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Original Research Article

Socioeconomic and health correlates disability in India

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ABSTRACT

Background: Disabled people suffered from multiple deprivations; poor health, low educational attainment, lower work participation and higher incidence of poverty. With demographic and epidemiological transition, the prevalence of disability also increases. This paper examines the socio economic and health correlates of disability in India.
Methods: The unit data from District Level Household Survey (DLHS 4), is used in the analysis. Seven type of disability; namely, mental, visual, hearing, speech, locomotor, multiple, and any disability are analysed. Bi-variate and logistic regression analysis has been used to examine the association between disability and its socioeconomic, health covariates.
Results: Prevalence of any disability was 2800 per 100,000 population in India. Prevalence of disability in non-empowered action group (EAG) states was highest for visual (800) followed by locomotor, hearing and mental. Age gradient of disability is quite strong; about 1140 person had any disability by age 10 compared to 3290 by age 40 years. Economic differentials in disability is large. Prevalence of any disability was 3680 among poorest wealth quintile compared to 2540 among richest.
Conclusions: Disability was significantly higher in poor, less educated and older adults.

Keywords: Disability, Socioeconomic, Type of disability, Chronic diseases

INTRODUCTION

The international classification of functional disability and health (ICF) defines disability as an umbrella for impairments, activity limitations and participation restriction.[1] The term disability involved complex interactions between individual and social environment.[2] In the present perspective disability is a major developmental challenges and has been increasingly recognized by multiple stake holders; academia, international organization, national and state government and the civil society.[3-6] Globally, about one billion people (15% of world population) are living with some form of disability of which about 100 million are under 15 years.[1] Moreover, disability had shown increasing trend over time and across countries. Increase in disability is associated with demographic transition and epidemiological transition across and among countries. Demographic transition leading to increase in share of older population those are more prone to disability. Epidemiological transition leading to increase of non-communicable diseases (NCDs) such as diabetes, cardiovascular disease, cancer and mental health disorder are also increasing the risk of disability. About two-third of life years lived with disability in low and middle income countries are attributed to chronic diseases.[6]

People with disability suffers from long term physical, mental, intellectual and sensory impairment systematically excluded from development agenda.[7,8] People with disability tend to have poorer health, lower educational attainments, lower work participation, restrict the range of tasks and lives with higher incidence of

poverty.[9-11] Disability leads to increase dependency and health spending at households.[1,10]

Indian scenario

India is the second most populous country of the world with 1.21 billion population having about 22 million disabled people.[12] Total fertility rate (TFR) was 2.3 with large variation across the states.[13] Prevalence of disability is increasing in India across states and over time. It was highest in state of Tamil Nadu followed by Haryana.[12] The growth rate of elderly population was about twice than overall population. On other hand, non-communicable diseases (NCDs) are leading cause of death and morbidity.[14] Limited health care facilities, lower coverage of social security system and low capacity to pay for health services is leading to increase disabled. The census of India provide seven type of disability; namely Seeing, Hearing, Speech, Movements, Mental retardation, Mental Illness any other, and one category Multiple disability. It counts only extreme form of disability. Recently, the district level household survey (DLHS-4) collected information on the disability from 21 states and 275 districts of India. The definition used in various census and surveys within country are not strictly comparable but it represent the broader picture of disability. However, the definition used in census of India 2011 and DLHS-4 are of broadly similar.

Review of literature

Most of studies on disability are from developed countries and addressed varying dimension of disability.[15] People in older age suffer from multiple disabilities and it increases with decreasing socio economic status.[16,17] Pattern holds true for each type of disability and an increasing function of age. Studies on disability are often linked to poverty, discrimination, health, health care utilization and work participation. Studies linking disability and poverty are numerous.[9,15,18,19] Causation of poverty and disability is bidirectional and the pathways of poverty and disability has been discussed elsewhere.[20,21]

Disability is significantly associated with higher multidimensional poverty, lower educational attainment, lower employment rates and higher medical expenditure in developing countries.[22] While there are multiple factors contributing to the poverty among people with disabilities, poor and unequal access to education or employment and the unequal distribution of resources are likely to be a the main causes of poverty.[23] Disable people are faces discrimination at labour market and wage discriminiation.[24-28] Attitudes toward disabled people are deeply rooted in the social and cultural values of society.[29] Disability is often what we perceive; and in the mind of the perceiver. [28]

