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Effect of Attitude and Transportation on Healthcare Utilisation Among Geriatric Patients of Respiratory Diseases – An Indian Perpective - Delhi NCR and Ghaziabad

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Abstract

Background: Ageing is associated with gradual decline in all body functions and compromised host defence mechanisms. Hence, with increasing age, the elderly develop a number of health problems.

Methods: It was a cross-sectional study, conducted in urban and rural areas of Delhi NCR (National Capital Region) and Ghaziabad district of Uttar Pradesh. People aged 60 yrs and above residing in the sample area were included. Elderly with respiratory diseases were asked to fill a questionnaire regarding health care utilisation.

Results: Attitude of elderly towards health issues in old age has significant effect on their healthcare utilisation. Presence of 'fear of addiction' in elderly decreased healthcare utilisation from 42.1% to 4.1% in urban and from 16.6% to 5.2% in rural elderly. Similarly, only 5.1% urban and 0.9% rural elderly who thought that disease was 'part of old age and medicines will not help' were utilising healthcare services. Presence of attitude that 'Problem not serious, medicines not needed' decreased healthcare utilisation from 39.6% to 3.5% in urban and 15.1% to 1.3% in rural elderly.

In our study 'availability of vehicle' had significant effect on healthcare utilisation by urban as well as rural elderly (p value = .031 and .001 respectively). 'Inconvenient transportation' did not affect healthcare utilization significantly by either urban or rural elderly but it significantly affected healthcare utilisation (p value = .019) in combined data. 'Need of more than one companion' for going to healthcare centre was associated with lesser healthcare utilisation in both urban (18.2% vs 33.9%) as well as rural elderly (0% vs 11.6%).

Conclusion: Majority of the elderly have a negative attitude regarding utilisation of healthcare services. They find transportation to a healthcare facility as inconvenient and time consuming. This negative attitude as well as transportation problems are significantly more with the rural elderly than their urban counterparts.

Key words: Elderly, attitude, transportation, healthcare utilisation, respiratory diseases, geriatric.

Introduction

Various theories proposed to explain biological basis of ageing are: immune theory, neuroendocrine theory, free radical theory, cell ageing theory, somatic mutation theory, error theory[1]. Immune system is also affected by ageing. Ageing related functional changes in the organs make them vulnerable to infections. Almost all organ systems of body are affected.

All over the world, the number of elderly is progressively increasing both in developed and developing countries. Currently, the growth rate of the older population (1.9 %) is significantly higher than that of the total population (1.2 %)[2].

In India also, the number of elderly is progressively increasing. It is expected to increase up to 12% by 2026 (173 million) and approximately 20% (316 million) by 2050[3]. In India also there is a wide variation in the proportion of elderly in different states. While in Kerala they constituted 11% of total population, in Uttar Pradesh they were 6% only. By 2026 it is expected to increase to 18% and 10% respectively.

This demographic change is a result of the combined impact of increasing life expectancy and declining fertility. Life expectancy at birth in India increased from 37 years in 1950 to 65 years in 2011[4]. During the same period, fertility rates in India have declined from 5.9 to 2.6 children per women[5].

A steep rise in the world population of elderly in the last five decades has compelled policy makers, health planners,

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economists and demographers to pay greater attention to Gerontology.

Healthcare infrastructure is as such inadequate in India. But even that is not utilised properly by elderly. Elderly are a unique population subgroup with their own problems in utilizing available healthcare services. A number of Indian as well as international investigators have tried to understand the factors affecting utilisation of healthcare services by the elderly. Despite respiratory diseases being a significant cause of morbidity in the elderly, in our search we were able to find only one Indian study by Sudha *et al* which focused on healthcare utilisation by elderly for respiratory disease[6].

Issues related to awareness, attitude towards old age problems, and the need to address them is another obstacle in tackling the old age problems in our country. Hence, it is important to understand the special needs of elderly, obstacles to the utilisation of available healthcare facilities in the form of attitudinal barrier, difficulties encountered in utilisation, shortcomings of the present systems from the perspective of end user. The fact that disease and disability are not a part of old age should be emphasized and health problems should be addressed.

