	1.9
	Labours	0	0.0	0	0.0	5	10.2	1	1.9
	Business	3	6.0	0	0.0	0	0.0	0	0.0
	Retired	27	55.1	0	0.0	4	8.2	0	0.0
	Unable to work	6	12.2	9	17.6	16	32.7	9	17.6

Out of the total sample, 88.9% (Table 2) of subjects reported illness based on their perception. A higher percentage of females (94.1%) reported illness compared with men (83.5%). Of the subjects in the urban area, 91% perceived themselves as ill whereas 85% of subjects in rural area were not well based on their perception.

The most prevalent morbidity among elderly people was anaemia (based on clinical impression) followed by dental problems, hypertension, Chronic Obstructive Airway Disease (COAD), cataract, osteoarthritis, skin and nails (fungal) infection, urinary incontinence, and senile pruritis. Most of the morbidities were more common in the rural area except for hypertension (56%), osteoarthritis (34%), anxiety (10%), diabetes mellitus (8%), obesity (8%), and psychosis (5%) which was more common in the urban area (**Table 3**).

Table-2: Distribution of self reported illness, morbidities diagnosed by physician, and treatment-seeking behaviour of elderly people

Particulars	Urban				Rural				Total				Total (n = 200)	
	Male (n = 49)		Female (n = 51)		Male (n = 49)		Female (n = 51)		Male (n = 98)		Female (n = 102)			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Self-reported illness	42	85.7	49	96.1	39	81.3	47	92.2	81	83.5	96	94.1	177	88.9
No. of morbidities (physician diagnosed)														
0	0	0.0	1	1.9	0	0.0	0	0.0	0	0.0	1	0.9	1	0.5
1-3	17	34.6	9	17.6	4	8.1	3	5.8	21	21.4	12	11.7	33	16.5
4-6	16	32.6	24	47	26	53	19	37.2	42	42.8	43	42.1	85	42.5
7-9	14	28.5	10	19.6	5	10.2	17	33.3	19	19.3	27	26.4	46	23.0
10-12	2	4.0	6	11.7	13	26.5	11	21.5	15	15.3	17	16.6	32	16.0
13	0	0.0	1	1.9	1	2.0	1	1.9	1	1.0	2	1.9	3	1.5
Seeking treatment	25	59.5	**33**	**67.3**	9	23.0	10	21.2	34	41.9	43	44.7	**77**	**43.5**

On the whole, it was found that 83% of elderly people presented with more than three morbidities. In the rural area, 93% of elderly subjects had more than three morbidities compared with 73% in urban area. The present study observed means of 5.9±3 and 6.4±2.8 morbidities in males & females, respectively.

The majority (42.5%) were diagnosed by physician to have 4-6 morbidities. All except one were having some morbidity but only 43.5% were seeking treatment. Treatment seeking was more common in the urban (58%) than the rural area (19%).

Table 3: Morbidity profile of elderly people according to sex and locality

Morbidities	Urban		Rural		Total %
	Male	Female	Male	Female	
	No.	No.	No.	No.	
Anaemia	19	34	40	40	66.5
Dental problems	27	26	41	32	63.0
Hypertension	23	33	18	24	49.0
Chronic Obstructive Airway Disease	18	16	28	22	42.0
Cataract	11	18	26	21	38.0
Osteoarthritis (knee joints)	6	28	17	15	33.0
Skin and nail infections	7	9	22	11	24.5
Urinary incontinence	1	18	0	21	20.0
Senile pruritus	7	4	18	10	19.5
Senile deafness	13	5	10	10	19.0
Parasthesia	6	10	10	9	17.5
Prostate enlargement	11	0	23	0	17.0
Valvular heart disease	4	6	12	11	16.5
Acid peptic disease	5	3	5	16	14.5
Cervical spondylosis	2	5	3	7	8.5
Anxiety neurosis	1	9	2	4	8.0
Corneal opacity/ulcer	0	1	4	10	7.5
Asthma	5	0	2	5	6.0
Diabetes mellitus	6	2	2	1	5.5
Obesity	1	7	0	2	5.0
Conjunctivitis	0	1	3	6	5.0
Rheumatoid arthritis	0	4	2	2	4.0
Sciatica	1	2	4	0	3.5
Psychosis	3	2	0	1	3.0
Pulmonary tuberculosis	1	1	0	4	3.0
Hemorrhoids	0	2	3	0	2.5
Faecal incontinence	1	0	1	3	2.5

The mean number of morbidities among the total elderly population was 6.1±2.9 (urban elderly 5.4±2.7, rural elderly 6.9±2.9). The mean number of morbidities among the male elderly was 5.9±3.0 compared with 6.4±2.8 among females.

