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Effect of Quality of Health Services and Cost of Treatment on Healthcare Utilisation Among Geriatric Patients of Respiratory Diseases – An Indian Perpective – Ghaziabad, Delhi NCR

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Abstract

Background: Aging refers to inevitable, irreversible decline in organ function.

Methods: Cross-sectional study of elderly aged 60 yrs and above was conducted in urban and rural area of NCR and Ghaziabad district of Uttar Pradesh. Elderly with respiratory diseases were asked questionnaire regarding healthcare utilisation.

Results: In Government sector good behaviour of healthcare provider had significantly positive effect on healthcare utilisation by urban elderly (p value - .001). But not in rural elderly population. In Government, while availability of specialist was significant factor for healthcare utilisation by urban elderly (p value = .040), for rural elderly it was availability of free medicines (.036). But satisfaction with doctor positively affected healthcare utilisation of both urban as well as rural elderly (p value = .020 and < .001). As the cost of treatment decreased, healthcare utilisation improved. But this effect did not achieve statistical significance in either urban or rural area. Both in urban and rural area most elderly who were utilizing health services found private health services 'very expensive'.

Conclusion: Majority of elderly (more than 80%) feel that Government healthcare services are very crowded and they have to wait very long to get consultation. Availability of free medicines is particularly poor at rural health facilities. Healthcare policy makers need to be aware of the heterogeneity of Indian elderly and plan healthcare systems suited to local expectations and needs.

Key words: Elderly, quality, cost of treatment, healthcare utilisation, respiratory diseases, geriatric.

Introduction

Every organ system during youth has sufficient homoeostatic reserve. Progressive constriction of this reserve, "Homoeostenosis", starts in 3rd decade of life[1].

Elderly population is progressively increasing worldwide. Global old age population was 784 million in 2011. India's old population accounts for 10% of the World's old age population (784 million) in 2011. Also its population in India is much greater than the total population of many developed and developing countries.

Improvement in healthcare along with development has brought a demographic transition. It has resulted in increased proportion of elderly in population. Respiratory disorders are an important cause of morbidity and mortality in old age. Inadequate treatment or no treatment of these disorders leads to increased morbidity, complications, poor quality of life and increased risk of dying from these disorders.

Finance is an important factor in healthcare utilisation. Healthcare utilisation is directly related to financial status. Access to free quality healthcare (either through employer or some kind of health insurance) also positively influences healthcare utilisation. Less than 20% of Indians have some form of health insurance. According to one study, 36 million people in India fall below the poverty line each year due to expenditure on healthcare[2]. Despite all this, a large portion of the population choose to bypass free public services to pay out-of-pocket in private institutions[3,4]. This fact reflects poor quality and accessibility of government healthcare services.

Recognising the special needs of elderly, reasons for non-utilisation of available healthcare services and problems faced by them in utilizing these services is the first step in formulating health policies for them.

Methodology

A descriptive survey of geriatric population aged 60 yrs and above was conducted in urban and rural area of NCR and Ghaziabad district of Uttar Pradesh. Urban colonies and rural villages which were conglomerated in close areas were

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selected based on convenience. A systematic random sampling was done from each urban and selected rural units. Interview of elderly in every alternate household was taken to achieve adequate sample size.

Population Setting: Urban area – Nandgram is a locality in Ghaziabad city with more than 10,000 houses with 7 blocks and free households, 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 Iliachipur and Khanpur from other side 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 from Khanpur village. Total rural sample was 1503. Total urban sample of 1522 was collected from Nandgram. Total combined sample was 3025.

Period of study: January 2015 to January 2018.