Methodology

A descriptive survey of geriatric population aged 60 yrs and above was conducted in urban and rural areas of Delhi NCR (National Capital Region) and Ghaziabad district of Uttar Pradesh. Urban colonies and rural villages, conglomerated in closed areas were selected on the basis of convenience of sampling from each urban and rural selected units, by systematic random sampling. Elderly in every alternate household was interviewed and adequate sample size was achieved.

Population Setting: Urban area – Nandgram is a locality in Ghaziabad city. There are more than 10,000 houses with 7 blocks and free households. It is inhabited mainly by lower middle class families. Rural area – six selected villages were – Chipiyana Buzurg and Shah beri from Greater Noida, Chhaprauala and Shahpur Bamheta from one side while Ilaichipur and Khanpur from the other end of Ghaziabad.

Sample of 51 elderly from Shah Beri village, 343 from Chipyana, 405 from Chhapraula, 136 from Shahpur Bamheta, 495 Ilaichipur and 73 was collected Khanpur village. A sample of 1,503 from rural and 1,522 from urban areas was collected. Total combined sample was 3,025.

Period of study: January 2015 to January 2018.

Sample size: For qualitative data, the formula used to derive sample size is: $n = 4\ pq/L^2$. (p - prevalence) available literature on prevalence of respiratory illness among elderly was assumed as 20% with an allowable error of 3% in a range of 17% - 23%. By simple random sampling for a given prevalence with 95% confidence level, a sample size of 682 was required. Attrition of 10% was added to 682 and then sample size was fixed at 750. As our sample procedure was systematic, we double the size and fix it at 1,500 each in rural and urban groups. It was predicted to give an average of 300 respiratory cases of elderly in each group.

Tools and Methodology

Door-to-door survey was conducted. A pre-designed, pre-tested questionnaire having 2 parts was used. First part included socio-demographic characteristics, self-reported co-morbidities and physical disabilities. Three healthcare workers were trained. Previous all medical records of patients were seen by them. After analyzing screening proforma, elderly with suspected respiratory disease were selected. In the second stage, screening proformas of suspected cases were verified. General and respiratory system examination was carried-out. These patients with respiratory diseases were asked about attitude towards health services and transportation on healthcare utilisation.

Statistical analysis

Microsoft Excel 2010 was used for data entry. Statistical analysis was done using IBM SPSS v 20.0.0. and 23.0.0 both. Categorical variables were analysed using proportions and percentages. Firstly, a descriptive analysis was performed for all records (n = 3,025), both urban and rural separately. And then association between categorical variables was studied by two-way cross-tabulations and the significance established by Chi-square test. The level of statistical significance was assessed at (P values less than 0.05) 5% probability.

Effect of attitude and transportation on healthcare utilisation was analysed in both urban and rural groups separately. It was assessed by chi-square test. Association between these two groups among all variables was also established by chi-square test.

Odd ratio at 95% confidence intervals were used for strength of association and interpretation of bivariate analysis. If differences found significant on univariate analysis, then necessary further analysis of the data was conducted by controlling for demographic and health characteristics. Multiple regression analysis was used to analyse various factors for assessing their independent contribution after adjusting for various factors in the model.

Table I: Attitude vs healthcare utilisation.