Elimination of chronic diseases from the elderly population could lead to a compression of morbidity in elderly disable.[30] Studies linked child disability with nutrition and cognitive development in low and middle income countries. The burden of neurological impairment was higher in rural areas and neonatal were identified as high risk factors.[31] Hearing and intellectual disabilities are most commonly studies. Impairment in cognitive and hearing are significantly associated with increasing age, predominantly age 75 years and above. In developing countries there is an evidence that malnutrition lead to the disability.[32] Studies show that, in the recent year socioeconomic inequalities and disability prevalence have increasingly been considered as correlate.[19,21,33]

Need of the study

The study has been conceptualized with the following rationale. First, disability is the vital issues and poses challenges to the state of development. Disabled are the most vulnerable group and had higher incidence of poverty, ill health, illiteracy and unemployment. In addition they suffers from societal prejudices, discrimination with respect to health care, employment and other public facilities. Though prevalence of disability is higher in developing countries and increasing over time, there are limited number of studies that addressed the dimensions and structure of disability in India. Evidences also suggest increasing in various form of disability in India and the spatial form of disability in India is large.[12,34] Second, in India, there are a few studies that addressed the socio-economic and demographic correlates of disability.[9] Poverty may increase the risk of disability through several pathway, many of which are related to poor health and its determinants. Chronic ailments and their effects on working capacity provide a problem for our society which may be considered in terms of economics, sociology, medicine, or personal suffering, but none alone can give a full picture. Disability is affecting more to the poor and less educated who have least capacity to pay for health care.[16] Third, India is on advanced stage of demographic and epidemiological transition that might be leading to increase in disability across age groups. In this context, this paper examines the socio-economic and demographic correlates of disability in India.

Data

The unit data of District Level Household Survey (DLHS-4) used in the analyses. The survey was conducted in 2012-13 by International Institute for Population Sciences (IIPS), Mumbai with financial support and overall guidance from Ministry of Health and Family Welfare, Govt of India in non-empowered action group (NEAG) states of India (The NEAG states are Arunachal Pradesh, Sikkim, Haryana, Manipur, Maharashtra, Meghalaya, Kerala, Mizoram, West Bengal, Goa, Tripura, Karnataka, Nagaland, Pondicherry, Andaman Nicobar, Himachal Pradesh, Telangana, Tamil Nadu, Punjab, Andhra Pradesh and Chandigarh). While the EAG states are nine in number and demographically backward states with relatively higher fertility and child

mortality, the NEAG states are demographically better off states of India. Many of the NEAG states has long achieved the replacement level of fertility. The NEAG states covered under DLHS 4 includes 17 states and 4 union territories. The survey was not completed in Gujarat, Jammu and Kashmir, Delhi, Dadar and Nagar Haveli, Daman and Diu and Lakshadweep due to unavoidable circumstances. The main objective of this survey was to provide demographic and health indicators for those states/districts for which the AHS was not conducted. The advantages of using this data is large sample size and most recent in nature. Besides, it provides comprehensive information on demographic, social and health of individuals and used household schedule, woman schedule, men's schedule and village schedule. The finding of this survey and the unit data for 21 states and union territories is publicly available (www. rchiips.org/DLHS-4.html). The DLHS 4 has successfully completed 378487 households and 1687736 individual in country. We have used household schedule that provides detailed information on age, sex, educational level, work status, chronic illness, acute illness and any form of disability for each member of the household. Information on disability was collected on the date of survey on eight categories namely, mental, visual, hearing, speech, locomoto, multiple, others and any disability.

METHODS

The analyses are presented for 21 state of India among these four selected states of India; Haryana, Tamil Nadu, West Bengal and Maharashtra. The states are selected to reflect diverse socio-economic and demographic situation. The state of Maharashtra, located in western parts of India, is economically developed states while state of Tamil Nadu, southern state of India is in advanced stage of demographic transition and socially developed. State of West Bengal is located in eastern India and economically less developed state of India. The state of Haryana is one of the northern state of India with better economic condition. All these states have either reached low fertility level or nearing to replacement level of fertility and reflect regional diversity in India. Along with these states, estimates of all NEAG states are also provided. We have used the sub-sample of adults (18+) and disability estimates (per 100,000 population) are provided by key socio-economic characteristics; sex, educational level and wealth quintile and presence of chronic diseases. Descriptive statistics and logistic regression is used to understand differentials and significant predictors of disability. A wealth index is computed using 42 variables for rural areas and 37 for urban areas using principal component analyses (PCA). The wealth index is categorised into quintiles and used. A set of logistic regression models are used to understand the significant predictors of type of disability. For regression analyses, four type of disability, namely, any disability, mental disability, visual disability and locomotive disability based on prevalence are used. The outcome in logistic regression analysis is coded as 0 or 1, where 1 indicates that the presence of specific form of disability and 0 otherwise. The socio economic variables used are age, sex, wealth quintile, educational level, caste, religion and presence/absence of chronic diseases.

