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RESEARCH ARTICLE

ON THE MEASUREMENT OF SUBJECTIVE AND OBJECTIVE HEALTH AMONG A GERIATRIC POPULATION IN INDIA: ITS VARIATION AND RELATION

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ABSTRACT

Objective: This study tries to find out the relationship of various socio-demographic variables with self perception of health (SPH) and morbidity load among the geriatric population of eastern Uttar Pradesh, India.

Methods: The study is based on a specially designed sample survey of 800 elderly people taken from two different setups of society that is from urban and rural.

Results: It was found that variables significantly associated with SPH were also significantly associated with morbidity load in both the type of localities, results show that gender, age, educational status, marital status, wealth index and type of family are significant determinants of either SPH or morbidity load.

Conclusion: The elderly respondents who perceived their health as good were mostly free from any kind of morbidity, while those who perceived their health as poor were mostly suffering from multiple morbidities.

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INTRODUCTION

The boundary of old age cannot be defined exactly because it does not have the uniform definition in all societies. The government of India adopted 'National Policy on Older Persons' in January, 1999. The policy defines 'Senior Citizen' or 'Elderly' as a person who is of age 60 years or above. In India size of elderly population, i.e. number of persons above the age 60 years is fast growing, the proportion of elderly person in the population of India rose from 5.63% in 1961 to 6.58% in 1991 (Rajan S.I., Mishra, Sharma 1999) and 7.5% in 2001 according to census of India, moreover the census 2011 projections indicate that elderly population has crossed 100 million mark. Under rapid socio-economic and demographic changes, the rapid growing population of elderly in the country needs special attention in several aspects, in which issues related to health are the most important aspects which prominently affect the quality of life of elderly population.

As people become older the functioning and adaptability of the tissues and different organs decline which brings various biological and physiological changes in elderly persons. Consequently, diseases requiring large quantum of health and social care become extremely common in old age. Disabilities resulting from these diseases frequently affect the functionality compromising the ability to pursue the activities of daily living (Dubey *et al.*, 2011; Arokiasamy, 2010; Alam and Mukherjee, 2005; Shalika, 2012).

There have been various studies which give evidence that majority of the elderly population suffer from multiple diseases. As in old age people become more prone to health issues in comparison to young (Husain and Ghosh, 2011; Kumar, 2012; Pou and Goli, 2012; Rajan, 2006; Krishnaswamy, 2008; Gupta and Shankar, 2003). Though in the urban area elderly are somehow benefitted with modern medical facilities but situation becomes more serious in the rural areas because of poor health care system and sanitation (Shankar, 2007; Chakrabarti and Sarkar, 2011; Karmakar, 2012). Thus, the health status of older population is an important domain of interest while studying about elderly.

In the present study while investigating the health status of older adults we have focused on two dimensions or aspects of health, self perception of health (SPH) and morbidity load on elderly (number of diseases from which the elderly respondent is suffering). The SPH is purely subjective phenomenon while the latter one is an objective phenomenon. Self perception of health is a person's own opinion about his/her health, which is measured generally on a 3 or 5 point ordinal scale. Self perception of health is an important indicator in prediction of future mortality and functional status. SPH is simple to measure and has been recognized by WHO as an instrument for monitoring health (De Brun *et al.*, 1996). While conducting a health survey it is recommended that the questions related to self perception of health should be asked at the beginning or before enquiring about the presence of any or multiple diseases. It would be difficult to ask a question on general health status after a person had gone into details of

