BMJ Open

Disabled or handicapped- examining the factors affecting the social inclusion of people living with disability in India.

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2024-090220
Article Type:	Original research
Date Submitted by the Author:	19-Jun-2024
Complete List of Authors:	Mirza, Moonis ; All India Institute of Medical Sciences - Bathinda, Department of Hospital Administration Esht, Vandana; Jazan University College of Applied Medical Sciences, Physical Therapy Department Verma, Madhur ; All India Institute of Medical Sciences Bathinda, Department of Community & Family Medicine Bahadur, Bajarang; International Institute for Population Sciences, Demography Jaiswal, Ajit; International Institute for Population Sciences, Demography Alagarajan, Manoj; International Institute for Population Sciences, Demography Kakkar, Rakesh; All India Institute of Medical Sciences - Bathinda, Department of Community & Family Medicine
Keywords:	Disabled Persons, PUBLIC HEALTH, Health Equity

I, the Submitting Author has the right to grant and does grant on behalf of all authors of the Work (as defined in the below author licence), an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the terms applicable for US Federal Government officers or employees acting as part of their official duties; on a worldwide, perpetual, irrevocable, royalty-free basis to BMJ Publishing Group Ltd ("BMJ") its licensees and where the relevant Journal is co-owned by BMJ to the co-owners of the Journal, to publish the Work in this journal and any other BMJ products and to exploit all rights, as set out in our licence.

The Submitting Author accepts and understands that any supply made under these terms is made by BMJ to the Submitting Author unless you are acting as an employee on behalf of your employer or a postgraduate student of an affiliated institution which is paying any applicable article publishing charge ("APC") for Open Access articles. Where the Submitting Author wishes to make the Work available on an Open Access basis (and intends to pay the relevant APC), the terms of reuse of such Open Access shall be governed by a Creative Commons licence – details of these licences and which Creative Commons licence will apply to this Work are set out in our licence referred to above.

Other than as permitted in any relevant BMJ Author's Self Archiving Policies, I confirm this Work has not been accepted for publication elsewhere, is not being considered for publication elsewhere and does not duplicate material already published. I confirm all authors consent to publication of this Work and authorise the granting of this licence.

Title Page

Disabled or handicapped- examining the factors affecting the social inclusion of people living with disability in India.

Type: Original Article

Moonis Mirza*, Vandana Esht[1]*, Madhur Verma*#, Bajarang Bahadur*, Ajit Kumar Jaiswal[3], Manoj Alagarajan, Rakesh Kakkar

*authors contributed equally

#corresponding author

Detailed Author Affiliations:

1. **Moonis Mirza (MD)**
   Associate Professor of Hospital Administration, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: moonismirza@gmail.com.
2. **Vandana Esht (Phd)**
   Associate Professor, Physical Therapy Department, College of Applied Medical Sciences, Jazan University, Jazan, Saudi Arabia
   Email: vandanaesht@jazanu.edu.sa.
3. **Madhur Verma (MD)**
   Associate Professor of Community and Family Medicine, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: drmadhurverma@gmail.com
4. **Bajarang Bahadur**
   Mphil, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: bajarang7894@gmail.com.
5. **Ajit Kumar Jaiswal**
   Mphil, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: ajitjaiswal20@gmail.com.
6. **Manoj Alagarajan**
   Assistant Professor, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: alagarajan@iipsindia.ac.in.
7. **Rakesh Kakkar (MD)**
   Professor of Community and Family Medicine, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: drrakesh75@rediffmail.com.

Details of the corresponding author

Dr. Madhur Verma (MD)
Associate Professor of Community and Family Medicine,
All India Institute of Medical Sciences Bathinda (Punjab),
India-151001
Email: drmadhurverma@gmail.com
Phone: +91 9466445513
Orcid id: 0000-0002-1787-8392

Manuscript

Abstract

Introduction: People living with disabilities (PLD) are particularly at risk of social exclusion due to physical obstacles, societal attitudes and practices that exclude such groups. The study's primary aim was to examine the epidemiology of disabilities and the accessibility of PLDs to crucial services, such as education, healthcare, and employment.

Methods: We did a secondary data analysis of the 76th round of the National Sample Survey (2018) conducted in India that focussed on disability. The cross-sectional survey included 576,796 individuals. The presence of "any disability" was primary dependent variable. The impact of disability on the activities of daily living was assessed by the difficulties faced in accessing public buildings, public transport, loss of job after disability, availability of any help or support, enrolment in any special schools, and possession of a disability certificate. Prevalence was estimated using sampling weights using Stata (version 17.0). Bivariate analysis was done to depict the association between dependent and independent variables. Multivariable binary logistic regression analysis explored the independent variables affecting the likelihood of living with 'any disability'. All p-values<0.05 were considered statistically significant.