Table-4: Relationship of morbidity profile with disability and psychological distress

Characteristics		Urban (n = 100)				Rural (n = 100)			
		Male		Female		Male		Female	
		No.	%	No.	%	No.	%	No.	%
Disability status	No disability	12	24.4	4	7.8	08	16.3	01	1.9
	Minimal disability	11	22.4	13	25.4	10	20.4	10	19.6
	Moderate	17	34.6	24	47.0	23	46.9	33	64.7
	Severe	09	18.3	10	19.6	08	16.3	07	13.7
Psychological well-being	Distressed	25	51	34	66.6	31	63.2	42	82.3
	Not distressed	24	49	17	33.3	18	36.7	09	17.6

Among the symptoms noted in elderly subjects, most frequent was depression (feeling of sadness, 70.5% of subjects). Out of the total sample majority 48.5% had moderate disability, while 12.5% did not suffer from any disability (**Table 4**).

Table-5: Relationship of morbidity with socio demographic variables

Socio demographic variables		N	Univariate analysis with morbidity		Multivariate analysis with morbidity	
			Mean±SD score	P-value	B value (95% CI)	P- value
No adjustment done with other socio-demographic variables						
Sex	Male	98	5.9±3.0	0.16	1.03 (0.02, 2.05)	0.03
	Female	102	6.4±2.8			
Age groups (years)	61–72	130	5.5±2.7	<0.001	0.06 (0.01, 0.12)	0.01
	73–84	52	7.3±2.8			
	85+	18	7.2±3.2			
Locality	Urban	100	5.4±2.7	<0.001	0.76 (−0.22, 1.76)	0.12
	Rural	100	6.9±2.9			
Marital status	Married	132	4.9±5.9	<0.001	0.20 (−0.59, 0.99)	0.61
	Not married	68	8.3±7.6			
Caste	Schedule caste	38	7.0± 3.1	0.18	−0.22 (−0.56, 0.11)	0.18
	Schedule tribe	1	4.0± 0.0			
	Other backward caste	32	6.2±2.7			
	Others	129	5.9±2.9			
Education	Illiterate	89	7.1± 2.8	<0.001	−0.17 (−0.40, 0.04)	0.12
	Literate	66	5.9± 2.9			
	Graduate	45	4.6± 2.3			
Occupation	Household work	85	5.7± 2.4	<0.001	0.20 (0.07, 0.33)	0.001
	Service (Pvt or Govt)	15	5.0± 2.8			
	Worker	6	8.8± 3.0			
	Farmer	20	5.6± 2.0			
	Business	3	3.0± 0.0			
	Retired	31	4.9± 2.9			
	Unable to work	40	8.6± 2.8			
Family income (Rs/mth)	<6000	99	6.9± 3.0	< 0.001	−3.45 (−9.30, 2.39)	0.24
	>6000	101	5.4±2.5			

Out of the total sample population, 103 (51.5%) subjects had fallen. Fracture was reported in 21.3%, and other injuries occurred in 79.6% of those who had fallen. Fractures among females (26.4%) were reported more frequently compared with males (16%) and fracture was seen more in urban subjects (29.4%) compared with rural subjects (13.4%).

In Table 5, a higher number of morbidities were observed among females; however, there was no significant difference by sex in the univariate analysis. Elderly people from the rural area (P<0.001), those unmarried and divorced (P<0.001), and those belonging to schedule and backward castes had higher levels of morbidity. Lower education was consistently observed with higher levels of morbidity (P<0.001). A family income of <Rs 6000 per month was associated with higher morbidity (P<0.001).

After controlling for confounding factors using multiple regression analysis, variables strongly associated with morbidity status were age (B value 0.06, 95% CI: 0.01, 0.12), sex (B value 1.03, 95% CI: 0.02, 2.05), and occupation (B value 0.20, 95% CI: 0.07, 0.33) (Table 5).

DISCUSSION

Some elderly people are sick while others maintain good health status even into advanced age. Hence, it is important to know from the elderly person how they evaluate their health since health comprises subjective and objective evaluations. In this study, many of the elderly (88.9%) felt that they were ill and 43.5% were on some medication. It was also noticed that elderly women, in both urban and rural areas, were relatively more ill than the elderly men.

Comparison with this study helped in assessing, albeit crudely, the morbidity level of the Indian elderly relative to those from the rest of the world belonging to different ethnic and racial groups. In our study, 83% of the elderly over 60 years had more than three morbidities compared with 44% of the Israeli elderly who had three or more morbidities in the age group at risk of higher morbidity levels.

Kishore and Garg et al. (1997)[7] reported that the commonest morbidities among the over 60s in a rural area were cataract (30%), arthritis and arthralgia (15.6%), refractory error (13.6%), anaemia (13.3%), chronic bronchitis (7.3%), hypertension (5.2%), dental caries (7%), impaired hearing (5%), and filariasis (1.5%). They also noted that the morbidity rates increased with increasing age, being maximum above 65 years of age. Garg et al (1993)[8] said that the main cause of illness reported were anaemia (39.6%), cataract (24.3%), refractory error (20.1%), hypertension (16.5%), arthritis (14.4%), and chronic bronchitis (9%). Sunder *et al.*(1999)[1] reported that, in a rural area of Rohtak district of Haryana (India), the leading symptoms among the male elderly were visual impairment (65%), chronic cough with or without expectoration and difficulty in breathing (58%), joint pains (51.8%), hearing problems (18.3%), and gastrointestinal problems (9.9%) compared with the present study where depressive symptoms (70.5%) and visual impairment (61%) followed by chronic cough with difficult breathing (52%) were the commonest symptoms.