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major illness and disability (Cartwright, 1983). Though, along with various socio-demographic factors, presence of morbidities in an individual significantly affects his/her perception of own health but SPH is a subjective phenomena and the way of rating own health may vary from one person to another, for instance, a person with some certain morbidities present in his/her body may perceive own health as poor while another person with same morbidities may perceive own health as good or average. Thus, in such type of investigations it would be better to find out the relationship between SPH and load of morbidity in the same population after measuring the SPH to ensure the reliability of SPH reported by the respondents. The present study was conducted on the elderly population (60+) of eastern Uttar Pradesh. Eastern Uttar Pradesh is a geographic region of northern India, which is located in the eastern end of Uttar Pradesh. Though, its geographical boundary is not determined by the government but in practice it comprises 28 districts of Uttar Pradesh. The cluster of these districts play immense political role because of its dense population and poor economic status. Due to these reasons the demand for separate state is also going on. The share of elderly (60 and above) in total population of eastern Uttar Pradesh is 8% (Census of India, 2001), which is almost equal to the national figure. In comparison to the districts of western part of Uttar Pradesh the districts of eastern region are less developed. This can be justified by the development indicators, like Human development Index. Out of 10 districts having lowest Human development Index (HDI) in Uttar Pradesh, 7 belong to eastern Uttar Pradesh.

Due to low economic conditions and poor availability of health care services in the region the elderly population of eastern Uttar Pradesh is more vulnerable. This situation becomes more critical for the elderly living in rural parts of this region, as they have poor sanitary conditions, economic assistance and medical facilities. While the urban areas are somewhat benefited from improvements in housing sanitation and health care. The developed western countries are giving special consideration to the issues related to elderly population, while in developing countries including India less attention has been paid towards it. There is lack of information regarding the situation of elderly like health status, economic condition, social relation, dependency on younger generation, expenditure on health care etc. Though, the National Sample Survey Organization collects the data regarding it but it is unable to provide the micro level information. Therefore, in order to assess these issues at micro level, so that the measures can be adopted to prevent elderly population from being socially marginalized and vulnerable to health issues, a systematic and deep exploration of their condition, needs and problems is warranted.

Objective

The present study is aimed to assess the association of various socio-demographic variables with self perception of health (SPH) and morbidity load among geriatric population of rural and urban areas of eastern Uttar Pradesh separately. This study also tries to investigate relationship between SPH and morbidity load.

MATERIALS AND METHODS

Reference Population: Elderly population of age 60 years and above of the Eastern Uttar Pradesh.

Study Participants: Four hundred individuals aged 60 years and above selected each from rural area and urban area of Eastern Uttar Pradesh, India.

Study Design and Sampling: For a population based survey the sample size determination is done on three factors, the estimated prevalence of variable of interest, desired level of confidence and acceptable margin of error. The process is explained by the formula given below:

$$n = \frac{Z_{\alpha}^2 * P * Q}{m^2}$$

Where,

n = required minimum sample size for survey.

Z_{α} = confidence level at $\alpha\%$ (1.96 at 95%)

P = prevalence of morbidities in the study.

Q = 1 - P

m = margin of error.

In present study taking most probable value of prevalence of morbidity in study area is 0.50 with 95% confidence level and 7% margin of acceptable error the required sample size was calculated as 196. The said method is used under simple random sampling scheme. On the other hand if we are using another sampling method in selecting units of population the estimated sample size is corrected for the difference in designs by multiplying design effect which may vary between 1.5 to 2.5. Since we have adopted multistage sampling procedure so by taking design effect as 2 we modified the required sample size as 392 which further approximated to 400 by considering 2% non response. As we considered both the urban and rural eastern Uttar Pradesh, we collected 400 samples from each type of locality.

Inclusion Criteria: People of age 60 years and above and willing to participate in the study with consent.

Exclusion Criteria: Those who were unwilling to participate in the study, refused to give consent and people unable to give interview due to various morbidity conditions. In case when interviewer was rejected from one respondent, he visited the adjacent house for interview.

Study setting: On the basis of human development index (HDI) districts of eastern Uttar Pradesh were divided into four categories, we randomly selected one district from each category, namely Varanasi, Ghazipur, Sant Kabir Nagar and Deoria. Further the districts were divided into urban and rural area. The rural area of each district was divided into blocks, from each district one block was selected randomly and from each block one village was selected randomly, if the required sample size was not available in that village the researcher visited the adjacent village for data collection. The names of villages as per districts are as follows Varanasi- Chitauni Kot, Ghazipur- Narainpur, Gangavishunpur and Langadpur, Sant

Kabir Nagar- Moradpur and Mathurapur and Deoria- Parasia urf Kharjarwa. For selection of urban sample we selected all the sampling units from urban area of Varanasi. Varanasi is one of the most important cities of eastern Uttar Pradesh, it's an ancient city of India with variety of cultural groups. Large numbers of people from the neighbouring districts of eastern Uttar Pradesh are settled in Varanasi city. Therefore, considering the heterogeneous nature of population of urban Varanasi and for convenience of data collection two urban wards namely Pandeypur and Nariya were selected for the study.