Results: Disability prevalence of any kind was about 2.2%, with significant disparities. Nearly 45% of the PLDs who did not have disability since birth were between 15 and 59 years old, and 20.8% did not receive any aid or help from the government. About 40%, and 57.7% reported inability to use public transport, and accessing public buildings. Around 60.7% of PLDs reported a loss of work due to disability, and 69.6% did not have any disability certificate.

Conclusions: The study suggests a high burden of PLDs who feel socially excluded despite numerous efforts by the government to improve the social inclusion of such people. There is a need for advocacy and empathy in society to improve the well-being of PLDs, help them improve their productivity, and contribute to the best of their abilities.

Keywords: *Disability, inequity, accessibility, universal health coverage.*

Introduction

The term "disability" has been defined and understood in various ways by scholars, organisations, and legal frameworks globally. Disability is defined as limitations in performing routine activities. Impairment is any deviation in psychological, physiological, or anatomical structure/function. Handicaps represent a relative disadvantage due to ill health, considering dimensions like mobility, orientation, occupation, social integration, physical independence, and economic self-sufficiency. [1,2] The World Health Organization's (WHO) International Classification of Functioning, Disability, and Health (ICF) encompass physical impairments, activity limitations, and restrictions in physical participation to provide a holistic understanding of disability after considering individual and environmental factors.[3] According to the "bio-psycho-social model", disability has evolved from being viewed as a medical to a social construct, considering one's environment, personality traits, quality of life, and self-sufficiency.[4]

Disability is a global issue, impacting 1.3 billion people or 16% of the population.[5] According to the world report on disability published by the WHO and the World Bank, of the total disabled population globally, 80% were in the working-age group, with a significant portion living in developing countries.[6][7] In India, the problem is equally concerning, with a wide range of disabilities afflicting the population. A recent study using the National Family Health Survey-5 (NFHS-5) data found the overall prevalence of disability in India to be 4.52%, with locomotor disabilities accounting for 44.70% of all disabilities.[8] These are followed by psychiatric disabilities, which are highest among the working-age population, and visual and hearing disability among the aged population. [9,10] The findings concur with the reports from the Census 2011 and the 76th round of the National Sample Survey Organization, which depict a disability prevalence of 2.2%, affecting 14,085,000 and 4,406,000 people in rural and urban areas. Of these, about 13% were seriously crippled and could not self-care, even with aid/

appliances.[11,12] The number of PLDs in India had increased over the last decade (2001-11), from 21.9 to 26.8 million.[13] with an age-dependent increase, being highest in individuals above 60 years.[8,14] The Increasing ageing population complicated by the simultaneously increasing prevalence of chronic diseases is a significant contributing factor to disability.[15] It is estimated that 323 million people in India (19.1% of the total population) will be over 60 years of age by 2050, thus escalating the disability burden substantially.[16]

These emerging concerns require an urgent obligation to have inclusive policies and interventions towards PLDs.[16] To attain genuine social inclusion, it is imperative to shift from perceiving disability as a medical or welfare concern to acknowledging it as a fundamental human rights issue. From a social perspective, disability is often seen as a result of barriers imposed by society rather than an inherent limitation of an individual's body or mind. These barriers can include physical obstacles, as well as societal attitudes and practices that exclude or marginalise people with disabilities. Globally, the most concerning issue faced by PLD is inequitable access to resources like employment, education, healthcare, and social and legal support, leading to social disparities and disproportionately higher rates of poverty.[17] The international organisations have constantly highlighted the barriers to PLD's social and economic inclusion.[18] They have also emphasised the right to education, a conducive workplace, and similar interventions to create a social environment that is open, inclusive, and accessible to PLDs and prevent them from feeling handicapped. [6,19–22] Based on these unmet needs, every nation is obligated be inclusive by addressing the inequities faced by PLD under international human rights law and the Convention on the Rights of Persons with Disabilities (CRPD).[23,24] But the world is far from appreciating the rights of PLD, leading to poorer health, lower education achievements, and fewer economic opportunities, thus worsening the social disparities.[5,6]

These emerging disparities make it imperative to study the access to essential services by the PLDs. Given the multifaceted nature of their exclusion, understanding the diverse experiences of PLDs is paramount for effective policymaking. However, the existing discrepancies in official statistics underscore the intricate nature of disability, thus requiring a nuanced approach to build our assumptions. Existing literature has been primarily limited to exploring the epidemiology of disability in India, but none has looked into policies that improve their social inclusion and minimise the emerging social disparities due to disability. With this background, this study examines the epidemiology of disabilities, and accessibility of PLDs to crucial services, such as education, healthcare, and employment, for PLDs in India to provide insights for specific interventions and support inclusive development.