RESULTS

Table 1 presents basic households characteristics of India and four of its states. The median age of India was 28 years; 31 years in Tamil Nadu and 26 years in Haryana. About 29% population in India were under age 18 years, 62% were in 18-64 years and 7% were aged 65 more. The ranking of wealth distribution varies across the states of India. A higher proportion of population in poorest quintile were from West Bengal followed by Maharashtra and Tamil Nadu. The extent of disability was 2.2% in India, 4.5% in Tamil Nadu, 2.1% in West Bengal, 1.8% in Maharashtra and 1.5% in Haryana.

Table 1: Basic characteristics of sample population in India, 2014.

	India	Haryana	Tamil Nadu	West Bengal	Maharashtra
No. of households surveys	1687736	166334	116281	116281	253123
Sex ratio	988	889	1074	993	957
Percent urban	39.5	40.3	46.1	48.1	44.5
Educational attainment (mean years)	2.6	2.7	2.7	2.4	2.7
Age distribution (%)					
Lt 18	30	32.6	27.5	29.9	30.6
18-64	63	61.1	64.7	63.7	61.3
65+	6.8	6.2	7.7	6.3	8
Median age	28	26	31	28	28
Wealth quintile					
Poorest	20	7.8	22	37	22.7
Poorer	20	11.2	23.9	22	20.1
Middle	20	14.7	23.1	18.9	20.5
Richer	20	21.4	20.7	15.8	21.3
Richest	19.9	44.7	10	6.08	15.2
Percentage of population with any disability	2.9	1.5	4.5	2.1	1.8

Table 2: Type of disability (per 100,000 population) in selected states of India (18+), 2014.

State	Any disability	Mental	Visual	Hearing	Speech	Locomoto	Multiple	Others
Arunachal Pradesh	1270	130	240	290	110	250	100	150
Sikkim	1350	120	250	350	250	100	190	90
Haryana	1570	230	310	110	80	400	130	310
Manipur	1720	460	360	330	110	170	60	240
Maharashtra	1860	280	380	230	110	400	160	310
Meghalaya	1910	170	370	250	50	80	60	940
Kerala	2120	430	460	210	120	360	100	450
Mizoram	2130	370	510	560	130	240	90	230
West Bengal	2130	370	590	350	140	370	130	180
Goa	2150	240	250	250	80	370	240	710
Tripura	2490	220	350	560	170	630	160	400
India	2800	320	800	420	140	490	260	560
Karnataka	3100	300	600	410	170	820	400	400
Nagaland	3410	110	1060	1360	140	90	380	270
Pondicherry	3430	320	830	420	210	570	210	870
Andaman Nicobar	3520	330	1530	760	90	240	250	330
Himachal Pradesh	4110	240	850	1020	180	300	720	790
Telangana	4400	490	1690	570	170	630	170	670
Tamil Nadu	4550	320	1120	550	160	400	550	1460
Punjab	4660	440	1510	560	160	870	260	860
Andhra Pradesh	5490	450	2290	660	190	660	370	870
Chandigarh	5940	270	3010	480	170	150	180	1670

Table 3: Type of disability by wealth quintile among adults (18+) in selected state of India, 2014.