Strategy: The study was conducted during August 2011 to June 2012. The data was collected through specially designed interview schedule which consisted three parts;

Socio-demographic characteristics of respondents: In this section place of residence (urban/rural), sex, caste, type of family marital status, age, educational status and wealth index of the respondents was recorded.

Self Perception of health (SPH): Measuring SPH is a subjective assessment about own health status with an ordinal scale, which is recognized by WHO as an instrument for monitoring health. In 52nd round NSS (1995-96) self perception of health was measured using five point ordinal scale with 5 possible responses (1) Excellent, (2) Very good, (3) Good, (4) Fair, (5) Poor. The 60th round NSS (2004) however, in order to make the interpretation convenient, made amendments and used only three points scale, excellent/very good, good/fair and poor, similarly in our study we used three point scale as (1) Good, (2) Average and (3) Poor which is comparable with the scale used in 60th round NSS.

Morbidity load among the elderly: In this section elderly respondents were enquired about the number of morbidities they were suffering at the present time.

Statistical Analysis: The data was tabulated and analyzed using the statistical package of SPSS 16.0 version. Chi square test was applied to find out the association of various socio-demographic variables with self perception of health (SPH) and morbidity load. Cross tabulation was done to see the distribution of morbidity load according to self perception of health. Logistic regression analysis was also performed to find the adjusted effect of each independent variable on SPH and morbidity load.

RESULTS AND DISCUSSION

Socio-demographic profile of the elderly

According to table 1, out of total sample of 800 subjects, 400 were taken from each urban and rural setups of eastern Uttar Pradesh. Among urban participants 61.2% were male and 38.8% were female however in rural setup there were 51% male and 49% female. In urban area majority of elderly belonged to general category (40%) whereas in rural area majority of elderly belonged to OBC category (52%). The proportion of the elderly respondents was highest in 60-69 years age group in both 52.2% in urban elderly population and 61.2% in rural elderly population. In both the areas majority of

elderly were living in joint family, 76.8% in urban area and 86.5% in the rural area. 58.5% elderly respondents were presently married in urban area in comparison to 57% in the rural area. 77% elderly were literate in urban area in comparison to 48.2% in rural area. In the urban area 52% elderly were in high wealth index, 23.8% in medium and 24.2% in low wealth index while in rural area 18.8% elderly were in high wealth index, 38.8% in medium and 42.5% were in low wealth index.

Table 1. Socio-demographic profile of elderly

Socio-demographic characteristics	Urban n=400 (%)	Rural n=400 (%)	Total n=800 (%)
Sex			
Male	245 (61.2)	204 (51.0)	449 (56.1)
Female	155 (38.8)	196 (49.0)	351 (43.9)
Caste			
General	161(40.2)	67 (16.8)	228 (28.5)
OBC	130 (32.5)	208 (52.0)	234 (29.2)
SC/ST	109 (27.2)	125 (31.2)	338 (42.2)
Type of family			
Nuclear	93 (23.2)	54 (13.5)	147 (18.4)
Joint	307 (76.8)	346 (86.5)	653 (81.6)
Marital status			
Presently married	234 (58.5)	228 (57.0)	462 (57.8)
Presently not married	166 (41.5)	172 (43.0)	338 (42.2)
Age group (years)			
60-69	209 (52.2)	245 (61.2)	454 (56.8)
70+	191 (47.8)	155 (38.8)	346 (43.2)
Educational status			
Illiterate	92 (23.0)	207 (51.8)	299 (37.4)
Literate	308 (77.0)	193 (48.2)	501 (62.6)
Wealth index			
Low	97 (24.2)	170(42.5)	267 (33.4)
Medium	95 (23.8)	155 (38.8)	250 (31.2)
High	208 (52)	75 (18.8)	283 (35.4)