Methodology

Data sources: We conducted a secondary analysis of the data from the 76th National Sample Survey (NSS), conducted by the Ministry of Statistics, Planning, and Implementation (MOSPI) between July and December 2018. The survey (NSS) collects socio-economic data employing scientific sampling methods and serves as a crucial tool to gauge various socio-economic aspects across all states of India. Its primary objective is to identify unmet needs within the population, thereby aiding the government in formulating effective policies to address them. The survey made its first attempt to collect information on the number of PLDs during 15th round (July 1959 - June 1960).[25] The survey on PLD (Schedule 26) was last conducted during the 58th round of NSS (July – December 2002). Information was collected from the households on the nature of the disability, viz. visual, hearing, speech, locomotor, and mental disability of the household members. In the 76th round, the main objective of the survey was to estimate indicators of incidence and prevalence of disability, cause of disability, age at onset of disability, facilities available to the PLDs, difficulties faced in accessing public building/public transport, arrangement of regular caregiver, out-of-pocket expense relating to

disability, etc. Further, estimates were obtained on various employment and unemployment particulars in usual status for the household members with at least one disability. For each household member aged 12 to 59 years, information was collected on whether or not they received vocational/technical training and details related to such training.

Sampling design and sample size: The 76th NSS employed a stratified two-stage sampling design, utilising Census 2011 as the sampling frame. In the first stage, villages/urban blocks were selected, and in the second stage, households in both rural and urban areas were chosen.[26] Encompassing all states and union territories of India, the NSS 76th round covered 8,992 village/urban blocks (5,378 rural villages and 3,614 urban blocks), including 1,18,152 households with a population of 576,796 individuals (4,02,589 in rural and 1,73,980 in urban). Within this, the present study focuses on 1,07,125 individuals consisting of 61,707 males and 45,305,96 females) who reported at least one disability during the survey.

Study Variables

Dependent variable: The presence of "any disability" was our primary dependent variable. This is made by the presence of at least one condition among all seven disability types, elaborated subsequently

1. **Locomotor disability:** A person was categorised as living with locomotor disability based on a positive response to any of the following three conditions: *(i) whether having difficulty in using hands, fingers, toes, body movement (including cerebral palsy, muscular dystrophy); (ii)whether having loss of sensation in the body due to paralysis, leprosy, other reasons; or (iii)whether having deformity of the body part(s) like hunch back, dwarfism, deformity due to leprosy, caused by acid attack, etc.*

2. **Visual disability:** It was identified using a direct question: "*Whether having difficulty in seeing, counting fingers of hand from a distance of 10 feet (with spectacles, if using, and both eyes taken together*)."

3. **Hearing disability:** The categorisation was based on the question: "Whether having difficulty in hearing day-to-day conversational speech (without hearing aid, if using, and both ears taken together)"

4. **Speech and language disability:** It was assessed using a question: "Whether having difficulty in speech (unable to speak like a normal person/ speech is not comprehensible, including laryngectomy, aphasia) which is base for speech disability.

5. **Mental retardation/intellectual disability:** This disability variable has been prepared based on the following question "*Whether having difficulty in understanding/ comprehension or communicating in doing daily activities*"

6. **Mental illness:** This disability was identified when there was a positive response to any of the three conditions: (i) *whether having unnecessary and excessive worry and anxiety, repetitive behaviour/ thoughts, changes of mood or mood swings, talking/laughing to self, staring in space; (ii) whether having unusual experiences of hearing voices, seeing visions, strange smell or sensation or strange taste; or (iii) whether having unusual behaviour or difficulty in social interactions and adaptability.*

7. **Other disabilities:** To identify other types of disability of the persons, the following question was used: "*Whether having any of the following: Parkinson's disease, multiple sclerosis, other chronic neurological conditions, thalassemia, haemophilia, sickle cell disease*".

Predictor variables: In the present study, the variables were chosen following a literature review and the scope of data collected in the original survey. We included age groups, place of residence, education level, religion, wealth status or monthly per capita income (MPCI) level, gender, marital status, social group, and regions. The impact of disability on the activities of daily living was assessed by the difficulties faced in accessing public buildings, public

transport, loss of job after disability, availability of any help or support, enrolment in any special schools, and possession of a disability certificate.

Statistical methodology: The prevalence, along with the dispersion of all disability variables, were estimated as part of univariate analysis by using sampling weights. Further, the prevalence of all disability types was estimated per socio-economic characteristics, and the associations were tested using bivariate analysis through a chi-squares test. **Multivariable binary logistic regression analysis was** used to explore the independent variables affecting the likelihood of living with 'any disability', *which was* the dependent variable coded by 1 and otherwise 0. The analysis depicted the unadjusted and adjusted odds ratio (95% confidence interval). All p-values<0.05 were considered statistically significant. All the analysis was done using Stata (version 17.0). Graphical maps were created using MS Excel sheets to depict the regional disparities.