A high number of morbidities, low level of treatment seeking in the rural area, and the high number of morbidities among elderly women could be linked due to a low level of literacy and health consciousness, social constraints, poverty, and poor access to health services. Thus it is possible that a person could rate their health as almost well, but on the other hand the physician may evaluate them as ill or very ill. The most popular type (system) of medicine preferred by those who were seeking treatment was allopathic, which was adopted by nearly 92.2%.

In the present study, fall was defined as ending up on the floor or ground unintentionally, It is itself not a diagnosis but a symptom of multiple underlying disease like visual impairment (cataract, corneal opacity), postural hypotension, degenerative joint disease, giddiness, and depression, the effects of certain medications on homeostasis, and/or environmental hazards or obstacles that interfere with safe mobility. In this study, many more elderly women had suffered a fracture compared with elderly men, which could be attributed to the increased prevalence of underlying risk factors like osteoporosis and osteomalacia. The significance of falls among elderly people is that not only that the number of falls increases with age but the injury rate is highest among the oldest old (>80 years) subjects with history of falling more than twice. There is a vicious cycle where, due to poor perceived health and morbidity there is increased tendency to fall which itself leads to increasing disability and distress.

The medical conditions that were related to both disability and distress are asthma, COAD, hypertension, osteoarthritis, gastrointestinal tract diseases, anaemia, neurological problems, visual impairment, hearing impairment, depressive symptoms, and others (including urinary incontinence, faecal incontinence). Similarly stroke, (Verbrugge LM et al., 1989; Ford AB et al., 1988; Guccione et al., 1994; Boult et al., 1994) [9,10,11,12] respiratory diseases, (Ford et al., 1988; Guccione et al., 1994)[10,11] incontinence, (Barberger-Gateau et al.,1992)[13] and arthritis were found to be related to disability in some studies. In our study tuberculosis was associated with distress but not with disability.

Other conditions like diabetes, heart disease, and renal disease were not significantly associated with disability and distress, which implies that people with these diseases succeed in making adaptations in order to perform necessary daily activities. In contrast to our findings, other studies have reported that conditions such as hypertension, arthritis, and gastrointestinal disease were associated with low levels of disability. High disability and psychological distress related to anaemia could be due to increasing weakness and fatigue and, therefore, could affect the ability to function independently.[14]

In our study, conditions such as increasing visual impairment, hearing impairment, and depressive symptoms were strongly related to disability and consequent distress. Studies have shown that poorer self-rated health and depression symptoms contribute substantially and independently to perceived health as both are known to be more prevalent in people with chronic conditions.[15,16] Our results were similar to other studies for the correlation of morbidity with disability and distress with a strong association between increasing number of conditions and increasing proportions of disability and distress.[14,17]

Reduction of the burden of morbidity, through primary or secondary prevention efforts, will depend also on the social factors, which act as a potential determinant for the application of the medical interventions. Other studies have suggested that socio-demographic variables like gender, age, race, marital status, and socioeconomic status are important determinants of physical functioning among the chronically ill.[18] The strength of our study is that our results are based on random sampling and the participation rate of the subjects was quite high. Also, the study is important because it was able to show to various factors that are related to functional status and psychological well-being.

CONCLUSION

A high mean number of morbidities were observed in elderly subjects with higher morbidity had increasing disability and distress. Age, sex, and occupation were important determinants of morbidity. Assessment of the morbidity profile and its determinants will help in the application of interventions, both medical and social, to improve the health status and thus the quality of life of the elderly. Socio-demographic variables such as age, sex, and occupation were significantly independently associated with morbidity-

- As the findings indicate, the main concern of the oldest of the old is regarding health facilities/ services. Therefore, more geriatric facilities need to be provided in hospitals and dispensaries.
- Outreach services should also be provided to the oldest of the old. Houses with oldest of the old population should be identified and registered with their health status, issues/ concerns; this can be done by the local health functionaries.
- Since financial dependence on family members and others is a primary issue at this age, the oldest of the old should be provided free treatment and medicines or universal health insurance coverage that covers all types of health problems of the oldest of the old.
- Mobilization and community based support towards the Oldest of the Old also needs to be emphasized and worked upon. Efforts need to be made to sensitize the people especially the young generation towards the needs and concerns of the Oldest Old. Abuse at family level is also an issue and the family members need to be educated about the harms of the elder abuse.

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