Self perceived health status of the elderly

Table no. 2 shows the self perception of health (SPH) among the elderly in eastern Uttar Pradesh of both urban and rural areas. Responses of the elderly have been shown in frequency and percentage, chi square test was applied to find out the association between various socio-demographic characteristics and SPH. It was found that gender is significantly associated with SPH in urban area while it was not found significantly associated in rural area. Age was found to be significantly associated with SPH in both urban and rural area. Marital status, educational status, type of family and wealth index all were found to be significantly associated with SPH in both areas, while variable caste was found to be significantly associated only in rural area. After bivariate analysis all the variables were taken in binary logistic regression analysis to find out the adjusted effect of each independent variable in presence of other variables, we further categorized SPH into 'good' and 'not good' by clubbing the last two responses average and poor as not good. Results according to table no.3 show that in urban area female elderly had higher chances for reporting their health status as not good as the OR is .39 for male elderly. While in the rural area no significant relationship was found between gender and self perception of health. Elderly respondents in 70+ age category of urban area were found to be more prone to report their health as not good in comparison to elderly in 60-69 years age group (OR .15), whereas no significant relationship was found between age and SPH in rural area.

Table 2. Self perceived health status of the elderly according to various socio-demographic characteristics

	Urban			Rural		
	Good	Average	Poor	Good	Average	Poor
Gender						
Male	55 (22.4)	129 (52.7)	61 (24.9)	44 (21.6)	95 (46.6)	65 (31.9)
Female	12 (7.7)	79 (51)	64 (41.3)	37 (18.9)	76 (38.8)	83 (42.3)
P value	< 0.001*			0.09		
Age group						
60-69	59 (28.2)	130 (62.2)	20 (9.6)	66 (26.9)	124 (50.6)	55 (22.4)
70+	8 (4.2)	70 (40.8)	105 (55)	15 (9.7)	47 (30.3)	93 (60)
P value	< 0.001*			< 0.001*		
Marital status						
Presently married	56 (23.9)	138 (59)	40 (17.1)	68 (29.8)	126 (55.3)	34 (14.9)
Presently not married	11 (6.6)	70 (42.2)	85 (51.2)	13 (7.6)	45 (26.2)	114 (66.3)
P value	< 0.001*			< 0.001*		
Educational status						
Illiterate	8 (8.7)	32 (34.8)	52 (56.5)	17 (8.2)	82 (39.6)	108 (52.2)
Literate	59 (19.2)	176 (57.1)	73 (23.7)	64 (33.2)	89 (46.1)	40 (20.7)
P value	< 0.001*			< 0.001*		
Type of family						
Nuclear	35 (37.6)	53 (57)	5 (5.4)	9 (16.7)	31 (57.4)	14 (25.9)
Joint	32 (10.4)	155 (50.5)	120 (39.1)	72 (20.8)	140 (40.5)	134 (38.7)
P value	<0.001*			< 0.001*		
Caste						
General	30 (18.6)	87 (54)	44 (27.3)	10 (14.9)	34 (50.7)	23 (34.3)
SC/ST	17 (15.6)	54 (49.5)	38 (34.9)	16 (12.8)	57 (45.6)	52 (41.6)
OBC	20 (15.4)	67 (51.5)	43 (33.1)	55 (26.4)	80 (38.5)	73 (35.1)
P value	< 0.69			< 0.02*		
Wealth index						
Low	14 (14.4)	51 (52.6)	32 (33)	11 (6.5)	65 (38.2)	94 (55.3)
Medium	25 (26.3)	50 (52.6)	20 (21.1)	58 (37.4)	66 (42.6)	31 (20)
High	28 (13.5)	107 (51.4)	73 (35.1)	12 (16)	40 (53.3)	23 (30.7)
P value	0.02*			< 0.001*		

*Shows significant association on the basis of chi square test.