Patient and public involvement: Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Results

Table 1 provides a comprehensive overview of the weighted prevalence of different types of disabilities across various socio-demographic characteristics in India. About 2.2% of the participants had at least one form of disability. The majority of such participants had a locomotor disability (1.36%), followed by Hearing(0.30%), visual (0.23%), speech-related (0.23), mental retardation (0.16%), mental illness (0.16%), and other types (0.05%) of disabilities. The highest prevalence of any disability, locomotor, speech and 'other' disabilities was seen in 50-65 years. However, the proportion of participants with visual and hearing disabilities was highest in the eldest age group, while mental retardation and mental illness were highest in the 6-35 years age group. Further, male gender, ever-married participants from rural areas, with minimal or no educational attainment, following Hinduism, belonging to OBC

social castes, poorer wealth index quintile, and Southern part of India depicted the highest prevalence.

We further assessed the origin of disability as per the type (Table **2).** The most common cause of locomotor and speech disability was disease (46.3%, 61.9%), while 'Other causes' were most commonly involved in visual (46.5%) and hearing (49.7%) disabilities. **)**. Around 18.5% of PLD had it since birth, while one-third (6.1%) had developed it in the last 1 year. Road was the most common place of occurrence of disability (41.9%), followed by home (32.9%). Only 28% of PLD were consulting doctors and undergoing treatment.

Table 3 depicts the living conditions of PLDs. Nearly half of the PLDs who did not have disability since birth were between 15 and 59 years old (45.9%), while nearly one-fifth (20.8%) had received any aid or help from the government. 57% of PLDs lived with their spouses, and 62.8% reported that caregivers were available. About 40% reported an inability to use public transport, while 54.4% reported inaccessibility to public buildings. Further, 57.7% of PLDs reported facing difficulties while accessing public buildings. Around 60.7% of PLDs reported a loss of work due to disability onset, and 69.6% did not have any official document certifying their disability for administrative purposes. Figure 1 further depicts the geographic disparities in the access to basic services by the PLDs.

Table 4 demonstrates the results from the multivariable binary logistic regression analysis to present the socio-demographic variables affecting the likelihood of living with disability. We found a significantly higher likelihood of living with disability with increasing age, urban residence, social castes other than scheduled tribes, richest wealth quintiles, and living in a Northern or Southern region of India. However, female gender, more years of education, following the Islamic religion, currently married/widowed vs never married, higher socio-economic status depicted a lower likelihood.

Discussion

We report here an investigation of multiple perspectives on the social inclusion of PLDs using nationally representative data from India. We report certain interesting findings for the first time that have profound policy implications. First, there are significant disparities in disability prevalence per socio-demographic characteristics. Second, one-fifth of PLDs had developed it since birth. Third, the roads were the most common place for the onset of disability, followed by home. Fourth, around half reported an inability to use public transport and buildings. Lastly, the majority of PLD reported a loss of work due to disability onset and did not have any official document certifying their disability.

The disability prevalence depicted a significant inclination towards higher age, male gender, rural areas, and lower socio-economic status. A mere 2.2% prevalence is equivalent to around 30 million PLDs is expected to increase in the near future and calls for urgent attention. While there was a preponderance of males with locomotor disabilities, speech and language disabilities were significantly higher in females. As per the estimates obtained from the previous 36th, 47th, and 58th rounds of NSS, there is a constant rise in disability prevalence in rural (1.8% in the 36th round to 2.3% in 76th round) as well as urban (1.4% in 36th round to 2.0% in 76th round) areas, with the overall increase from 1.6% in 36th round in year 1981 to 2.2% in 76th round in year 2018.[27][26]Another study based on NFHS-5 depicts an overall disability prevalence of 4.52%, with a higher proportion of locomotor disabilities (44.70%), followed by mental disabilities (20.28%).[8] Similarly, an increased prevalence of locomotor (1.35%), visual (0.23%), and hearing disability (0.30%) among the elderly population belonging to rural areas, with a low level of education and low wealth quintile, respectively.[27][28]

We observed a **high proportion of PLDs had developed it since birth**. The high burden calls for adopting a more rigorous screening toolkit and investigations at the primary healthcare

level. Pregnancy is still fraught with uncertainty about the health status of the newborn child in resource-constrained settings. So, the preparation should target pregnancy more comprehensively concerning screening Down's syndrome and similar intellectual disabilities, later extending to include screening for auditory and visual disabilities.[28] Newborn screening can allow for early psychological or therapeutic interventions and improve the quality of life of affected children.[29] Such screening tests can also help parents make timely decisions for either terminating the pregnancy or preparing for raising a child with a disability. Better awareness through adequate counselling of such bereaved parents may reduce parental anxiety. Meanwhile, the Rashtriya Bal Swasthya Karyakram (RBSK) provides free healthcare for children with disabilities up to 18.[30] Additionally, the government has various healthcare schemes that cater to the specific needs of PLDs. The government provides assistive devices and aids such as wheelchairs, hearing aids, and prosthetic limbs at subsidised rates through schemes like the Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances (ADIP). [31] Under ADIP, aids and appliances are provided to PLDs at subsidised rates. Deendayal Disabled Rehabilitation Scheme (DDRS) provides financial assistance to NGOs for various rehabilitation services for persons with disabilities.[32]