Sample size: For qualitative data, formula used to derive sample size was: $n = 4\ pq/L^2$. (p – prevalence) available literature on prevalence of respiratory illness among elderly was assumed as 20% with an allowable error of 3%. For 95% confidence level, by simple random sampling, a sample size of 682 was required. By adding 10% attrition, the sample size was fixed at 750. As sample procedure was systematic, we doubled the size and fixed it at 1500 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 using a pre-designed, pre-tested questionnaire having 2 parts. First part included socio-demographic characteristics, self-reported co-morbidities and physical disabilities. Medical records of patients were seen. Three healthcare workers were trained for this purpose. After analyzing screening proforma, elderly with suspected respiratory disease were selected. In 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 quality of health services and cost of treatment on healthcare utilisation.

Statistical Analysis

Data were entered using Microsoft Excel 2010 and statistical analysis was done using IBM SPSS v 20.0.0. and 23.0.0 both. Categorical variables were analysed using proportions and percentages. In the first stage, a descriptive analysis was performed for all records (n = 3025), both urban and rural seperately. 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 quality of Government health services, cost of treatment of Government health facility, quality of private health services, cost of treatment at private healthcare facility 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 above mentioned variables was also established by chi-square test.

Odds ratio at 95% confidence intervals were used for strength of association and interpretation of bivariate analysis. If differences found were significant on univariate analysis, then 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: Quality of healthcare services vs healthcare utilisation.

		Government Healthcare utilisation														
		Urban					Rural					Combined				
		Inade-quate	No	Yes	Total 100.0%	P value	Inade-quate	No	Yes	Total 100.0%	P value	Inade-quate	No	Yes	Total 100.0%	P value
Long wait	Yes	1466 0.3%	145 0.8%	8233 0.9%	242 100%	.708	161 69.1%	411 7.6%	311 3.3%	233 100%	.334	307 64.6%	551 1.6%	113 23.8%	475 100%	.067
	No	207 1.4%	27 0.1%	62 1.4%	28 100%		397 8%	91 8%	24 0%	50 100%		597 5.6%	111 4.1%	81 0.3%	78 100%	
Very crowded	Yes	143 60.1%	15 6.3%	80 33.6%	238 100%	.659	177 70.2%	42 16.7%	331 3.1%	252 100%	.151	320 65.3%	571 1.6%	1132 3.1%	490 100%	.299
	No	236 9.7%	13 0%	92 7.3%	33 100%		267 4.3%	92 5.7%	00 0%	35 100%		497 2.1%	101 4.7%	91 3.2%	68 100%	
Behaviour good	Yes	114 62.6%	73 0.8%	613 3.5%	182 100%	**.001**	123 74.1%	231 3.9%	201 2.0%	166 100%	.293	237 68.1%	308 0.6%	812 3.3%	348 100%	**.012**
	No	486 2.3%	45 0.2%	253 2.5%	77 100%		766 5.5%	272 3.3%	131 1.2%	116 100%		124 64.2%	311 6.1%	381 9.7%	193 100%	