Wealth quintile	Any disability	Mental	Visual	Hearing	Speech	Locomoto	Multiple	Other
India								
Poorest	3680	400	940	570	190	620	320	650
Poorer	3070	330	780	460	150	510	280	560
Middle	2830	290	730	410	130	450	270	540
Richer	2660	280	710	340	120	430	240	530
Richest	2540	250	750	310	100	400	190	540
Haryana								
Poorest	2150	420	400	220	130	530	120	330
Poorer	1800	250	390	140	90	460	160	310
Middle	1680	220	310	110	80	430	140	390
Richer	1660	210	290	110	110	470	160	300
Richest	1270	210	260	80	50	300	100	280
Tamil Nadu								
Poorest	6210	500	1530	860	210	620	650	1830
Poorer	4790	320	1260	620	160	380	600	1450
Middle	4030	270	960	460	160	320	570	1290
Richer	3880	220	950	400	140	330	460	1370
Richest	3200	200	660	320	50	300	290	1380
West Bengal								
Poorest	2370	390	600	330	130	440	160	220
Poorer	2070	380	540	220	100	340	120	190
Middle	1940	340	580	220	100	320	120	140
Richer	1660	310	470	170	80	320	100	150
Richest	1190	270	270	190	100	200	70	180

Wealth quintile	Any disability	Mental	Visual	Hearing	Speech	Locomoto	Multiple	Other
Maharashtra								
Poorest	2520	340	560	380	190	530	210	420
Poorer	1870	310	370	360	140	460	140	290
Middle	1850	270	380	310	130	430	160	330
Richer	1520	240	310	230	90	470	130	260
Richest	1350	190	240	160	40	300	140	230

Table 4: Type of disability by educational level and chronic disease among adults (18+) in selected state of India, 2014.

Education	Any disability	Mental	Visual	Hearing	Speech	Locomoto	Multiple	Other
India								
Less than primary	3740	490	980	560	240	520	310	630
5-8	2740	260	710	360	110	460	240	600
9-10	2300	210	570	260	80	450	170	560
11-15	1590	140	450	130	40	340	110	390
16+	1600	100	530	120	20	270	110	450
Chronic diseases								
No chronic	2670	300	680	380	130	430	230	510
Any chronic	6700	470	2100	930	180	1170	600	1250
Haryana								
Less than primary	1670	420	200	110	150	260	250	290
5-8	1490	170	260	90	60	460	120	330
9-10	1430	150	280	90	50	450	70	340
11-15	960	80	230	40	20	310	40	240
16+	830	80	180	30	0	180	70	280
Chronic disease								
No chronic	1410	220	270	90	70	340	120	290
Any chronic	2540	280	530	240	120	740	190	460
Tamil Nadu								
Less than primary	6450	450	1410	770	270	510	770	2270
5-8	4700	310	1030	530	170	450	610	1600
9-10	3720	250	800	370	120	330	430	1410
11-15	2250	160	540	180	30	250	280	810
16+	2640	140	650	180	50	300	240	1080
Chronic disease								
No chronic	4300	310	1060	530	150	380	490	1370
Any chronic	12800	420	3030	1600	250	960	2150	4390
West Bengal								
Less than primary	2450	490	540	450	230	370	170	200
5-8	1900	320	570	280	100	360	90	170
9-10	1360	230	360	190	50	310	50	170
11-15	1070	200	260	80	60	270	40	170
16+	1040	120	350	190	0	190	80	120
Chronic disease								
No chronic	1740	340	430	260	140	300	110	360
Any chronic	4580	550	1420	900	120	890	320	380
Maharashtra								
Less than primary	2690	480	500	350	230	480	240	420
5-8	1640	250	370	210	90	340	110	280
9-10	1490	160	290	150	60	390	100	340
11-15	1170	130	220	100	50	310	80	280
16+	910	80	210	100	10	160	90	260
Chronic disease								
No chronic	1720	270	360	210	100	350	150	1300
Any chronic	3810	370	750	520	140	1080	260	290

Table 5 (a): Odds ratio of any disability and mental disability in selected state of India, 2014.

