## **Original Research Article**

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# Prevalence of disability using rapid assessment of disability toolkit among adult residents of rural Delhi, India

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## **ABSTRACT**

**Background:** India is committed to ensure development inclusive of persons with disability. Recently a sensitive and specific Rapid Assessment of Disability toolkit has been developed to assess the disability prevalence by United Nations Convention on Disability. Studies using this toolkit in India are inadequate leading to paucity of data regarding disability. The present study was conducted to assess the prevalence of disability among adults of a rural area of Delhi.

**Methods:** A community-based, cross-sectional study, carried out among adults of Fatehpur Beri village, Delhi. A total of 660 participants were assessed using the rapid assessment of disability toolkit. Descriptive statistics were used to calculate the prevalence, Chi-square and Fischer's exact test was used for bivariate analysis.

**Results:** The prevalence of disability was found to be 8.6% and was similar among both genders. A higher proportion of persons with disability belonged to lower socioeconomic class, were likely to be unmarried, widow/widower, separated/divorced also either illiterate or had studied till primary school only and more often unemployed as compared those without disability.

**Conclusions:** Persons with disability had a significantly lower educational, occupational, socioeconomic attainment. Large scale studies are needed to provide data for planning inclusive development.

Keywords: Disability, Persons with disability, Rapid assessment of disability

## INTRODUCTION

Disability is one of the major public health problems in developing countries, including India. World Health Organisation estimates world-wide prevalence of disability as 15% approximately, with more than 80% persons with disability residing in rural areas of developing countries. United Nations Convention on Rights of Persons with Disability describes disability as "persons with long term physical, mental, intellectual or sensory impairments which in interaction with various barrier may hinder their full and effective participation in society on an equal basis with others". In most populations, persons with disability are denied full

participation in social and political lives as a result of difficulty in day to day functioning itself. They have poorer health and lower educational accomplishment. This results in their reduced productivity and therefore higher rates of poverty than people without disabilities.

The social model of disability states that disability is not a feature of the individual; instead it reflects the inability of society to take the different needs and abilities of its member in to account. It acknowledges that society needs to bring in modifications to suit the needs of persons with disability and so as to eliminate the barriers that hinder the full participation of persons with disability.

Following the adoption of United Nations Convention on Rights of Persons with Disability, various nations are committed to ensure development that is inclusive of persons with disability.<sup>1</sup>

For this purpose, the baseline information on the prevalence of disability is crucial. Unfortunately reliable estimates of prevalence and pattern of disability are limited, especially data that is internationally comparable. This limits the understanding of the needs and priorities of people with disability.

In India, world health survey reports a disability prevalence of 24.9% whereas the 2011 census reported the same as 2.2%. This may reflect the lack of a valid tool for measuring the prevalence of disability.<sup>2</sup>

Improving the life of persons with disability is a major challenge in India. Government policies have largely failed to deliver employment. According to Ministry of Statistics, people with disabilities have only been included in National Rural Employment Guarantee Act at levels less than 0.1% of the total programme.<sup>3-5</sup>

There was no comprehensive tool to assess the disability prevalence until recently when the United Nations Convention on Disability developed Rapid Assessment of Disability tool to measure the disability and self-assessed functioning and well-being of persons with disability. The Rapid Assessment of Disability toolkit was found out to be very specific and sensitive and was validated for use in developing countries. Studies on disability using rapid assessment of disability toolkit in India are still inadequate. Hence, not much data is available on prevalence and pattern of disability, level of self-assessed functioning and wellbeing of persons with disability in India. In India.

The present study was conducted to collect the baseline information on the prevalence of disability using rapid assessment of disability tool, among the adults residing in a rural area of New Delhi, India and to identify the associated socio-demographic factors.

## **METHODS**

A cross-sectional population based survey was conducted in the villages under the Primary Health Centre, Fatehpur Beri area. This is a rural area in the South district of Delhi. This is the field practice area of the Department of Community Medicine of the investigating institute. There are 11 villages falling under the area of the primary health centre.

