Prevalence and Predictors of Unmet Needs among the Elderly Residents of the Rural Field Practice Area of a Tertiary Care Centre from Northern India

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Abstract

Background: Surrogate markers simple enough to be used by primary care workers have not been closely investigated by the community experts in rural Uttar Pradesh. We assessed the physical disabilities in activities of daily living (ADL) and unmet need in physical disabilities among rural elderly. Predictors of unmet needs in physical disabilities among the elderly were also identified.

Methods: A community based cross-sectional study was conducted among elderly residents of the rural field practice area of a tertiary care centre in rural Uttar Pradesh. Three hundred and thirty five (335) participants aged 60 years and above from 9 villages were selected using the Probability Proportional to Size (PPS) sampling technique. Study tools were the proforma regarding socio-demographic details, socio-economic status and Stanford Health Assessment Questionnaire. Multivariate logistic regression analysis was performed to identify predictors of unmet needs.

Results: 185 (55.2%) had physical disability in one or more activity limitation. Gender wise elderly females had more physical disability in one or more ADL categories than elderly males (66.8% vs. 42.0%). Almost one third (32.5%) of subjects had unmet need for one or more physical disabilities. the predictors of unmet needs that were identified in the study were female gender ($P = 0.046$), elderly aged 70 years and above ($P = 0.032$), those living alone ($P = 0.035$), low monthly family income ($P = 0.044$), financially fully dependent elderly ($P = 0.0002$), and those having 3 or more physical disabilities ($P = 0.033$).

Conclusions: The findings of the study highlight that large number of needs of the disabled are still unmet. Greater, targeted efforts are needed to identify at-risk elderly people living in the community. These predictors would act as surrogate markers and can be easily used by primary care workers to plan and provide services to the elderly people in rural communities.

Keywords: Prevalence, predictors, unmet needs, elderly, rural. Geriatric, unmet needs, elderly, rural India

Introduction

The developing countries are "getting old before they get rich". The UN defines a country as "ageing" where the proportion of people over 60 years old reaches 7% (1). As per census of India 2011, percentage of 60+ persons has increased to 8.6% and is expected to reach 12.6% in 2025 (2). By that definition alone, India has acquired the label of "an ageing nation". According to WHO estimates, the absolute number of the over 60 population in India will increase from 103.8 million in 2011 to 137 million by 2021 (3).

Accurate assessments of need for disability assistance are essential for effective planning of disability support services, but there is little data on type and acuity of need (4). Apart from assessing needs and unmet needs of elderly, it is important to identify the target elders who need the service the most (predictors of unmet need) in order to provide the home based and community care services so that we can "Add life to the years, not years to the life". Current statistics for the elderly in India gives a prelude to a new set of problems that could arise if a timely initiative in this direction is not taken by program managers and policy makers.

To best of our knowledge surrogate markers (predictors of unmet needs) which are simple enough to be used by primary care workers have not been closely investigated by the community experts in rural Uttar Pradesh. The present study was therefore conducted to assess the physical disabilities in activities of daily living (ADL) and unmet need in physical disabilities among the elderly residents of the rural field practice area of a tertiary care centre. An additional objective was to identify predictors of unmet needs in physical disabilities among the elderly.

Materials and Methods

The present cross sectional survey was conducted among elderly residents of the rural field practice area of the Department of Community Medicine, Major S.D. Singh Medical College and Hospital, Fatehgarh, Uttar Pradesh during June to December 2013. Study subjects were selected from nine villages coming under the rural field practice area of the department.

The sample size was calculated – with an anticipated prevalence of unmet need of 32.8% (3), 5% absolute precision, 95% confidence interval and 10% non-response error – as 373 participants aged 60 years and above. About 38 elderly subjects were either non-cooperative or could not be interviewed despite making three visits to contact them. Remaining 335 eligible study subjects were contacted and interviewed.

Study subjects were selected from nine villages coming under "MSDS Geriatric Day Care Centre". The area selected was the rural field practice area of MSDS Medical College. It has been adopted by this tertiary medical centre for rural training of under graduate students in community medicine and for providing health services to the villagers.

The list of all residents of those villages was obtained from the centre. All households which have elders were given serial numbers. This constituted the sampling frame. To arrive at the required sample size, elders from nine villages were selected using the Probability Proportional to Size (PPS) sampling technique. Among the total households in each village, the sample households were randomly selected. If a household had more than one elder person one of them selected for the study by using lots.