Table 3. The outcome of logistic regression analysis for self perception of health according various socio-demographic characteristics

	Urban					Rural				
	Estimate of β	SE of β	Odds ratio	95% CI for OR		Estimate of β	SE of β	Odds ratio	95% CI for OR	
			Lower limit	Upper limit				Lower limit	Upper limit	
Gender										
Male	-.952	.401	.386*	.176	.846	.286	.356	1.332	.663	2.673
Female			#					#		
Age										
60-69	-1.868	.444	.154*	.065	.846	-.700	.447	.496	.207	1.191
70+			#					#		
Marital status										
Presently married	-.365	.432	.694	.298	1.619	-1.152	.435	.316*	.135	.742
Presently not married			#					#		
Education										
Illiterate	-.259	.577	.772	.249	2.391	1.893	.392	6.640*	3.080	14.315
Literate			#					#		
Type of family										
Nuclear	-.594	.611	.552	.167	1.829	-.628	.491	.533	.204	1.396
Joint			#					#		
Caste										
General	-.694	.433	.499	.214	1.167	1.069	.463	2.913*	1.175	7.220
SC/ST	.241	.474	.259	.503	3.221	.698	.368	2.010	.977	4.135
OBC			#					#		
Wealth index										
Low	-.594	.611	.552	.167	1.829	.521	.581	1.684	.539	5.262
Medium	-1.020	.439	.361*	.152	.853	-1.097	.458	.334*	.136	.820
High			#					#		

indicates reference category in independent variable. Good is reference category in dependent variable.

*shows independent variable significantly affect the dependent variable

Table 4. Morbidity load according to various socio-demographic characteristics

	Urban (%)				Rural (%)			
	0	1 or 2	3 or 4	≥5	0	1 or 2	3 or 4	≥5
Gender								
Male	71 (29)	56 (22.9)	61 (24.9)	57 (23.3)	54 (26.5)	52 (25.5)	50 (24.5)	48 (23.5)
Female	20 (12.9)	41 (26.5)	49 (31.6)	45 (29)	37 (18.9)	43 (21.9)	66 (33.7)	50 (25.5)
P value		0.003				0.10		
Age group								
60-69	85 (40.7)	62 (29.7)	40 (19.1)	22 (10.5)	80 (32.7)	73 (29.8)	62 (25.3)	30 (12.2)
70+	6 (3.1)	35 (18.3)	70 (36.6)	80 (41.9)	11 (7.1)	22 (14.2)	54 (34.8)	68 (43.9)
P value		< 0.001				<0.001		
Marital status								
Presently married	81 (34.6)	60 (25.6)	56 (23.9)	37 (15.8)	87 (38.2)	70 (30.7)	57 (25)	14 (6.1)
Presently not married	10 (6)	37 (22.3)	54 (32.5)	65 (39.2)	4 (2.3)	25 (14.5)	59 (34.3)	84 (48.8)
P value		< 0.001				< 0.001		
Illiterate	13 (14.1)	10 (10.9)	37 (40.2)	32 (34.8)	22 (10.6)	46 (22.2)	68 (32.9)	71 (34.3)
Literate	78 (25.3)	87 (28.2)	73 (23.7)	70 (22.7)	69 (35.8)	49 (25.4)	48 (24.9)	27 (14)
P value		< 0.001				< 0.001		
Type of family								
Nuclear	49 (52.7)	21 (22.6)	18 (19.4)	5 (5.4)	9 (16.7)	14 (25.9)	25 (46.3)	6 (11.1)
Joint	42 (13.7)	76 (24.8)	92 (30)	97 (31.6)	82 (23.7)	81 (23.4)	91 (26.3)	92 (26.6)
P value		< 0.001				< 0.007		
Caste								
General	29 (18)	49 (30.4)	39 (24.2)	44 (27.3)	11 (16.4)	12 (17.9)	32 (47.8)	12 (17.9)
SC/ST	30 (27.5)	25 (22.9)	33 (30.3)	21 (19.3)	16 (12.8)	29 (23.2)	52 (41.6)	28 (22.4)
OBC	32 (24.6)	23 (17.7)	38 (29.2)	37 (28.5)	64 (30.8)	54 (26)	32 (15.4)	58 (27.9)
P value	0.08				< 0.001			
Wealth index								
Low	27 (27.8)	24 (24.7)	28 (28.9)	18 (18.6)	17 (10)	33 (19.4)	59 (34.7)	61 (35.9)
Medium	31 (32.6)	17 (17.9)	31 (32.6)	16 (16.8)	62 (40)	47 (30.3)	27 (17.4)	19 (12.3)
High	33 (15.9)	17 (17.9)	31 (32.6)	16 (16.8)	12 (16)	15 (20)	30 (40)	18 (24)
P value	0.001				< 0.001			

*Shows significant association on the basis of chi square test.