The most **common place of disability origin was road,** followed by home. Trauma is an important cause of locomotor disability, and in India, it is the second most common cause of locomotor disability.[33] Previous estimates suggest that the poorest quintiles are maximally impacted by road crashes. Most victims are pedestrians, bicyclists and motorcyclists, who are less prone to adopt safety gear while on the road and also do not have adequate access to medical and social safety nets.[34] Anecdotal evidence from Chandigarh, a Union Territory of India, suggests that stringent traffic mutually benefits the public and the administration. On one side, it reduces morbidity due to road traffic acts, while on the other side, penalties generate massive revenues to run and develop the administration and also generate awareness. An

increasing number of domestic accidents are equally concerning. Domestic accidents may be subjected to under-reporting as most of the domestic injuries are considered minor, often neglected, and may be easily forgotten and subjected to recall bias. This changing trend is similar to many developed nations where more accidents happen in home than anywhere else. With increasing population, and population density, we expect an increase. Domestic accidents depend on the physical and social environment and also on the functional capacity of the individual. While road traffic accidents are unforeseen and unexpected, it is generally accepted that domestic accidents can be prevented and minimised by taking adequate safety measures well in time.[35]

We observed that there is still scope for **improving the accessibility of** public buildings and transport by the PWDs, as they must accommodate PWDs' needs. Various schemes and initiatives demonstrate the Indian government's commitment to securing the rights and welfare of disabled populations in the country. India's commitment to the United Nations Convention on the Rights of PWD (UNCRPD) is embodied in the Rights of Persons with Disabilities Act of 2016 (RPWD Act, 2016) and emphasises dignity, autonomy, and non-discrimination for Persons with Disabilities (PWD).[36][37]. The Act further mandates inclusive education, vocational training, and self-employment opportunities without discrimination. [28]To increase the accessibility of public buildings, The Rights of Persons with Disabilities Act 2016 and the National Building Code of India 2016 [38] outline expanded guidelines for building accessibility. Compliance with these standards has been made crucial, with responsibility falling on those involved in commissioning, designing, constructing, or managing built environments. The building design must adhere to relevant legislation, including equality and safety regulations. This focus on accessibility has fostered the adoption of universal design concepts, leading to numerous best practices for creating inclusive environments. These encompass accessible buildings, parking areas, parks, and recreational facilities, reflecting a

concerted effort to ensure equal access and inclusion for people with disabilities in the built environment.

In addition to the above, the Indian government has taken several steps to **ensure that the rights** of disabled populations are secured. The **Right to Education Act** (RTE) aims to provide free and compulsory education for children with disabilities up to 18 years. [39] The government-funded higher education institutions reserve 5% of seats for PWDs, fostering diversity and enhancing workforce opportunities. This legislation reflects India's dedication to empowering individuals with disabilities, ensuring their full participation in society.[37] Additionally, the Samagra Shiksha Abhiyan integrates children with disabilities into mainstream education.[40] Likewise, many people **lost their current jobs** due to the onset of disabilities. Employment can enhance social sustainability and individual well-being.[41] Loss of jobs can be linked to the social stigma associated with impairment or disabilities and the perception of such people being less productive. Many employers have depict ill-founded views about the work-related abilities of PLDs; these negative views are often a result of interrelated concerns that permeate the entire employment cycle.[42] It is to be empasised that negative attitudes toward disability disempower individuals with disabilities and lead to their social exclusion and isolation. By contrast, a healthy society encourages positive attitudes toward individuals with disabilities and promotes social inclusion.[43] However, various initiatives have been introduced to promote employment opportunities for PLDs. This includes reservation quotas in government jobs and incentives for the private sector to employ persons with disabilities. The government provides financial assistance and benefits to persons with disabilities through schemes like the National Handicapped Finance and Development Corporation (NHFDC) which offers loans and subsidies to start self-employment ventures.[44]. Some prominent schemes introduced for disabled people in India include the National Handicapped Finance and Development Corporation (NHFDC), which provides financial

assistance to persons with disabilities for self-employment, education, and training.[44] Scheme for Implementation of Persons with Disabilities Act (SIPDA) [45] to create barrier-free environments and improve the quality of life for persons with disabilities. Accessible India Campaign (Sugamya Bharat Abhiyan) focuses on making public infrastructure and transportation accessible for persons with disabilities. Inclusive Education for Disabled at Secondary Stage (IEDSS) [46] supports the inclusive education of students with disabilities at the secondary level.