Study tools used in the survey were Stanford Health Assessment Questionnaire and a proforma containing questions on socio-demographic details and socio-economic status. Stanford Health Assessment Questionnaire is a previously validated tool used for assessing disability in Activities of Daily Living [ADL] (5). Subjects with disabilities were assessed for their unmet needs with the following standardised tool. An elderly, who receives no human assistance, does not use assistive device but reports needing help for their disability is said to have unmet need.

Elders with unmet needs in any one of the physical disabilities in ADL of eight categories of were considered as having an unmet need in physical disability. Subjects were clinically evaluated for morbidity assessment by history and clinical examination. All interviews and examinations were conducted by a single person. Interviews were conducted in relaxed environment. Initial few minutes were devoted for rapport building. Then relevant questions were asked and responses were noted down by a trained person. It took 20–30 minutes to interview one subject. Ethical committee approved the study. Informed consent was obtained from the study participants.

After compilation of collected data, analysis was done using Statistical Package for Social Sciences (SPSS), version 20.0. The results were expressed as proportions. Chi-square (χ^2) test

was applied to test the difference across the groups and $P < 0.05$ was considered statistically significant. Multivariate logistic regression analysis was performed to identify predictors of unmet needs.

Results

Of the 373 patients approached, 35 patients refused to participate and 335 patients were interviewed giving a response rate of 89.8%. Majority of the elderly were Hindus (98%) and the remaining (2%) belonged to other religions (Muslims and Christians). Major proportions (33%) of elderly were between age group of 60 to 64 years. Nearly 53% elderly people were currently married, 44% were widowed and remaining were separated, divorced or never married. Almost 67% elderly people were illiterate. Only 5% had under gone high school and above. A big proportion of the elderly (47%) was financially fully dependent.

Out of total 335 elderly people, 185 (55.2%) had physical disability in one or more activity limitation. Gender wise elderly females had more physical disability in one or more ADL categories than elderly males (66.8% vs. 42.0%) and this difference was found to be statistically highly significant ($P < 0.001$). Gender difference was also observed in the following two out of eight categories of physical function:walking (22.5% vs. 14.0%) and other activities (21.8% vs. 14.6%). The difference was found to be statistically significant in these two categories (Table 1).

Table 2 shows that disabilities are very common in the age group ≥80 years and it is also worthwhile to note that the percent of people with disability increasing as the age increases.

Out of total 335 elderly people, 109 i.e. almost one third (32.5%) of subjects had unmet need for one or more physical disabilities. The maximum unmet need was observed in "others" category followed by "dressing and grooming" i.e. 21.8% and 21.2% respectively. Gender wise elderly females had more unmet needs than elderly males (40.4% vs. 23.6%) and this difference was found to be statistically highly significant ($P < 0.001$). Gender differences were also observed significantly higher in the three out of eight categories of activities of daily living (Table 3).

After adjusting for other variables [Number of morbidities (<3, 4–6, >6), Cognitive impairment (present, absent), Status of care provider (Care provider yes/no) etc. were some such variables], the predictors of unmet needs that were identified in the study were respondents who lived alone, were aged more than 70 years, were other than married, financially fully dependent elderly, those elderly who had more number / level of disability and those who were having more number of morbidity. On multiple logistic regression, the predictors of unmet needs that were identified in the study were female gender ($P = 0.046$), aged 70 years and above ($P = 0.032$), those living alone ($P = 0.035$), low monthly family income ($P = 0.044$), financially fully dependent elderly ($P = 0.0002$), and those having three or more physical disabilities ($P = 0.033$) after adjusting for other variables (Table 4).

Table 1: Gender-wise distribution of various physical disabilities in ADL among elderly

| Category | Number (%) | | | P-value |
	Male (*n* = 157)	Female (*n* = 178)	Total (*n* = 335)	
Dressing and grooming	27 (17.2)	44 (24.7)	71 (21.2)	0.122
Arising	30 (19.1)	36 (20.2)	66 (19.7)	0.905
Eating	25 (15.9)	40 (22.5)	65 (19.4)	0.169
Walking	22 (14.0)	40 (22.5)	62 (18.5)	0.045[†]
Hygiene	25 (15.9)	33 (18.5)	58 (17.3)	0.622
Reach	23 (14.6)	31 (17.4)	54 (16.1)	0.594
Grip	16 (10.2)	27 (15.2)	43 (12.8)	0.237
Other**	23 (14.6)	50 (28.1)	73 (21.8)	0.004[†]
One or more activity limitation	66 (42.0)	119 (66.8)	185 (55.2)	<0.001[‡]