## Sample size

The sample size was estimated using the disability prevalence of 10.4% as reported by a study done by Sulgodu et al in 2015 in Prakasam district of Andhra

Pradesh, with a 95% confidence level, an absolute error of 2.5%, and a non-response rate of 10 %, to be 660.<sup>1</sup>

## Study duration

Study was conducted from 03 October 2016 to 30 March 2018.

## Sampling technique

Out of 11 villages under primary health centre area, village Fatehpur Beri was selected by lottery method. Participants from the village were selected using systematic random sampling. A house-to-house survey to prepare a numbered list of the households was done to obtain the sampling frame. The sampling interval was calculated to be 3. Then the first household was chosen by lottery method, and then every 3<sup>rd</sup> household was included. One adult per household was selected for the study by lottery method.

After obtaining written informed consent, a pre-tested and semi-structured questionnaire was administered. The socio-economic class was assessed using Modified B. G. Prasad's Socio-economic classification-2017.<sup>7</sup> Following this, the rapid assessment of disability toolkit was administered.

### Rapid assessment of disability toolkit

The rapid assessment of disability toolkit has been developed by United Nations Convention on Persons with Disability with the help of University of Melbourne and Centre for Eye Research Australia and funded by the Australian Government through the Australian Development Research Awards.

The rapid assessment of disability toolkit is to be administered by the interviewer and has two parts. The first part is designed to diagnose if a disability is present and was administered to each participant. It assesses any difficulties in functioning in seven domains: vision, hearing, communication, mobility, gross and fine motor skills, cognition, appearance. It also assesses psychological distress in a separate domain.

The remaining portion is designed to evaluate the self-assessed functioning and wellbeing by the persons with disability and was administered to those identified to have disability.<sup>6</sup>

## Statistical analysis

Data analysis was done using SPSS software licensed version 21. All the variables were analysed using descriptive statistics. Bi-variate analyses were done using the Chi square test and Fischer exact test. A p value of less than 0.05 was considered as statistically significant.

Approval from Institutional Ethical Committee of VMMC and Safdarjung Hospital was taken before the start of the study.

### **RESULTS**

Table 1 shows socio-demographic profile of study population (n=660). Mean age of the study population was  $39.5\pm17.7$  years. Males and females constituted 51.4% and 48.6% respectively. A high percentage (310/660) i.e. 47% of study population was either

illiterate or had studied till primary school. Approximately 50% (325/660) of the participants were employed. A high proportion of the study population was occupied in unskilled (319/660; 48.3%) or semiskilled (297/660; 45%) work only. A vast majority (510/660; 77.3%) of the study participants was married and a small proportion was divorced (14/660; 2.1%) and separated (2/660; 0.3%). Mean age of marriage of study participants were 22.49±3.1years. The highest number of study participants (314/660; 47.6%) belongs to class III of B. G. Prasad classification of socio-economic status followed by class II (263/660; 39.8%).

Table 1: Socio-demographic profile of study population (n=660).

Variable	Male N (%)	Female N (%)	Total N (%)
Age group (in years)			
18-27	81 (23.9)	145 (45.2)	226 (34.2)
28-37	70 (20.6)	39 (12.1)	109 (16.5)
38-47	63 (18.6)	71 (22.1)	134 (20.3)
48-57	65 (19.2)	23 (7.2)	88 (13.3)
58- 67	19 (5.6)	21 (6.6)	40 (6.1)
>68	41 (12.1)	22 (6.8)	63 (9.5)
Educational status			
Illiterate	75 (21.3)	70 (21.9)	145 (22)
Primary school	81 (23.9)	84 (26.2)	165 (25)
Middle school	48 (14.4)	30 (9.4)	78 (11.8)
Secondary school	42 (12.5)	47 (14.6)	89 (13.5)
Senior secondary school	85 (25.3)	62 (19.3)	147 (22.3)
Graduate	6 (2)	28 (8.6)	34 (5.2)
<b>Employment status</b>			
Employed	142 (41.9)	183 (57)	325 (49.2)
Unemployed	197 (58.1)	138 (43)	335 (50.8)
Occupational category			
Unskilled	219 (64.6)	100 (31.1)	319 (48.3)
Semi-skilled	83 (24.4)	214 (66.7)	297 (45)
Skilled	31 (9.3)	5 (1.6)	36 (5.5)
Clerical	2 (0.5)	2 (0.6)	4 (0.6)
Semi-professional	3 (0.9)	0	3 (0.5)
Professional	1 (0.3)	0	1 (0.2)
Total	339 (51.4)	321 (48.6)	660 (100)
Marital status			
Married			510 (77.3)
Unmarried			95 (14.4)
Widow/widower			39 (5.9)
Divorced			14 (2.1)
Separated			2 (0.9)
Socio-economic classification	n*		
Class I			6 (0.9)
Class II			263 (39.8)
Class III			314 (47.6)
Class IV			48 (7.3)
Class V			29 (4.4)
Total			660 (100)