There are a few strengths and limitations of this study that should be acknowledged. Its major strength lies in its novelty by bringing social science and medicine to a common platform. We have used the latest nationally representative data, and adequately weighted estimates can help us guide the policy.. The present study takes a novel approach by initially delineating the proportions of various types of disabilities. Subsequently, it delves into the analysis concerning "any disability," thus unveiling unique characteristics within this broader category. By doing so, the study not only broadens the scope of understanding but also highlights the nuanced interplay between different types of disabilities and their impact on hospitalisation rates. This shift towards a more inclusive analysis holds promise for informing policy decisions and healthcare interventions tailored to address the complex needs of individuals with disabilities. The major limitation lies in the study's cross-sectional nature, which limits causality and temporal associations and is limited by recall bias, particularly when assessing disabilities since birth. Being a secondary analysis, we are limited by the number of variables that can further explain social inclusion and exclusion. There was also a non-uniformity in the sample size to assess different questions related to the impact of disability.

There are a few policy implications and recommendations emerging from the study. Given the increasing prevalence of disability and the concurrent escalating proportion of the geriatric population, we need to work on improving the accessibility for PLDs. A large number of

disabilities originating since birth calls for more robust ante-natal and neonatal screening protocols supported by adequate counselling and rehabilitation services. A high proportion of PLDs agreed to have a caretaker who can help us improve their quality of life by adopting a family-centred approach to rehabilitation and empowering the family members of PLDs. Despite many schemes extended by the government to enhance the social inclusion of PLDs, high social exclusion calls for more health advocacy around this issue.

To conclude, while most of the previous research has predominantly emphasised individual heterogeneity among PLDs, our study suggests a high burden of PLDs who feel socially excluded despite numerous efforts by the government to improve the social inclusion of such people. There is a need for advocacy and empathy in society to improve the well-being of PLDs, help them improve their productivity, and contribute to the best of their abilities. This will contribute to realising our national goals and stand towards our global commitment to the 2030 Agenda for Sustainable Development, which recognises the promotion of the rights, perspectives and well-being of PLDs as a pre-requisite while envisaging a more sustainable and inclusive world

Declarations

Acknowledgements: Nil

Ethics statement: The ethical approvals were not deemed necessary since it was secondary data analysis. No patient-level data were used in this paper.

Patient and Public Involvement: Patients were not involved at any stage of this study.

Funding: No funding was involved at any stage of this study.

Data availability: Data is available from the first author upon reasonable request.

Ethics approval: Not applicable

Authors' contribution: MM, BB, and MA conceptualised the study, MV and AKJ collected data, drafted the manuscript, and reviewed it. VE, MV, and AKJ did the analysis and drafted the final version; MA and RK critically reviewed the manuscript from policy and feasibility points of view. All the authors read and approved the final version of the manuscript.

References

1. A. J. CAMPBELL WJBMCRCLLJAL and FCM. Disease, impairment, disability and social handicap: a community based study of people aged 70 years and over. Disabil Rehabil. 1994;16:72–9.
2. Prince MJ, Harwood " R H, Blizard RA, Thomas A. Impairment, disability and handicap as risk factors for depression in old age. The Gospel Oak Project V. Psychol Med. 1997.
3. International Classification of Functioning, Disability and Health (ICF) [Internet]. [cited 2024 Jan 3]. Available from: https://www.who.int/standards/classifications/international-classification-of-functioning-disability-and-health
4. Mahmud I, Clarke L, Ploubidis GB. Socio-demographic determinants of the severity of locomotor disability among adults in Bangladesh: a cross-sectional study, December 2010–February 2011. Archives of Public Health [Internet]. 2017;75:47. Available from: http://archpublichealth.biomedcentral.com/articles/10.1186/s13690-017-0217-5
5. Global report on health equity for persons with disabilities | Knowledge Action Portal on NCDs [Internet]. [cited 2024 Jan 3]. Available from: https://www.knowledge-action-portal.com/en/content/global-report-health-equity-persons-disabilities
6. World Health Organization., World Bank. World report on disability. World Health Organization; 2011.
7. Health Organization W. WORLD REPORT ON DISABILITY WHO Library Cataloguing-in-Publication Data. 2011 [cited 2022 Feb 9]; Available from: www.who.int/about/licensing/copyright_form/en/index.html
8. Pattnaik S, Murmu J, Agrawal R, Rehman T, Kanungo S, Pati S. Prevalence, pattern and determinants of disabilities in India: Insights from NFHS-5 (2019–21). Front Public Health [Internet]. 2023 [cited 2024 Mar 16];11. Available from: /pmc/articles/PMC10009251/
9. Patel S. An Empirical Study of Causes of Disability in India. The Internet Journal of Epidemiology. 2008;6.
10. Sivadasan L, Narayanan A. Factors of Resilience Among Physically Disabled: An Interpretative Phenomenological Analysis. Indian Journal of Positive Psychology [Internet]. 2016 [cited 2024 Feb 22];7:113–8. Available from: https://www.i-scholar.in/index.php/ijpp/article/view/123703
11. Unit level data & Report on NSS 76th Round for Schedule 1.2, July-December, 2018 (Drinking Water, Sanitation, Hygiene and Housing Condition) | Ministry of Statistics and Program Implementation | Government Of India [Internet]. [cited 2024 Jan 6]. Available