**Going to the shop, Able to use personal and public transport, Household chores. † $P < 0.05$, ‡ $P < 0.001$

Table 2: Age-wise distribution of various physical disabilities

Category	Number (%)					
	60 to 64 (*n* = 110)	65 to 69 (*n* = 91)	70 to 74 (*n* = 63)	75 to 79 (*n* = 32)	80 or ≥80 (*n* = 39)	Total (*n* = 335)
Dressing and grooming	14 (12.7)	16 (17.6)	13 (20.6)	8 (25.0)	20 (51.3)	71 (21.2)
Arising	9 (8.1)	15 (16.5)	12 (19.0)	11 (34.4)	19 (48.7)	66 (19.7)
Eating	8 (7.2)	7 (7.6)	10 (15.9)	8 (25.0)	32 (82.1)	65 (19.4)
Walking	4 (3.6)	5 (5.5)	3 (4.8)	13 (40.6)	37 (94.9)	62 (18.5)
Hygiene	5 (4.5)	6 (6.6)	5 (7.9)	10 (31.2)	32 (82.1)	58 (17.3)
Reach	0 (0.0)	5 (5.5)	17 (26.9)	13 (40.6)	19 (48.7)	54 (16.1)
Grip	2 (1.8)	6 (6.6)	10 (15.9)	8 (25.0)	17 (43.6)	43 (12.8)
Other***	7 (6.3)	10 (10.9)	30 (47.6)	12 (37.5)	14 (35.9)	73 (21.8)
One or more activity limitation	35 (31.8)	34 (37.4)	48 (76.2)	29 (90.6)	39 (100.0)	185 (55.2)

**Going to the shop, Able to use personal and public transport, Household chores.

Table 3: Gender-wise distribution of unmet needs in physical disabilities among elderly

Category	Male n = 157	Female n = 178	Total n = 335	*P*-value
Dressing and grooming	8 (5.1)	25 (14.0)	33 (9.9)	0.017[†]
Arising	14 (8.9)	31 (17.5)	45 (13.4)	0.033[†]
Eating	15 (9.5)	22 (12.4)	37 (11.0)	0.305
Walking	10 (6.4)	13 (7.3)	23 (6.9)	0.904
Hygiene	4 (2.5)	15 (8.4)	19 (5.7)	0.026[†§]
Reach	12 (7.6)	17 (9.6)	29 (8.7)	0.671
Grip	3 (1.9)	6 (3.4)	9 (2.7)	0.318[§]
Other***	9 (5.7)	21 (11.8)	30 (8.9)	0.083
One or more activity limitation	37 (23.6)	72 (40.4)	109 (32.5)	< 0.001[‡]

**Going to the shop, Able to use personal and public transport, Household chores. † $P < 0.05$, ‡ $P < 0.001$, § Mantel Haenszel Chi-square

Discussion

The process of ageing in India is mired by the frailties and poor health conditions of the aged. While there have been some attempts by empiricists in recent years to examine this phenomenon and its demand-supply implications for the health sector in the country, an attempt has been made to assess the problems of functional limitations suffered by the aged with deficient health.

The prevalence of unmet needs in disabilities in this study was found to be 32.5%. Our findings confirm the views of Rajan and Aliyar (6). They observed that unmet health needs were more pronounced among the 33.1% of the elderly in India who were reported to have lost their spouses. This finding is also similar to another study of Moner Alam et al. (7) and is in contrast to the several studies from western countries (8, 9). The prevalence of unmet needs in disabilities were found to be at much lower than our study. Probably this could be due to two obvious reasons; one, availability of a care taker to assist the elderly for their Activities and Instrumental activities; two, more use of various equipments/aids by elderly subjects in their study.

The present study observed that 47% of the elderly was financially fully dependent to others. These findings are lower than the observations of another study conducted in Delhi (10). Probable explanation can be given that rural elderly continue to be active until physical incapacity prevents them from working.