Specialist available	Yes	1195 9.5%	94 0.5%	723 6.0%	200 100%	**.040**	137 71.7%	281 4.7%	261 3.6%	261 3.6%	.201	256 65.5%	37 9.5%	982 5.1%	391 100%	**.004**
	No	427 0%	46 0.7%	142 3.3%	60 100%		636 8.5%	222 3.9%	77 0.6%	92 100%		1056 9.1%	261 7.1%	211 3.8%	152 100%	
Doctor satisfaction	Yes	925 8.2%	74 0.4%	593 7.3%	158 100%	**.020**	104 75.9%	96 0.6%	241 7.5%	137 100%	**<.001**	1966 6.4%	165 .4%	832 8.1%	295 100%	**<.001**
	No	617 0.1%	44 0.6%	222 5.3%	87 100%		797 0.5%	272 4.1%	65 0.4%	112 100%		1407 0.4%	311 5.6%	281 4.1%	199 100%	
Free med available	Yes	995 8.9%	127 0.1%	573 3.9%	168 100%	.455	457 3.8%	58 0.2%	111 8.0%	61 100%	.036	1446 2.9%	177 .4%	682 9.7%	229 100%	**<.001**
	No	646 8.1%	33 0.2%	272 8.7%	94 100%		1497 1.3%	401 9.1%	209 0.6%	209 100%		213 70.3%	431 4.2%	471 5.5%	303 100%	
Pvt.																
Long wait	Yes	585 6.9%	87 0.8%	363 5.3%	102 100%	.681	748 6.0%	55 0.8%	78 0.1%	86 100%	**.003**	132 70.2%	136 0.9%	432 2.9%	188 100%	.118
	No	1096 4.5%	84 0.7%	523 0.8%	169 100%		1226 4.2%	452 3.7%	231 2.1%	190 100%		2316 4.3%	531 4.8%	752 0.9%	359 100%	
Very crowded	Yes	485 2.2%	99 0.8%	353 8.0%	92 100%	.130	648 4.2%	67 0.9%	67 0.9%	76 100%	**.033**	1126 6.7%	158 0.9%	412 4.4%	168 100%	.551
	No	1196 6.5%	73 0.9%	532 9.6%	179 100%		1306 5.7%	442 2.2%	241 2.1%	198 100%		2496 6.0%	511 3.5%	772 0.4%	377 100%	
Behaviour good	Yes	1566 1.9%	135 0.2%	833 2.9%	252 100%	.318	1426 8.3%	391 8.8%	271 3.0%	208 100%	.380	2986 4.8%	521 1.3%	1102 3.9%	460 100%	**.020**
	No	550 0%	220 0%	330 0%	10 100%		377 2.5%	112 1.6%	35 0.9%	51 100%		426 8.9%	132 1.3%	69 0.8%	61 100%	
Specialist available	Yes	1426 2.8%	83 0.5%	763 3.6%	226 100%	**.003**	1077 5.9%	128 0.5%	221 5.6%	141 100%	**<.001**	2496 7.8%	205 0.4%	982 6.7%	367 100%	**<.001**
	No	165 7.1%	621 0.4%	621 0.4%	28 100%		487 1.6%	152 2.4%	46 0%	67 100%		646 7.4%	212 2.1%	101 0.5%	95 100%	
Doctor satisfaction	Yes	1606 2.0%	135 0%	853 2.9%	258 100.0%	**.002**	1646 9.2%	471 9.8%	261 1.0%	237 100%	.570	3246 5.5%	601 2.1%	1112 2.4%	495 100%	.330
	No	342 0.9%	342 0.9%	114 .3%	710 0.0%		197 0.4%	414 0.8%	414 0.8%	27 100%		226 4.7%	720 0.6%	514 0.7%	34 100%	

Table II: Cost of treatment of healthcare services *versus* healthcare utilisation.

Cost of treatment at Government	**Health Care utilisation**											
Health services	**Urban**				**Rural**				**Combined**			
	Inadequate	**No**	**Yes**	**Total 100.0%**	**Inadequate**	**No**	**Yes**	**Total 100.0%**	**Inadequate**	**No**	**Yes**	**Total 100.0%**
Very expensive	6 (66.7%)	0 (0%)	3 (33.3%)	9 (100%)	17 (77.3%)	4 (18.2%)	1 (4.5%)	22 (100%)	23 (74.2%)	4 (12.9%)	4 (12.9%)	31 (100)
Expensive but affordable	38 (67.9%)	1 (1.8%)	17 (30.4%)	56 (100%)	123 (74.5%)	25 (15.2%)	17 (10.3%)	165 (100%)	161 (72.9%)	26 (11.8%)	34 (15.4%)	221 (100%)
Not expensive	118 (61.1)	13 (6.7%)	62 (32.1%)	193 (100%)	45 (62.5%)	14 (19.4%)	13 (18.1%)	72 (100%)	163 (61.5%)	27 (10.2%)	75 (28.3%)	265 (100%)
NA	12 (50%)	3 (12.5%)	9 (37.5%)	24 (100%)	25 (64.1%)	11 (28.2%)	3 (7.7%)	39 (100%)	37 (58.7%)	14 (22.2%)	12 (19%)	63 (100%)
Total	174 (61.7%)	17 (6%)	91 (32.3%)	282 (100%)	210 (70.5%)	54 (18.1%)	34 (11.4%)	298 (100%)	384 (66.2%)	71 (12.2%)	125 (21.6%)	580 (100%)
P value		.514				.184				**.003**		
Cost of treatment of Private Health services	**Inadequate**	**No**	**Yes**	**Total 100.0%**	**Inadequate**	**No**	**Yes**	**Total 100.0%**	**Inadequate**	**No**	**Yes**	**Total 100.0%**
Very Expensive	44 (55%)	8 (10%)	28 (35%)	80 (100%)	70 (59.3%)	32 (27.1%)	16 (13.6%)	118 (100%)	114 (57.6%)	40 (20.2%)	44 (22.2%)	198 (100%)