from: https://mospi.gov.in/unit-level-data-report-nss-76th-round-schedule-12-july-december-2018-drinking-water-sanitation

12. India - Survey of Persons with Disabilities NSS 76th Round : July 2018 - December 2018 - Overview [Internet]. [cited 2024 Feb 22]. Available from: https://microdata.gov.in/nada43/index.php/catalog/154/overview

13. Ministry of Statistics and Programme Implementation G of I. Persons with Disabilities (Divyangjan) in India-A Statistical Profile : 2021 [Internet]. Available from: www.mospi.gov.in

14. Nations U, of Economic D, Affairs S, Division P. World Population Prospects: The 2010 Revision, Volume I: Comprehensive Tables.

15. Bickenbach JE, Cieza A, Sabariego C, Tchounwou PB. Disability and Public Health. J Environ Res Public Health [Internet]. 2016 [cited 2024 Jan 3];13:123. Available from: www.mdpi.com/journal/ijerph

16. New York: United Nations. United Nation, Department of Economic Social Affairs Population Division. World Population Ageing 2017 [Internet]. 2017. Available from: https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2017_Report.pdf

17. Groce NE, United Nations. Department of Economic and Social Affairs. Disability and the Millennium Development Goals : a review of the MDG process and strategies for inclusion of disability issues in Millennium Development Goal efforts. United Nations; 2011.

18. Disability Inclusion Overview [Internet]. [cited 2024 Jan 3]. Available from: https://www.worldbank.org/en/topic/disability

19. Article 27 – Work and employment | United Nations Enable [Internet]. [cited 2024 Jan 5]. Available from: https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-27-work-and-employment.html

20. 70/1. Transforming our world: the 2030 Agenda for Sustainable Development Transforming our world: the 2030 Agenda for Sustainable Development Preamble. 2015;

21. Article 24 – Education | United Nations Enable [Internet]. [cited 2024 Jan 5]. Available from: https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-24-education.html

22. Disability and Development Report _____ Realizing the Sustainable Development Goals by, for and with persons with disabilities. 2018 [cited 2024 Jan 5]; Available from: http://shop.un.org

23. International Human Rights Law | OHCHR [Internet]. [cited 2024 Jan 3]. Available from: https://www.ohchr.org/en/instruments-and-mechanisms/international-human-rights-law
24. Convention on the Rights of Persons with Disabilities (CRPD) | Division for Inclusive Social Development (DISD) [Internet]. [cited 2024 Jan 3]. Available from: https://social.desa.un.org/issues/disability/crpd/convention-on-the-rights-of-persons-with-disabilities-crpd
25. Ministry of Statistics and Program Implementation (Government of India). Introduction: Coverage, Concepts, Design and Definitions [Internet]. National Sample Surveys. 2024 [cited 2024 May 29]. Available from: https://www.mospi.gov.in/sites/default/files/NSS7612dws/NSS_76_ins_Ch1.pdf
26. Ministry of Statistics and Program Implementation (Government of India). Note on Sample Design and Estimation Procedure of NSS 76th Round [Internet]. National Sample Surveys. 2018 [cited 2024 May 29]. p. 1–125. Available from: https://mospi.gov.in/sites/default/files/NSS7612dws/Estimation Procedure_NSS 76.pdf
27. Ministry of Statistics and Programme Implementation. NSS 76th round (July – December 2018) Persons with Disabilities in India. Government of India [Internet]. 2018 [cited 2023 Nov 3]; Available from: www.mospi.gov.
28. Acharya K. Prenatal testing for intellectual disability: Misperceptions and reality with lessons from down syndrome. Dev Disabil Res Rev [Internet]. 2011;17:27–31. Available from: https://onlinelibrary.wiley.com/doi/10.1002/ddrr.135
29. Bailey DB, Skinner D, Warren SF. Newborn Screening for Developmental Disabilities: Reframing Presumptive Benefit. Am J Public Health [Internet]. 2005;95:1889–93. Available from: https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2004.051110
30. RBSK-Rashtriya Bal Swasthya Karyakram :: National Health Mission [Internet]. [cited 2024 Mar 19]. Available from: https://nhm.gov.in/index4.php?lang=1&level=0&linkid=499&lid=773
31. SCHEME OF ASSISTANCE TO DISABLED PERSONS FOR PURCHASE/FITTING OF AIDS/APPLIANCES (ADIP SCHEME) Govt. of India Ministry of Social Justice and Empowerment, Shastri Bhawan New Delhi.
32. DDRS | Department of Empowerment of Persons with Disabilities (DEPwD) | India [Internet]. [cited 2024 Mar 19]. Available from: https://depwd.gov.in/ddrs/
33. Dhole SR, Gaur AK, More SN, Popalwar H, Lokhande V. Original Article Study of Locomotor Disability Due To Various Types of Trauma. National Journal Of Medical Research. 2004;5:1–5.