Table 4 : Risk factors of unmet needs in physical disabilities among elderly subjects

Variable	Elderly people n (%)	Elderly with Unmet Need n (%)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	P-value
Sex					
Male	157 (46.9)	37 (23.6)	1.00 (Reference)	1.00 (Reference)	–
Female	178 (53.1)	63 (35.4)	2.54 (1.60–4.47)	2.12 (1.04–5.42)	0.048†
Age (in years)					
< 70	198 (59.1)	17 (8.6)	1.00 (Reference)	1.00 (Reference)	–
70 and above	137 (40.9)	83 (60.6)	6.81 (4.14–10.62)	2.77 (1.14–6.77)	0.032†
Educational status					
Literate	127 (37.9)	15 (11.8)	1.00 (Reference)	1.00 (Reference)	–
Illiterate	208 (62.1)	85 (40.9)	2.65 (1.52–5.48)	1.12 (0.27–1.48)	0.511
Marital status					
Married	183 (54.6)	35 (19.1)	1.00 (Reference)	1.00 (Reference)	–
Others*	152 (45.4)	65 (42.8)	2.28 (1.27–3.56)	2.42 (1.07–5.34)	0.068
Living arrangement					
Living with other(s)	298 (89.0)	74 (24.8)	1.00 (Reference)	1.00 (Reference)	–
Alone	37 (11.0)	26 (70.3)	4.67 (2.15–11.14)	7.63 (1.45–16.88)	0.035†
Monthly Family income					
>Rs 4350 (High)	93 (27.8)	14 (15.1)	1.00 (Reference)	1.00 (Reference)	–
<Rs 4350 (Low)	207 (72.2)	86 (41.5)	3.74 (2.01–7.45)	1.74 (1.01–3.14)	0.044†
Financial status					
Partially dependent and independent	184 (54.9)	13 (7.1)	1.00 (Reference)	1.00 (Reference)	–
Fully dependant	151 (45.1)	87 (57.6)	7.70 (4.36–12.53)	5.71 (2.62–12.40)	<0.001‡
Number of physical disability					
<3	253 (75.5)	80 (31.6)	1.00 (Reference)	1.00 (Reference)	–
3 and above	82 (24.5)	20 (24.4)	8.03 (4.15–12.98)	3.14 (1.08–7.15)	0.033†

*Going to the shop, Able to use personal and public transport, Household chores. † $P < 0.05$, ‡ $P < 0.001$

It was observed in the current study that 55% of elderly were disabled in one or more of their physical activities and these findings are similar to another study from south India (9). In their study they found that 58% of elderly people had at least one disability in their activities of daily living and instrumental activities of daily living. It was also seen that women were having more disability (66.8% vs 42.0 %) than men.

Consistent with other studies (7, 9, 11) our study also shows that disability occurrence was more with increasing age. Results of another study by Melzer et al. (12) are also in concordance with our observations. Age is an important predictor of unmet needs as identified in our study. Surprisingly many studies did not find any relationship between chronological age and unmet needs (13, 14).

This study did not find an association between monthly family income and unmet need, similar to Tennstedt el al. (14). In contrast to our study, Mayur et al. (13) and another study from Spain (15) found elderly having low income were at increased risk of having an unmet need. This may be explained, may be in part that our study assessed the monthly income of the family, which is having less recall bias in contrast to other studies, which assessed the annual income.

Another study from Tamil Nadu (4) also observed elderly living alone, financially fully dependent elderly, and those having three or more physical disabilities as significant predictors of unmet needs. Not surprisingly findings of our study confirm the results of this study. But with regard to gender, our observation is in contrast to the same study.

This study has several strengths. First, to our knowledge, predictors of unmet needs among the elderly in rural populations in India has not been extensively investigated. Very few similar studies are available in the literature. Second, we used PPS sampling and random selection method to select the study subjects which provide protection against selection bias. Third, all the interviews were conducted by single person which created a sense of uniformity in data gathering.

The study has some limitations as well. First, some may argue that these markers may not be applicable to every elderly population of our country. We agree because baseline data like income, literacy, gender distribution and other socio-demographic-cultural factors tend to vary in different geographical areas. Second, such a community-based study is always susceptible to recall bias. Third, morbidity assessment was not conducted.

Conclusion

The findings of the study highlight that large number of needs of the disabled are still unmet. Greater, targeted efforts are needed to identify at-risk elderly people living in the community and to provide services (e.g. home care, community based rehabilitation services). These predictors would act as surrogate markers and can be easily used by primary care workers to plan and provide services to the elderly people in rural communities. Data thus generated can be used to plan and provide quality care services to the rural elderly who need it most.

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Conflict of Interests

No

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No

Authors' Contributions

Conception and design: AS, MB
Analysis and interpretation of the data: SG
Drafting of the article: AS, MB
Final approval of the article: AS, MB
Provision of study materials or patients: SG
Statistical expertise: RB
Administrative, technical, or logistic support: AS, RB, PM
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