Variable	Haryana	Tamil Nadu	West Bengal	Maharashtra	Haryana	Tamil Nadu	West Bengal	Maharashtra
Residence		**Any disability**				**Mental disability**		
Rural®								
Urban	0.44***	0.70***	0.71***	0.80***	0.85	0.874	0.84	0.85
Sex								
Male®								
Female	1.04***	0.87***	0.88	0.74***	0.78	0.784	1.01*	0.86
Age group 18-30®								
31-40	0.18***	2.22***	2.02***	1.98***	2.52***	5.213***	3.32***	5.87***
41-50	0.22***	3.11***	2.92***	2.18***	3.04***	5.148***	2.70***	5.51***
51-60	0.26***	4.57***	3.10***	2.98***	2.10*	3.196***	3.03***	7.34***
61-70	0.47***	6.71***	4.84***	4.05***	3.76***	2.733***	3.21***	5.28***
71+	0.81***	9.71***	6.45***	7.55***	2.78	3.524***	3.89***	4.45***
Education								
Less than primary®								
5-8	0.07	0.80***	0.86	0.74***	0.43***	0.765***	0.69**	0.56***
9-10	0.07	0.75***	0.61***	0.73***	0.35***	0.665***	0.52***	0.39***
11-15	0.06***	0.58***	0.51***	0.62***	0.23***	0.425***	0.43***	0.33***
16+	0.10**	0.69***	0.52*	0.52***	0.20***	0.360**	0.10***	0.20***
Wealth quintile								
Poorest®								
Poorer	0.11	0.82***	0.97	0.76***	0.63	0.610***	1.30	1.09
Middle	0.09	0.66***	0.90	0.76***	0.48**	0.556***	1.13	1.15
Richer	0.09	0.60***	0.75	0.62***	0.60*	0.511***	1.03	0.90
Richest	0.07***	0.46***	0.54***	0.50***	0.58**	0.510***	0.72	0.76
Marital status								
Never married®								
Currently married	0.06***	0.72	0.49***	0.48	0.38***	0.183***	0.29***	0.12***
Others	0.11	0.91	0.55***	0.56	0.39*	0.430***	0.48**	0.22***
Caste								
SC®								
ST	0.16***	0.91	0.81	0.86	2.14**	0.736	0.88	2.17***
OBC	0.07	0.97	1.41***	0.87*	1.17	0.905	1.18	1.42*
Other	0.07	1.29	1.15	0.89	1.10	1.556	1.48**	1.38
Religion								
Hindu®								
Muslim	0.13	0.90	0.89	0.89	0.66	1.540*	1.01	0.72
Christian	0.94	1.14	0.77	1.41		0.608	0.94	1.03
Others	0.17	1.92	0.67	1.01	2.11**		1.39	1.12
Chronic disease								
No chronic®								
Any chronic	1.02***	1.90	1.86***	1.87***	1.19	2.147***	1.90***	1.56**

Note:®: Reference Category; Level of Significance: *** p<0.01; ** p<0.05; *p<0.1.

Table 5(b): Odds ratio of visual and locomotors disability in selected state of India, 2014.

Variable	Haryana	Tamil Nadu	West Bengal	Maharashtra	Haryana	Tamil Nadu	West Bengal	Maharashtra
Residence	**Visual disability**				**Locomotors disability**			
Rural®								
Urban	0.84	0.66***	0.51***	0.75**	0.88	0.61***	0.58***	0.79*
Sex								
Male®								
Female	1.27	0.89*	1.10	0.97	0.71	0.79**	0.95	0.78*

Variable	Haryana	Tamil Nadu	West Bengal	Maharashtra	Haryana	Tamil Nadu	West Bengal	Maharashtra
	Visual disability				Visual disability			
Age group								
18-30®								
31-40	1.68**	1.65***	1.98***	1.15	4.53***	1.79**	1.50	2.27***
41-50	2.80***	2.59***	3.60***	1.97***	3.95**	3.49***	2.28***	2.69***
51-60	3.09***	4.71***	3.70***	2.96***	7.99***	4.52***	2.80***	3.89***
61-70	5.77***	7.04***	5.75***	2.62***	21.91***	11.65***	5.20***	11.63***
71+	5.26***	10.53***	6.64***	5.94***	92.39***	24.47***	9.95***	32.27***
Education								
Less than primary®								
5-8	1.35	0.87*	1.10	0.94	0.74	0.86	0.78	0.94
9-10	1.44	0.84*	0.66**	0.81	0.78	0.82	0.49***	0.73*
11-15	1.47	0.79**	0.58**	0.71**	0.54	0.61**	0.27***	0.58**
16+	1.18	1.02	1.02	0.84	0.41	0.70	0.61	0.58
Wealth quintile								
Poorest®								
Poorer	1.02	0.85*	1.02	0.70**	0.54	0.86	1.04	0.58***
Middle	0.84	0.68***	1.11	0.75**	0.32**	0.61***	0.93	0.62***
Richer	0.87	0.59***	0.91	0.62***	0.24***	0.49***	0.73	0.58***
Richest	0.78	0.38***	0.41**	0.43***	0.18***	0.32***	0.52	0.49***
Marital status								
Never married®								
Currently-married	0.47***	1.01	0.92	0.73*	0.34**	1.33	1.00	0.49***
Others	0.34**	1.42**	0.63	1.01	0.11***	1.57*	1.07	0.63
Caste								
SC®								
ST	2.39***	0.86	0.45**	0.67**	2.04	0.64*	1.03	1.04
OBC	0.85	0.96	1.46**	0.74**	0.94	0.88	1.50*	1.00
Other	0.89	0.94	1.41**	0.70**	1.05***	0.71	1.11	0.91
Religion								
Hindu®								
Muslim	0.97	0.73*	0.98	0.99	0.51	0.74	0.76	0.75
Christian	0.85	1.02	1.24	0.79	0.41	0.99	0.84	0.91
Others	0.71	0.88	1.05	0.76	3.74***	0.82	0.56	1.20
Chronic disease								
No chronic®								
Any chronic	1.36	1.42***	1.66***	1.56***	1.59*	1.33*	1.81***	1.37*