Attitude		Healthcare utilisation														
		Urban					Rural					Combined				
		Inadequate	No	Yes	Total 100.0%	P value	Inadequate	No	Yes	Total 100.0%	P value	Inadequate	No	Yes	Total 100.0%	P value
Fear of addiction	Yes	6690.4%	45.5%	34.1%	73100.0%	<.001	10477.0%	2417.8%	75.2%	135100.0%	.007	17081.7%	2813.5%	104.8%	208100.0%	<.001
	No	10851.7%	136.2%	8842.1%	209100.0%		10665.0%	3018.4%	2716.6%	163100.0%		21457.5%	4311.6%	11530.9%	372100.0%	
Part of old age medicines will not help	Yes	3282.1%	512.8%	25.1%	39100.0%	<.001	8675.4%	2723.7%	10.9%	114100.0%	<.001	11877.1%	3220.9%	32.0%	153100.0%	<.001
	No	14258.4%	124.9%	8936.6%	243100.0%		12467.4%	2714.7%	3317.9%	184100.0%		26662.3%	399.1%	12228.6%	427100.0%	
Medicines not needed	Yes	5087.7%	58.8%	23.5%	57100.0%	<.001	5973.8%	2025.0%	11.3%	80100.0%	.002	10979.6%	2518.2%	32.2%	137100.0%	<.001
	No	12455.1%	125.3%	8939.6%	225100.0%		15169.3%	3415.6%	3315.1%	218100.0%		27562.1%	4610.4%	12227.5%	443100.0%	
Decided to handle problem by self	Yes	7783.7%	1010.9%	55.4%	92100.%	<.001	9982.5%	1512.5%	65.0%	120100.0%	<.001	17683.0%	2511.8%	115.2%	212100.0%	<.001
	No	9751.1%	73.7%	8645.3%	190100%		11162.%	3921.9%	2815.7%	178100.0%		20856.5%	4612.5%	11431.0%	368100.0%	
Available services not good	Yes	1368.4%	210.5%	421.1%	19100.%	.443	2472.7%	721.2%	26.1%	33100.0%	.562	3771.2%	917.3%	611.5%	52100.0%	.131
	No	16161.2%	155.7%	8733.1%	263100.0%		18670.2%	4717.7%	3212.1%	265100.0%		34765.7%	6211.7%	11922.5%	528100.0%	
Any Negative attitude	Absent	4536.0%	32.4%	7761.6%	125100.0%	<.001	2242.3%	611.5%	2446.2%	52100.0%	<.001	6737.9%	95.1%	10157.1%	177100.0%	<.001
	Present	12982.%	148.9%	148.9%	157100.0%		18876.4%	4819.5%	104.1%	246100.0%		31778.7%	6215.4%	246.0%	403100.0%	

Table 3: Transportation problems vs healthcare utilisation.

Transportation		Healthcare utilisation														
		Urban					Rural					Combined				
		Inadequate	No	Yes	Total 100.0%	P value	Inadequate	No	Yes	Total 100.0%	P value	Inadequate	No	Yes	Total 100.0%	P value
Inconvenient	Yes	8166.4%	64.9%	3528.7%	122100.0%	.363	16769.6%	4518.8%	2811.7%	240100.0%	.518	24868.5%	5114.1%	6317.4%	362100.0%	.019
	No	9057.3%	117.0%	5635.7%	157100.0%		4276.4%	814.5%	59.1%	55100.0%		13262.3%	199.0%	6128.8%	212100.0%	
Vehicle available	Yes	8854.3%	106.2%	6439.5%	162100.0%	.031	6758.8%	3228.1%	1513.2%	114100.0%	.001	15556.2%	4215.2%	7928.6%	276100.0%	<.001
	No	8370.9%	76.0%	2723.1%	117100.0%		14278.9%	2011.1%	1810.0%	180100.0%		22575.8%	279.1%	4515.2%	297100.0%	
Long time taken	Yes	11259.6%	126.4%	6434.0%	188100.0%	.627	17471.3%	4217.2%	2811.5%	244100.0%	.584	28666.2%	5412.5%	9221.3%	432100.0%	.985
	No	5964.8%	55.5%	2729.7%	91100.0%		3568.6%	1121.6%	59.8%	51100.0%		9466.2%	1611.3%	3222.5%	142100.0%	
Companion available	Yes	12461.7%	126.0%	6532.3%	201100.0%	.748	14771.4%	3918.9%	209.7%	206100.0%	.414	27166.6%	5112.5%	8520.9%	407100.0%	.956
	No	4760.3%	56.4%	2633.3%	78100.0%		6269.7%	1415.7%	1314.6%	89100.0%		10965.3%	1911.4%	3923.4%	167100.0%	
Need > 1 companion	Yes	1777.3%	14.5%	418.2%	22100.0%	.342	763.6%	436.4%	00.0%	11100.0%	.220	2472.7%	515.2%	412.1%	33100.0%	.717
	No	15459.9%	166.2%	8733.9%	257100.0%		20271.1%	4917.3%	3311.6%	284100.0%		35665.8%	6512.0%	12022.2%	541100.0%	