Expensive but affordable	113 (66.5%)	4 (2.4%)	53 (31.2%)	170 (100%)	52 (76.5%)	7 (10.3%)	9 (13.2%)	68 (100%)	165 (69.3%)	11 (4.6%)	62 (26.1%)	238 (100%)
Not expensive	6 (50%)	2 (16.7%)	4 (33.3%)	12 (100%)	35 (77.8%)	7 (15.6%)	3 (6.7%)	45 (100%)	41 (71.9%)	9 (15.8%)	7 (12.3%)	57 (100%)
NA	11 (55%)	3 (15%)	6 (30%)	20 (100%)	53 (79.1%)	8 (11.9%)	6 (9%)	67 (100%)	64 (73.6%)	11 (12.6%)	12 (13.8%)	87 (100%)
Total	174 (61.7%)	17 (6%)	91 (32.3%)	282 (100%)	210 (70.5%)	54 (18.1%)	34 (11.4%)	298 (100%)	384 (66.2%)	71 (12.2%)	125 (21.6%)	580 (100%)
P value		**.048**				**.024**				**<.001**		

Table III: Group wise regression analysis.

Urban				
Quality of Government healthcare service				
Factor	**Sig. (p value)**	**Odds ratio**	**(95% CI)**	
Gender	**.033**	2.141	1.05	4.38
Age	.122	1.904	.83	4.38
Educational status	.574	.812	.39	1.71
S – E class	**.002**	2.700	1.41	5.15
Satisfaction with Govt. doctor	**.022**	2.219	1.11	4.44
Constant	.106	.490	.20	1.18
Quality of Private healthcare service				
Factor	**Sig. (p value)**	**Odds ratio**	**(95% C I)**	
Gender	.065	1.832	.95	3.53
Age	.357	1.407	.67	2.95
Educational status	.447	.775	.40	1.51
S – E class	**.011**	2.061	1.17	3.64
Distance to Pvt. service	**.008**	.394	.20	.79
Constant	.074	2.840	.88	9.15
Rural				
Quality of Government healthcare service				
Factor	**Sig. (p value)**	**Odds ratio**	**(95% CI)**	
Age	.137	.208	.03	1.72
Educational status	.154	1.979	.76	5.16
S – E class	.599	1.266	.51	3.11
Gender	.598	.792	.33	1.91
Govt. crowding	.998	.000	.00	
No satisfaction with Govt. doctor	**.002**	5.745	1.84	17.92
Constant	.998	3317993102.965	.00	
Quality of Private healthcare service				
Factor	**Sig. (p value)**	**Odds ratio**	**(95% C I)**	
Age	.413	.405	.04	3.69
Educational status	.164	2.338	.69	7.92
S – E class	.207	1.912	.68	5.34
Gender	.699	.820	.30	2.28
Awareness of pvt. service	**.035**	.294	.09	.94
No good behaviour of Pvt.	**.049**	7.978	.96	66.09
Constant	**.023**	14.025	1.36	44.17