Note:®: Reference category; Level of significance: *** p< 0.01; ** p< 0.05; *p< 0.1.

Table 2 present seven type of disability (per 100,000 population) namely, mental, visual, hearing, speech, locomotive along with multiple disability, any disability and other disability in 21 states and union territories of India. The states are arranged in ascending order of any disability. The prevalence of disability varies largely across states of India. Among the states, any disability was highest in Chandigarh (5940) followed by Andhra Pradesh (5490), Punjab (4650) and Tamil Nadu (4550) and lowest in states of Arunachal Pradesh (1270) followed by Sikkim (1350) and Haryana (1570). It appears that those states with lower fertility and higher proportion of elderly population (barring the state of Kerala) had higher prevalence of any disability. Among six type of disability in India, it was highest for visual disability (800) followed by locomotive (490) and hearing (420). About 260 people per 100,000 population were suffering from multiple disability in these states. State differentials in mental disability was highest in Telangana (490) and lowest in Arunachal Pradesh (130). With respect to visual disability, the highest prevalence was in Chandigarh followed by Andhra Pradesh and Telangana and lowest in Arunachal Pradesh. The prevalence of locomotive disability was highest in Punjab (870) followed by Andhra Pradesh (660). However in case of multiple disability, the prevalence was highest in the state of Himachal Pradesh (720) followed by Tamil Nadu (550). With respect to hearing disability, the

highest prevalence was in state of Nagaland followed by Himachal Pradesh. Results suggests that the pattern of type of disability varies across states of India to a larger extent.

Disability is associated with age; with increase in age the chance of disability increases. The rate of increases of disability also varies by type of disability. Figure 1 presents that Age pattern of each of disability is quite distinct. Each of disability barring speech had a strong age gradient. Age gradient is strongest in visual followed by hearing and locomotive disability. Increase in disability with age is modest till age 40 after which it increases faster. The most prominent disability across age group is visual disability that increases from 490 and in age group 31-40 to 4610 by age group 80 and above. In case of hearing also disability increase from 360 in 31-40 age group to 5280 by age 80 above. The locomotive and multiple disability also increases with age. Among these six type of disability, disability in speech is relatively stable over age.