In the urban population, among factors related to attitude of elderly towards utilisation of healthcare services, 'fear of addiction to medicines' , 'medicines not needed' for their present illness, their illness being 'part of old age' , 'self handling' were found to be significant with p value of 0.001 (< 0.05). In transportation group, sex, socio-economic status, vehicle not available were found to be significant with p value of 0.036, 0.043, .010 respectively with ($p < 0.05$).

In the rural population, in attitude group, negative belief of 'fear of addiction', 'medicine not needed', 'part of old age' , 'self handling' were found to be significant with p value of 0.00 (< 0.05). In transportation group, no factor were found to be significant.

In the combined population, in attitude group, negative belief of 'fear of addiction', 'medicine not needed', 'part of old age', 'self handling' were found to be significant with p value of 0.00 and due to bad service of health sector ($p = .008$) (< 0.05). In transportation group socio-economic status, vehicle not available were found to be significant with p value of $p = .015$, $p = .006$ respectively with ($p < 0.05$).

Discussion

Attitudinal factors as barriers to healthcare utilisation by the elderly are unique to our society. Illiteracy, ignorance, poverty, socio-cultural conditioning lead to fatalistic attitude in old age. Old age has been described as a curse in ancient Indian literature. Many older people take ill health in their stride as a part of the usual/normal ageing. They feel not much can be done about it. They are resigned to bear with the ill effects of diseases. There are also many misconceptions about the need and effects of treatment. Besides, many of them also resort to non scientific methods.

In our study, only 44.3% (125/282) of urban and significantly lesser 17.4% (52/298, $p < .001$) rural elderly had no negative

Table III: Group wise regression analysis.

	Urban			
Attitude				
Factor	**Sig. (p value)**	**Odds ratio**	**(95% CI)**	
Sex	.084	1.600	.93 2.76	
Age	.558	1.261	.57	2.78
Educational status	.852	1.056	.59	1.90
S-E class	.183	1.441	.83	2.49
Fear of addiction	.001	5.158	2.38	11.17
Illness part of old age	.001	15.335	4.48	52.46
No need of medicines	.001	14.826	4.35	50.50
Decided to handle self	.001	3.991	1.90	8.40
Constant	.008	.260	.09	. 72
Transportation				
Sex	.036	1.999	1.03	3.87
Age	.112	1.809	.86	3.82
Educational status	.689	.873	.44	1.72
S-E class	.043	1.792	1.01	3.19
No vehicle available	.010	2.087	1.18	3.68
Constant	.155	.567	26	1.26
Rural				
Attitude				
Location	.106	1.561	.90	2.70
Sex1	.084	1.600	.93	2.76
Age	.558	1.261	.57	2.78
Educational status	.852	1.056	.59	1.90
S-E class	.183	1.441	.83	2.49
Fear of addiction	.000	5.158	2.38	11.17
Illness part of old age	.000	15.335	4.48 52.46	
No need of medicines	.000	14.826	4.35	50.50
Decided to handle self	.000	3.991	1.90	8.40
Constant	.008	.260	.09	.72
Combined (Urban and Rural data)				
Attitude				
Location	.177	1.463	.83	2.57
Sex	.071	1.650	.95	2.88
Age	.643	1.204	.54	2.68
Educational status	.830	1.066	.59	1.93
S-E class	.161	1.475	.85	2.57
Fear of addiction	.000	5.277	2.40	11.58
Illness part of old age	.000	16.182	4.70	55.70
No need of medicines	.000	16.088	4.70	55.04
Decided to handle self	.000	3.807	1.79	8.11
Avlbl. Services bad	.008	3.720	1.39	9.99
Constant	.008	.254	.09	.71
Transpotation				
Location	.000	3.270	2.06	5.20
Age	.352	1.346	.71	2.55
Educational status	.256	1.334	.80	2.22
S-E class	.015	1.745	1.10	2.76
Sex	.351	1.250	.77	2.02
No vehicle avlbl.	.006	1.838	1.18	2.87
Constant	.001	.242	.10	. 58