In rural area perceived good health status was significantly higher in elderly who were presently married (OR .32) in comparison to presently not married elderly, while marital status was not found to be significantly related with SPH in urban area. Similar trend follows in education category, no significant relationship was found between education and SPH in urban area, while in rural area it was found that illiterate elderly have significantly more chances for reporting SPH as not good (OR 6.64) in comparison to literate elderly. In rural area elderly from general category showed significantly more chances of reporting not good health in comparison to OBC category. Elderly respondents in medium wealth index showed significantly lower chances of reporting not good SPH in comparison to high wealth index in both the areas as OR is .36 in urban area and .33 in rural area.

Distribution of morbidities according to various socio-demographic characteristics

Table no. 4 shows the distribution of morbidity load across various socio-demographic characteristics in urban and rural areas of eastern Uttar Pradesh. Chi square test was applied to find out association between various socio-demographic variables and morbidity load. Gender was found to be significantly associated with morbidity load in urban area whereas in the rural area gender was not found significantly associated. Association between age and morbidity load was found significant in both areas. Similarly marital status, educational status, type of family and wealth index were found to be significantly associated with morbidity load in both urban and rural areas, while caste category was found to be significantly associated with morbidity load only in rural area.

Table 5. The outcome of logistic regression analysis of morbidity load according to various socio-demographic characteristics

	Urban					Rural				
	Estimate of β	SE of β	Odds ratio	95% CI for OR		Estimate of β	SE of β	Odds ratio	95% CI for OR	
				Lower limit	Upper limit				Lower limit	Upper limit
Gender										
Male	-.370	.367	.691	.337	1.417	-.023	.375	.978	.469	2.039
Female			#					#		
Age										
60-69	-2.370	.471	.093*	.037	.235	-1.042	.489	.353*	.135	.920
70+			#					#		
Marital status										
Presently married	-.982	.431	.374*	.161	.872	-2.904	.600	.055*	.017	.178
Presently not married			#					#		
Education										
Illiterate	.350	.544	1.419	.489	4.118	1.846	.404	6.335*	2.869	13.988
Literate			#					#		
Type of family										
Nuclear	-.954	.334	.385*	.200	.741	.024	.504	1.024	.381	2.751
Joint			#					#		
Caste										
General	.313	.405	1.367	.618	3.026	.772	.507	2.165	.801	5.854
SC/ST	.035	.455	1.036	.424	2.529	1.080	.375	2.946*	1.413	6.145
OBC			#					#		
Wealth index										
Low	-.932	.571	.394	.129	1.206	-.057	.591	.945	.297	3.010
Medium	-.819	.433	.441	.189	1.031	-1.169	.515	.311*	.113	.853
High			#					#		

indicates reference category in independent variable. Good is reference category in dependent variable.

*shows independent variable significantly affect the dependent variable

Table 6. Morbidity load on elderly according to self perception of health

Morbidity load	Urban (%)				Rural (%)			
	Good	Average	Poor	Total	Good	Average	Poor	Total
No morbidity	58(86.6)	32 (15.4)	1 (.8)	91 (22.8)	68 (84)	23 (13.5)	0 (.0)	91 (22.8)
1 or 2 morbidities	7 (10.4)	86 (41.3)	4 (3.2)	97 (24.2)	10(12.3)	78 (45.6)	7 (4.7)	95 (23.8)
3 or 4 morbidities	2 (3)	74 (35.6)	34 (27.2)	110(27.5)	3 (3.7)	59 (34.5)	54 (36.5)	116(29)
≥ 5 morbidities	0 (.0)	16 (7.7)	86 (68.8)	102(25.5)	0 (.0)	11 (6.4)	87 (58.8)	98 (24.5)
Total	67 (100)	208(100)	125(100)	400(100)	81 (100)	171(100)	148(100)	400(100)