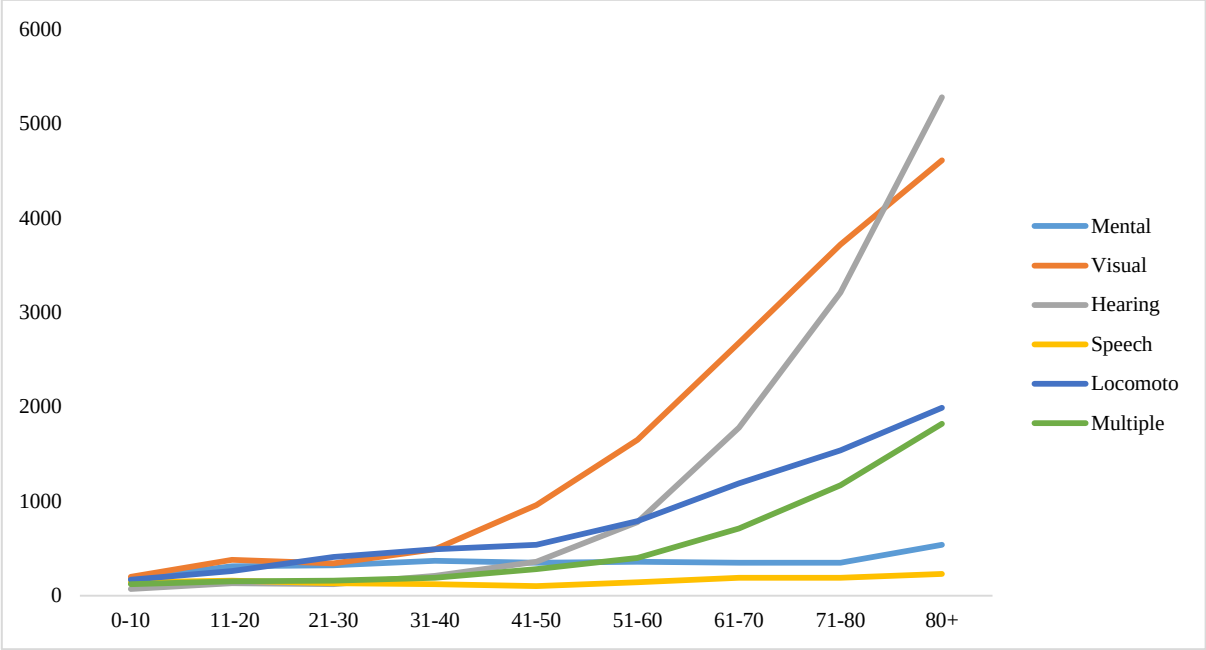

Figure 1: Age pattern of type of disability (per 100,000 populations) in India, 2014.

State level differential

Table 3 presents type of disability by wealth quintile in selected states of India. In India, any disability among the poorest wealth quintile was 3680, 3070 among poorer, and 2540 among richest wealth quintile. Pattern holds true for each of specific disability including multiple disability. For example, In case of mental disability, prevalence varies from 400 among poorest wealth quintile to 250 among the richest wealth quintile while in case of locomotive disability it varies from 620 among poorest wealth quintile to 400 among the richest wealth quintile. State pattern in economic differential of disability is similar to national pattern. In case of West Bengal, any disability varies from 2520 among the poorest wealth quintile to 1350 among the richest wealth quintile. In Tamil Nadu, Prevalence of any disability was about 6210 among those belong from the poorest wealth quintile while it was 3200 among the richest wealth quintile. Visual disability was of higher in Maharashtra compared to other three states. Disability was highest among the poorest and lowest among the richest wealth quintile in all four states suggesting that economic gradient in disability is robust in India.

Table 4 presents type of disability by educational attainment and chronic diseases in four selected states and a combined estimates for NEAG states. In general, disability is negatively associated with educational attainment (year of schooling) irrespective of place of residence. The prevalence of any disability in India was 3740 among those with less than primary schooling, 2740 among those with 5-8 years of schooling, 2300 among those with 9-15 years of schooling and 1590 among those with 16 years and above schooling. This pattern in disability holds true for each type of disability and each of state suggesting that educational gradient of disability is robust. In case of Tamil Nadu, any form of disability varies from 6450 among illiterate to 2640 among those who completed 16 years and more of schooling. This holds true for each type of disability across the states. In West Bengal, differentials in any disability was of lower order by educational group. Disability is positively associated with chronic diseases; 6700 among who had a

chronic disease and 2670 among those who did not had any chronic disease in India. The pattern is similar in states of India.