attitudinal factor regarding healthcare utilisation. It means that a large number of urban (55.7%) and rural elderly (82.6%) had at least one negative attitudinal factor. Although all negative attitudinal factors were more prevalent in rural population but only 'fear of addiction' and 'disease being part of old age thus requiring no treatment' achieved statistical significance ($p < .001$). This difference between urban and rural elderly is explainable due to difference in literacy, socio-economic status and socio-cultural milieu of two population.

Effect of negative attitude on healthcare utilisation has been well-documented in literature. In a study 39.6% elderly did not seek treatment for their illness due to their belief that it is part of old age, while 36.8% considered their morbidity as minor illness requiring no treatment[7]. Fear of discovering a serious illness and unneeded tests led 18.1% and 16.3% elderly respectively to avoid treatment in a rural Bengal study[8]. Sharma *et al* reported the most common reason for not seeking healthcare was the perception of disease as an age related phenomenon(49.6%)[9]. A study in Nepal found 'ignorance due to old age' and 'trust on God for healing' being reasons for not seeking treatment by 64% and 8% elderly respectively. Goswami *et al* also noted fatalistic attitude as a reason for not seeking any treatment by elderly[10].

In our study also, four attitudinal problems viz ' fear of addiction', 'part of old age medicines not needed', 'decided to handle problem self' and 'illness not serious so no need for medicines' had significantly negative effect on healthcare utilisation by both urban and rural elderly. Absence of any negative attitudinal factor had significant positive effect on utilisation ($p < .001$). In fact when regression analysis was done, absence of negative attitudinal factor was found to be the most significant factor affecting healthcare utilisation. These results are consistent with the literature as discussed above. This data emphasizes the need of creating awareness and bringing about attitudinal change in society as a whole, regarding problems of old age. Society also needs to be educated to treat old age as just another phase of life which can be enjoyed, provided all problems are properly addressed to.

Although perceived health status was a strong significant predictor of health service utilisation, the older persons who reported their health status as "fair" or "poor" were less likely to utilize health services than their counterparts[11]. This result agreed with a study in China reporting that older residents were less likely to utilize health services when they felt unwell[12]. Conversely, individuals with more negative self-perception of ageing were more likely to delay care and reported more reasons for delay[13]. Hence, attitudes toward one's ageing experience may influence health service utilisation.

A study by Maroof *et al* 2018,one of the reason for non-utilisation of health services was considering disease as normal part of ageing 13 (21.7 %) out of 60[14].

Accessibility of healthcare services is an important determinant of healthcare utilisation. In our study, distance of healthcare facilities in rural areas was significantly more than in urban areas ($p < .001$). While for 49% (139/282) urban residents healthcare facility was more than 3 km away for rural areas much higher proportion of elderly, 74% (221/298), had healthcare facility this much distant. This rural-urban difference is understandable since healthcare facilities are disproportionately concentrated in urban areas. Effect of geographical proximity of healthcare facility on healthcare utilisation has been studied extensively. In a rural Assam study, 27% respondents were not utilizing health care services due to facility being too far[15]. In a rural Bengal study as high as 48% elderly were not using healthcare services due to distance[16]. In a Shimla study also, 19% elderly cited long distance as the reason for non-utilisation[17]. Ahmed *et al* found geographical proximity to be a strong catalyst for healthcare seeking in Oman[18]. Similarly, a South African study found distance to health facilities a barrier for those wishing to access healthcare[19].