Combined (Urban and Rural data)				
Quality of Government healthcare service				
Factor	**Sig. (p value)**	**Odds ratio**	**(95% CI)**	
Location	.000	3.087	1.85	5.16
Age	.468	1.291	.64	2.61
Educational status	.347	1.304	.74	2.30
S – E class	.003	2.165	1.29	3.63
Gender	.181	1.435	.84	2.46
Long waiting time	.050	.422	.17	1.02
No satisfaction with Govt. doctor	.000	2.750	1.55	4.88
Constant	.258	.492	.14	1.72
Quality of Private healthcare service				
Factor	**Sig. (p value)**	**Odds ratio**	**(95% CI)**	
Location	.182	1.523	.81	2.86
Age	.262	1.471	.74	2.93
Educational status	.531	1.197	.67	2.13
S – E class	.027	1.751	1.06	2.90
Gender	.126	1.523	.88	2.64
Awareness of pvt. service	.007	.287	.11	.72
No satisfaction with Pvt. Doctor	.014	2.600	1.19	5.66
Constant	.432	1.784	.41	7.78

In Urban, among Government health service quality variables - group, gender (p = .033), socio-economic status (p = .002) and non-satisfaction with Government doctor (p = .022), were found to be significant, i.e., (p < 0.05). Among Private care service quality, factors which were found to be significant, were socio-economic status (p = .011) and distance to private facility (p = .008), denoting (p <0.05).

In Rural, in analysis of Government quality group, non-satisfaction of Government doctor (p = .002) were found to be significant, i.e., (p < 0.05). After analysis of Private care service group, factors which were found to be significant, were private awareness (p = .035), not good behaviour of private doctors (p = .049) denoting (p <0.05).

In combined, in analysis of Government quality group, economic status (p = .003), long wait in Government sector (p = .050), non-satisfaction of Government doctor (p = .000) were found to be significant, i.e., (p < 0.05). After analysis of Private care service group, factors which were found to be significant, were economic status (p = .027), private awareness (p = .007), not satisfaction with doctor (p = .014) denoting (p <0.05).

Discussion

Quality of available healthcare services is an important

determinant of healthcare utilisation. In our study we enquired respondents about the quality of government as well as private healthcare facilities on the basis of past experience and perception. Quality of healthcare services has got many components, i.e., infrastructure and organisation of facility, availability of expertise and equipments as per requirements, behaviour of healthcare providers, their ability to address concerns of patients, giving them enough time and satisfy them, convenience in getting the service in the form of crowding, waiting time. In case of government services availability of free medicines and levying of user charges are also significant factors. We studied response of elderly regarding quality of healthcare services for six factors, viz., crowding, waiting time, availability of specialist, behaviour of healthcare providers, satisfaction with doctor and cost of treatment at facility. For government facility availability of free medicines was also asked. In our study among urban elderly 85.8% (242/282) and 84.4% (238/282) respectively complained of long waiting time and overcrowding at government health facilities. Among rural elderly 78.2% (233/298) and 84.6% (252/298) respectively complained of these two problems in seeking government health services. These problems regarding government health facilities in India is a well known fact. These factors make accessing healthcare services especially difficult for elderly considering their poor physical condition. Majority of elderly reported behaviour of healthcare provider as good. Satisfaction with Government doctor was 56 (158/282) and 46 (137/298) per cent respectively for urban and rural areas but this difference was not significant ($p = .053$). Availability of free medicines was significantly better in urban facilities as compared to rural area. While in urban area 59.6% (168/282) elderly said that free medicines were available at Government health facility only 20.5% (61/298) rural elderly reported so. It is understandable due to better monitoring, as well as awareness of users in urban areas. Partly due to availability of free medicines, there was also significant difference regarding cost of treatment at Government facility perceived by urban and rural elderly ($p = .000$). While majority of elderly (68.4% - 193/282) in urban area found Government health services as not expensive, majority of rural elderly (55.4% - 165/298) perceived them as expensive but affordable. Other reason for this perceived difference could also be due to difference in financial affordability between two populations. Quality of private healthcare services for all these factors was better than Government facilities except for cost.