Table 7. Association between self perception of health and morbidity load

Morbidity load	Urban			Rural		
	Good	Not good	Total	Good	Not good	Total
No morbidity	58 (86.6)	33 (9.9)	91 (22.8)	68 (84)	23 (7.2)	91 (22.8)
Reported morbidity	9 (13.4)	300(90.1)	309(77.2)	13 (16)	296 (92.8)	309 (77.2)
Total	67 (100)	333(100)	400(100)	81 (100)	319 (100)	400 (100)
P value	< 0.001 *			< 0.001*		
R ²	0.56			0.60		

*Shows significant association on the basis of chi square test.

Further we clubbed the responses into two categories no morbidity and morbidity reported, for the purpose of binary logistic regression analysis, results as shown in table -5, it was found that elderly in 60-69 years age group have significantly lower chances of reporting morbidity in comparison to elderly in 70+ years age group in both the urban (OR .69) and rural (OR .98) area. In both the areas elderly who were presently married showed significantly lower chances of reporting morbidity in comparison to presently not married elderly as OR is .37 in urban and .06 in rural area.

No significant relationship was found between educational status and morbidity load in urban area, while in rural area illiterate elderly were significantly more prone to report morbidity in comparison to urban elderly as OR is 6.34. In urban area elderly living in nuclear family showed significantly lower chances of reporting morbidity in comparison to elderly living in joint family (OR .39) however no significant relationship was found between these variables in rural area. No significant relationship was found between caste and morbidity load in urban area, whereas elderly in SC/ST category showed significantly higher chances of reporting morbidity in comparison to OBC category (OR

2.95). Similarly rural elderly in medium wealth index showed significantly lower chance of reporting morbidity in comparison to elderly in high wealth index (OR .31).

Morbidity load on elderly according to self perception of health

Table no. 6 shows the morbidity load on elderly according to self perception of health. It was found that urban elderly who reported having no morbidity, 86.6% in them perceived their health as good and 15.4% perceived as average. Similarly the rural elderly who reported no morbidity, 84% in them perceived their health as good and 13.5% as average. Moreover we found that majority of urban elderly who perceived their health as average were suffering from 1 or 2 morbidities (41.3%) and 3 or 4 morbidities (35.6%). While the urban elderly who perceived their health as poor were mainly suffering from 3 or 4 morbidities (27.2%) and ≥ 5 morbidities (68.8%). Similar trend was observed in rural elderly, those who perceived their health as average were mainly suffering 1 or 2 morbidities (45.6%) and 3 or 4 morbidities (34.5%) whereas those who perceived their health as poor were mainly suffering from 3 or 4 morbidities (36.5%) and ≥ 5 morbidities (58.8%). To find out the association between morbidity load and self perception of health, we clubbed the categories of morbidity load into two categories 'no morbidity' and 'morbidity reported' and SPH was also divided in two categories 'good' and 'not good' as categorized previously. As per the results in table no.7, the chi square test shows a significant association between morbidity load and self perception of health in both urban and rural areas. Additional computation suggests a good value of generalized coefficient of variation 0.56 for urban and 0.60 for rural area.

Conclusion

In this study relationship of various socio-demographic variables with self perception of health or subjective health and morbidity load or objective health have been studied. It was found that variables significantly associated with SPH were also significantly associated with morbidity load in both the type of localities. Interestingly it was found that elderly in medium wealth index performed better than elderly in low and high wealth index in both urban and rural areas, which shows that after attaining a certain level of economic status when people meet most of their basic needs, wealth index has no positive impact on health. Results also show that gender, age, educational status, marital status and type of family are significant determinants of either SPH or morbidity load. Moreover results depict that the elderly respondents who perceived their health as good were mostly free from any kind of morbidity, while those who perceived their health as poor were mostly suffering from multiple morbidities. Thus, it can be said that measurement of self perception of health is a good predictor of health status.

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