Predictors of disability

Table 5 (a-b) present results of logistic regression analyses of any disability, mental disability, locomotive disability and visual disability for states of Haryana, Tamil Nadu, West Bengal and Maharashtra. The dependent variable is dichotomous (type of disability) and independent variables are a set of socio-economic and demographic factors. Adjusted odds ratio with significance level for each type of disability are presented. Table 5 (a) presents results of any and mental disability. In case of any disability, age and place of residence are significant predictors in all selected states. Urban residence people are less likely to be disables compared to rural. For example, in Tamil Nadu, urban residents are 30% less likely to be disabled compared to rural residents. Age gradient of disability is strong cutting across states. Odds ratio of being disable in 71 above age group is 9.7 times compared to 18-30 age group in Tamil Nadu, 6.5 times in West Bengal and 7.6 times in Maharashtra. Education gradient of disability is strong across states. For example, in Maharashtra, Odds of disability among those with 16 years and above schooling was about 50% lower than those of illiterate. The pattern is also similar in other states. Wealth gradient of disability is significant in state of Tamil Nadu and Maharashtra but not in West Bengal. Odds ratio of disability among those who had chronic disease is 86% more in Tamil Nadu and 87% more in Maharashtra. The pattern is similar with respect to mental disability, visual and locomotive disability.

DISCUSSION

Disability is multifaceted; associated with poverty, ill health, and lower cognitive development and cultural taboos. Though disability is a priority research agenda, there are limited studies on dimension, structure and correlates of disability owning to data constraints and lack of programmatic attention.[35,36] Demographic an epidemiological transition along with low level of development call for urgent attention on understanding the socio-economic and demographic correlates of disability. Using micro data from DLHS-4, this study examines the socio economic and health correlates to disability with different type of disabilities in India.

The followings are salient findings of paper. First, disability rate varies largely across states by socio-economic and demographic characteristics. State differential in disability suggest that Tamil Nadu had higher prevalence rate of disability ailments. Economic gradient of disability is strong cutting across states. Prevalence of disability was higher among the poorest and least among the richest across states. Second, education gradient of disability is also strong. Less educated are more likely to be disabled cutting across states. Third, age gradient of disability is most prominent. In all selected states, age is positively and significantly associated with each type of disability. This further confirms that demographic transition lead top increase in disability in the population. Disability is also positively and significantly associated with chronic diseases.[35,37] Fourth, rural population are more likely to be disabled than urban population in each type of disability cutting across states. Overall, the findings of this study are consistent with existing literature.

CONCLUSION

The higher prevalence of disability among older adults may be the combined effect of population ageing and disability. Besides, disability at birth, the rate of disability increases with certain diseases and accident. Older adults, particularly, elderly are more prone to chronic diseases that might be leading to disability. Education, and economic gradient of disability are strong and most prominent. Disease related disability could be lessened if medical care is taken at time. Hence, disability is an important issue for policy making from socio economic and demographic point of view and not just only medical point. The policies that promote access to education and employment may be particularly important for the well-being of persons with disabilities (PWD) in the Indian context. Therefore, providing access to basic capabilities to persons with impairment might be a way to reduce the challenges for disable people in India.

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APPENDIX

Table 1: Age pattern of disability (per 100,000 populations) in selected states of India, 2014.

Age group	Any disability	Mental	Visual	Hearing	Speech	Locomoto	Multiple	Others
0-10	1140	180	200	70	140	170	120	260
11-20	1720	310	380	130	160	260	150	320
21-30	1860	320	340	120	130	410	160	380
31-40	2460	370	490	210	120	490	190	580
41-50	3290	350	960	360	100	540	280	710
51-60	5100	360	1650	780	140	790	400	990
61-70	8270	350	2680	1780	190	1190	710	1350
71-80	11610	350	3720	3210	190	1540	1170	1430
80+	15940	540	4610	5280	230	1990	1820	1470

Table 2: Definition of type of disability as used in DLHS-4, 2014.

Type of disability	Definition
Mental	Persons who lack understanding appropriate to their age and have difficulty in carrying out the activities of daily routine like others of similar age such as communication (speech), self-care will be treated as mentally disabled.
Visual	Persons with no perception of light and those who perceive light but cannot see properly on account of low and/or blurred vision will be treated as suffering from visual disability
Locomoto	Persons who are totally crippled (those who do not have both legs and hands or those without two legs or two hands) or persons who are paralyzed and are unable to move at all will be treated as having locomoto disability.
Speech	A person will be classified as having speech disability if she/he cannot speak at all or she/he is unable to speak normally due to speech disorder. Persons who speak in single words will be treated as having speech disability.
Hearing	Persons who cannot hear at all and those having difficulty in hearing day to day conversational speech with or without the hearing aid will be classified as having hearing disability.
Any disability	Any disability mention above are called as a any disability
Multiple disability	More than one disability described above are called multiple disability.
Others disability	Any other type of disability not covered above are called others disability.