Many studies have found poor quality of healthcare services as a significant impediment to healthcare utilisation. In an American study, lack of responsiveness of doctor was most often cited (33%) than physical barriers such as cost or transportation. An elderly person's perception of the physician's lack of responsiveness was a greater disincentive to seeking care than more tangible barriers[5]. In Dharan, Nepal study, elderly cited the following reasons for avoiding Government healthcare facility. A large number (16% - 41%) complained about the poor attitude of healthcare workers towards their health needs and treatment and 107 (26.8%) found facility too crowded and avoided due to lengthy process to get treated[6]. In this study, the above said facility was a big Government medical institute (BPKIHS) with availability of high-end equipment and specialists, still many elderly did not find it good. This data underlines special needs of elderly.

Another study from Bangladesh also emphasized importance of provider behaviour. It found most powerful predictor for client satisfaction with Government services was provider behaviour especially respect and politeness. Reduction of long waiting time was more important to the clients than prolongation of short consultation time[7]. An AIIMS study found carelessness (31.6%) and disillusionment (23.5%) due to previous unsatisfactory experience as second and third most important reasons for avoiding treatment by elderly for their self-reported problems[8]. Various other studies have reported out-of-pocket costs, long queues, disrespectful treatment by facility staff, medication stock-outs and perceived ineffective care as barriers to healthcare utilisation[9-11].

In our study, satisfaction with doctor affected healthcare utilisation significantly both by rural and urban elderly ($p < .001$ and $< .05$ respectively). Behaviour of provider and availability of free medicines had differing effect on urban and rural elderly. While provider behaviour affected healthcare utilisation by urban elderly only ($p = .001$), rural elderly only were affected by availability of free medicines ($p = .036$). Higher sense of self pride in urban population due to better socio-economic status, thus making them more sensitive to perceived bad behaviour by healthcare provider may be the reason of this factor affecting healthcare utilisation in urban elderly only. Difference in financial status could also be the reason for differing effect of availability of free medicines on healthcare utilisation by two population. As majority of urban elderly found Government healthcare facility as non-expensive, non availability of free medicines did not affect their healthcare utilisation. Better awareness may be the reason for availability of specialist affecting healthcare utilisation by urban elderly only ($p = .040$). While healthcare cost at Government facility had no effect on utilisation by either urban or rural elderly, cost at private facility affected utilisation by both these population ($p = .048$ and .024). This difference may be due to much higher cost of healthcare services at private as compared to Government facility.

In 2021 an analysis by Banerjee has been done using the unit level data of Social Consumption: Health (Schedule number 25.0) of the 75th round of the National sample Survey conducted during July 2017 – June 2018. Preference for a trusted doctor/hospital (29.17% in rural and 40.73% in urban) and unsatisfactory quality of services in public facilities (27.79% in rural and 22.77 % in urban) were the two most commonly cited reasons for not availing healthcare services from Government sources in both urban and rural areas albeit constituting a varying proportion. The third most common reason for not availing healthcare services from Government sources, even if it the quality was satisfactory was that it involves long waiting which accounted 17.47% in rural and 21.55% in urban[12].

A study by Gnanasabai *et al*, when asked about the reasons for not seeking treatment, around 30.3% reported that it was a minor illness, 21% were not taking treatment due to financial constraints[13].

Conclusion

The Indian Government is unable to cover the full spectrum of healthcare needs due to persistently low public investment in health, poor health infrastructure, which increases the cost and the financial burden of care resulting in out-of-pocket catastrophic expenditure on health. The expansion in insurance coverage and the provision of good-quality, subsidised, public health facilities will both improve access to healthcare and protect the poor elderly against financial catastrophe[14].

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