Not all studies have found effect of distance on healthcare utilisation. In Pakistan neither driving distance nor driving time showed association with the use of public health services for treatment of acute childhood illness[20]. Similarly no association was found between the use of contraceptive services and straight-line distances in Malawi[21]. No effect of distance on healthcare utilisation in these studies may be due to the fact that these studies concerned healthcare utilisation by young people for their own needs or of their children. Distance is likely to pose more difficulties for the elderly in utilisation of healthcare services in view of their own poor physical health and need of an accompanying person especially if distance to healthcare facility is more.

In the present study also, no significant effect of distance on healthcare utilisation was found. We had divided healthcare service distance in 3 categories, i.e., < 1 km, 1 - 3 km, > 3 km. Since availability of healthcare services is better in Delhi NCR, this small difference in distance is unlikely to make a significant effect on healthcare utilisation. Another reason could be that distance is only one part of transportation problem and availability of good transport facilities will negate the effect of this small difference in distance. Another Delhi-NCR study in Ballabhgarh, Faridabad found very few elderly reporting distance as a barrier to healthcare utilisation[10].

We studied transportation problems under five variables, i.e., inconveniece, long time taken, vehicle availability, availability of companion and need for more than one companion to acompany. Only a small number of elderly (5.7 - 33/580) reported the need of more than one companion to take them to a healthcare facility. In all other four, transportation problems were reported by a significant number of elderly especially in rural areas, which is understandable. Among the rural respondents, 80.5% (240/298) found transport to healthcare services inconvenient, 81.9% (244/298) complained they consume too much time. 60.4% (180/298) rural respondents said vehicle was not available while 29.9% (89/298) complained of non-availability of companion to take them to healthcare centre. When effect of all these factors was individually analysed on healthcare utilisation, availability of vehicle was found to have statistically significant effect on both rural ($p = .001$) and urban elderly ($p = .031$). Effect of inconvenience was found to be significant only when urban and rural data was combined. Other factors had no significant effect on healthcare utilisation. Probably availability of personal/public vehicle and to some extent convenience, compensates for other transportation problems.

Transportation problems are more likely to affect healthcare utilisation by the elderly in view of their weak body, illness, physical disabilities, and increasing need of a companion. This effect has been found by many investigators. Rittner and Kirk found that public transportation barriers have adverse effects on the populations that depend most on them for health services access, namely the poor and older persons[22]. Okoro *et al* analysed data from the 2002 Behavioral Risk Factor Surveillance System and reported finding that 9% of older adults (65 and older) did not obtain needed medical care because of transportation problems[23]. Rask *et al* reported that transportation problems were the third most common reason patients cited for not having regular medical care[24]. Transportation problems also put indirect costs on utilisation. So even availability of free medical services get affected by transportation due to financial reasons.

In a study by Maroof *et al* 2018, it was observed that out of 60, who were not utilizing health services, non-availability of companion 22 (36.7%) was the most common reason for not utilizing health services followed by health services too far 17 (28.3%), disease normal part of aging 13 (21.7%), not affordable 8 (13.3%)[14].

A study by Gnanasabai *et al*, 7.9% reported that the hospital was too far to go. The other reasons given by the 10.5% of elders were: no use of treatment, nobody to take them to the hospital, and too old to take treatment[25].

Despite perceiving transportation cost "fair or expensive," most of the respondents utilized health service (88.9%) than others. The elderly without access to healthcare personnel (71.7%) utilized health services more than those

with access to healthcare personnel (52.6%). The respondents who perceived their health status as "fair" or "poor" showed greater utilisation (85.5%) than the respondents who perceived their health status as "good" (21.7%)[11].

Availability of transport and commuting time have been found to affect also the choice of health care facility. In a Tamil Nadu study, 9% elderly switched to private facilities from government only due to lack of transport[6]. Similarly in a Dharan, Nepal study, commuting time of more than 30 minutes significantly affected choice of small private clinics over BPKIHS, Dharan – a large medical college facility ($p = .001$)[26].

Conclusion

Some enabling factors, such as financial support of family, perceived transportation cost (fair or expensive), and accessibility to healthcare personnel, were significantly associated with health service utilisation and served as significant predictors of health service utilisation[11].

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