<sup>\*</sup>Based on Modified B. G. Prasad's classification 2017, consumer price index 2017.

Table 2: Distribution of study participants according to presence of disability (n=660).

	Gender		= Total
Disability	Male N (%)	Female N (%)	N (%)
Present	30 (8.8)	27 (8.4)	57 (8.6)
Absent	309 (91.2)	294 (91.6)	603 (91.4)
Total	339 (51.4)	321 (48.6)	660 (100)

Table 2 shows distribution of study participants according to presence of disability (n=660). The overall prevalence of disability was found to be 8.6% (57/660). The prevalence among males was 8.8% (30/339) and among the females was 8.4% (27/321). The difference in prevalence between genders was not statistically significant (p=0.8).

Table 3: Distribution of persons with disability according to age (n=57).

Age group (in years)	Number (%)	Age-wise prevalence of disability
18-27	15 (26.3)	6.6% (15/226)
28-37	1 (1.8)	1% (1/109)
38-47	3 (5.3)	2.3% (3/71)
48-57	5 (8.8)	5.7% (5/88)
58-67	3 (5.3)	7.5% (3/40)
>68	30 (52.6)	47.6% (30/63)
Total	57 (100)	

Table 3 shows distribution of persons with disability according to age, the mean age was  $61\pm27.5$  years. The prevalence among the elderly (>60 years) was 38.6%.

Table 4: Distribution of persons with disability according to the type of disability (n=57).

Type of disability	Number (%)
Visual disability	23 (40.3)
Loco-motor disability	12 (21)
Hearing disability	8 (14)
Communication disability	5 (8.7)
Gross/fine motor disability	5 (8.7)
Cognitive disability	4 (7)
Psychological disability	2 (3.5)

Table 4 shows distribution of persons with disability according to type of disability, most common disability was visual (23/57; 40.3%) followed by locomotor disability (12/57; 21%) and hearing disability (8/57; 14%). Next were gross/fine motor disability (5/57; 8.7%), communication disability (5/57; 8.7%) and cognitive disability (4/57; 7%). The least common disability was psychological disability (2/57; 3.5%).

Table 5 shows socio-demographic profile of persons with disability A high percentage (37/57) i.e. 64.9% of persons with disability was either illiterate or had studied till primary school only. A majority (22/57; 38.6%) of them were widow/widower and 35.1% (29/57) were married, followed by unmarried (13/57; 22.8%) and mean age of marriage were 23.73±3.8years, majority of them were unemployed (48/57; 84.2%). Only 15.8% (9/57) had a gainful employment, a high proportion of them were occupied in unskilled work (41/57; 71.9%), followed by semiskilled worker (14/57; 24.6%), the highest number of them (26/57; 45.6%) belongs to lower two classes i.e. Class IV and Class V of B. G. Prasad classification of socio-economic status.

Table 5: Socio-demographic profile of persons with disability (n=57).

Variable	N (%)		
Educational status			
Illiterate	20 (35.1)		
Primary school	17 (29.8)		
Middle school	10 (17.5)		
Secondary school	6 (10.5)		
Senior secondary school	3 (5.3)		
Graduate School	1 (1.8)		
Post graduate	0		
Marital status			
Married	20 (35.1)		
Unmarried	13 (22.8)		
Widow/widower	22 (38.6)		
Divorced	0		
Separated	2 (3.5)		
Employment status			
Employed	9 (15.8)		
Un-employed	48 (84.2)		
Occupational category			
Unskilled	41 (71.9)		
Semi-skilled	14 (24.6)		
Skilled	1 (1.8)		
Clerical	1 (1.8)		
Semi-professional	0		
Professional	0		
Socio-economic classification*			
Class I	0		
Class II	13 (22.8)		
Class III	18 (31.6)		
Class IV	11 (19.3)		
Class V	15 (26.3)		
*Based on Modified B. G. Prasad's classification 2017.			

Table 6: Association of various socio-demographic characteristics and presence of disability (N=57).

Socio-demographic characteristic	Variable	Disability	Disability	Total	P
Age group (in years)	18-37	present N (%) 16 (4.8)	absent N (%) 319 (95.2)	N (%) 335 (50.8)	value
	38-57	8 (3.6)	214 (96.4)	222 (33.6)	0.001
	>58	33 (32)	70 (68)	103 (15.6)	
Gender	Male	30 (8.8)	308 (92.2)	338 (51.2)	0.0
	Female	27 (8.3)	295 (91.6)	322 (48.8)	0.8
	Upper class	13 (4.9)	253 (95.1)	266 (40.3)	0.001
Socio-economic status	Middle class	18 (5.7)	298 (94.3)	316 (47.9)	
	Lower class	26 (33.3)	52 (66.7)	78 (11.8)	
<b>Employment status</b>	Employed	9 (17.8)	316 (52.4)	325 (49.2)	0.01
	Unemployed	48 (84.2)	287(47.6)	335 (50.8)	0.01
Occupation category	Unskilled	41 (71.9)	278 (46.1)	319 (48.4)	_
	Skilled	16 (28.1)	321 (53.3)	337 (51)	0.001
	Professional	0	4 (0.6)	4 (0.6)	
Literacy status	Literate	37 (65)	478 (79.3)	515 (78)	0.01
	Illiterate	20 (35)	125 (20.7)	145 (22)	0.01
Marital status	Unmarried	13 (22.8)	82 (13.6)	95 (14.4)	
	Married	20 (35.1)	490 (81.3)	510 (72.3)	0.001
	Widow/separated/divorced	24 (42.1)	31 (5.1)	55 (8.3)	
	Total	57 (8.6)	603 (91.4)	660 (100)	

Table 6 shows association of various socio-demographic characteristics and presence of disability. Age, socioeconomic status, employment status, occupational category, literacy and marital status were found statistically significant among those with disability. No correlation was observed between presence of disability and other socio-demographic factors viz. gender, religion, type of family and housing conditions.

## **DISCUSSION**

The overall prevalence of disability was found out to be 8.6% and was similar in both the genders (8.8% in males and 8.4% in females). This prevalence is nearly four times higher than the 2011 census data. The reasons for this discrepancy may be the census's narrow definition of disability and the fact that census enumerators are not adequately qualified to diagnose disability.

Rapid assessment of disability tool is probably more sensitive for identifying people with disability which may be due to rapid assessment of disability toolkit's broad definition of disability which does not use stigmatising words. The rapid assessment of disability data also provides information on prevalence of disability subtypes.

For planning inclusive development, a countrywide data on prevalence and associated factors of disability is crucial. However, as rapid assessment of disability toolkit has been validated recently, only a few prevalence studies have been completed using this toolkit. These studies have reported disability prevalence of 10.4% in rural district of south India, 10.43% in Prakasam district, Andhra Pradesh, 9.9% in rural Hyderabad, 6.8% in rural area of Uttarakhand and 2.9% in Guwahati district, Assam.<sup>1</sup>

This wide variation is expected, India being a vast and diverse country. Therefore only a large number of studies or a countrywide survey with appropriate sampling technique would provide the disability rates, sociodemographic factors and the barriers faced by persons with disability throughout the country.

Prevalence in other South East Asian countries has been reported as 8.9% in Bogra district of Bangladesh, 6.8% and 13.6% in Quezon City and Ligao City of Philippines respectively, using the rapid assessment of disability toolkit.<sup>6,8</sup>

## Socio-demographic factors associated with disability

Age and gender distribution of persons with disability

The current study reported higher prevalence of disability i.e. 38.6% among the elderly (>60 years), the highest prevalence (47.6%) in >68 years age group was found to be associated with increasing age. Similar findings were reported by Sulgodu et al in rural district of south India where the elderly were eleven times more likely to report disability than younger age groups. Almost all the studies in India and elsewhere have reported an increase in disability with age. In disability with age.

Even the census data reveals an increasing rate of disability with age. Velayutham et al analysed the 2011 census data and found the prevalence of disability in elderly to be 5.1% versus 1.2% in the younger age. 11

In current study the prevalence of disability was found to be similar in both genders. Other studies using rapid assessment of disability toolkit in Uttarakhand, Bangladesh and Andhra Pradesh too did not find significant difference among the genders.

Some studies across the world have reported a higher prevalence of disability among female but these are mostly limited to the elderly age group. 1,8,10,12-17

A few studies have reported a higher prevalence of disability in males but these used census data, considered all age groups or were outside Asia. 11,18-19

#### Education

A majority of persons with disability were either illiterate (35.1%) or studied till primary school (29.8%) only. The presence of disability was also found to be associated with lower literacy level. Other studies using rapid assessment of disability toolkit or otherwise, in India or abroad have also reported low level of education attainment in persons with disability.8,11,13,15,20-22

### Marital status

In current study, significantly higher proportion (p=0.001) of the persons with disability were either unmarried (22.8% versus 13.6%) or were separated, divorced or widowed (42.1% versus 5.1%).

Similar findings were reported in India by Gupta et al in rural area of Haryana, Kumar et al in Puducherry and after analysis of 2011 census data also by Ahmad et al in Malaysia, Alhajj el al in rural China and among elderly population of low-income and middle-income countries. 10,13,19,22-23

## Employment status

A significantly higher unemployment rate (84.2% versus 47.6%) was observed among the persons with disability. Even among the employed, almost all (96.5%) the persons with disability were engaged as unskilled or semiskilled workers which are the lowest two category of Kuppuswamy classification of occupations.

Similar results were found in Uttarakhand where around 60% of persons with disability had no gainful employment, in rural area of south India (OR 3.6; 95% CI: 2.3, 5.5) and in Bangladesh using same toolkit (OR 4.6; 95% CI: 3.6, 5.4). Other studies conducted in India and other countries worldwide also reported the poor level of employment status of persons with disability. 6,15,19,20,24-30

Ganesh et al reviewed 32 studies which reveal that occupation plays a major role as a determinant of disability.<sup>26</sup>

### Socio-economic status

Most of the persons with disability belonged to the lowest two classes of B. G. Prasad classification of socioeconomic status, and none belonged to class I i.e. upper class.

The prevalence of disability in the lower class (33.3%) was significantly higher (p=0.001) than that in the upper (3.9%) and middle (5.7%) class. Thus persons with disability were likely to be poorer compared to those without disability.

Numerous studies in India and worldwide have revealed similar association between poor economic status and disability. World Health Organisation has recognized that disability is linked to poverty due to poor access to services (medical care, education etc.) and social exclusion of persons with disability. This leads to lack of social and economic development opportunities, leading to poverty which in turn leads to further limitation of social participation. This has been termed as 'disability-poverty cycle'. 6,11,13,15,24

In the current study too, this phenomenon is demonstrated by the significantly higher rates of co-morbidity, selfreported bad general health, illiteracy, and unemployment and significantly lower levels of education and socioeconomic status among the persons with disability.

The society itself also bears a high cost of such social exclusion of persons with disability. This includes the direct cost of treatment and rehabilitation and indirect cost of lost income contribution by persons with disability.<sup>24</sup> Knowledge regarding the disability prevalence, associated socio-demographic factors and the barriers faced by persons with disability in all the regions of the country and across all age groups will allow region specific policies and programs for them. These will enable the persons with disability to access the social services and attain the highest possible level of social and economic development. This utilisation of full potential of persons with disability can in turn lead the country to new heights of development.

## **CONCLUSION**

The overall prevalence of disability was found to be 8.6%. The prevalence of disability was highest among elderly. Most common disability was visual followed by loco-motor disability and hearing disability. A higher proportion of PWD were unmarried, widow/widower, separated/divorced. PWDs had a significantly lower educational, occupational and socioeconomic achievement.

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Ethical approval: The study was approved by the Institutional Ethics Committee of VMMC & Safdarjung Hospital

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