34. The World Bank. Traffic Crash Injuries and Disabilities: The Burden on Indian Society [Internet]. 2021 [cited 2024 May 29]. Available from: https://www.worldbank.org/en/country/india/publication/traffic-crash-injuries-and-disabilities-the-burden-on-indian-society
35. Rehman T, Sulgante S, Sekhar Kar S. Prevalence and pattern of domestic accidents in the field practice area of Jawaharlal Institute of Urban Health Centre, Puducherry: a cross-sectional analytical study. J Inj Violence Res [Internet]. 2020;12. Available from: http://www.jivresearch.org/jivr/index.php/jivr/article/view/1182
36. Convention on the Rights of Persons with Disabilities and Optional Protocol UNITED NATIONS.
37. MINISTRY OF LAW AND JUSTICE, (Legislative Department). THE RIGHTS OF PERSONS WITH DISABILITIES ACT, 2016 (NO. 49 OF 2016). MINISTRY OF LAW AND JUSTICE; Dec 27, 2016.
38. National Building Code - Bureau of Indian Standards [Internet]. [cited 2024 Mar 19]. Available from: https://www.bis.gov.in/standards/technical-department/national-building-code/
39. Right To Education [Internet]. [cited 2024 Mar 19]. Available from: https://righttoeducation.in/know-your-rte/about
40. Ministry of Education (Government of India). Samagra Shiksha [Internet]. 2022 [cited 2024 Jun 1]. Available from: https://samagra.education.gov.in/
41. Qiu N, Jiang Y, Sun Z, Du M. The impact of disability-related deprivation on employment opportunity at the neighborhood level: does family socioeconomic status matter? Front Public Health [Internet]. 2023;11. Available from: https://www.frontiersin.org/articles/10.3389/fpubh.2023.1232829/full
42. Bonaccio S, Connelly CE, Gellatly IR, Jetha A, Martin Ginis KA. The Participation of People with Disabilities in the Workplace Across the Employment Cycle: Employer Concerns and Research Evidence. J Bus Psychol [Internet]. 2020;35:135–58. Available from: http://link.springer.com/10.1007/s10869-018-9602-5
43. Babik I, Gardner ES. Factors Affecting the Perception of Disability: A Developmental Perspective. Front Psychol [Internet]. 2021;12. Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2021.702166/full
44. National Divyangjan Finance and Development Corporation | Department of Empowerment of Persons with Disabilities (DEPwD) | India [Internet]. [cited 2024 Mar

19]. Available from: https://depwd.gov.in/national-handicapped-finance-and-development-corporation/

45. SIPDA | Department of Empowerment of Persons with Disabilities (DEPwD) | India [Internet]. [cited 2024 Mar 19]. Available from: https://depwd.gov.in/sipda/

46. Inclusive Education of the Disabled at Secondary Stage | Government of India, Ministry of Education [Internet]. [cited 2024 Mar 19]. Available from: https://www.education.gov.in/iedss

Tables

Table 1: Prevalence of different types of disabilities across different socio-demographic characteristics, NSS, 76th round, India.

Background characteristics	Total sample N	Locomotor N (%)	Vision N (%)	Hearing N (%)	Speech N (%)	Mental Retardation N (%)	Mental Illness N (%)	Others N (%)	Any one disability N (%)
	576,796	61981 (1.36)	11977 (0.23)	15294 (0.30)	12661 (0.23)	8564 (0.16)	751 (0.16)	3121 (0.05)	107,125 (2.20)
Age Group (completed years)									
up to 5	50,010	1494 (2.2)	182 (1.5)	311 (2)	907 (7.3)	445 (5.3)	41 (0.5)	182 (5.5)	2839 (2.5)
`6-17	152,084	7290 (10.8)	1210 (9.2)	1977 (12.6)	4515 (35.8)	3492 (41.2)	060 (15.4)	691 (21.5)	16695 (14.4)
18-35	166,862	11546 (18)	1386 (10.7)	2036 (13.3)	3273 (26.4)	2796 (33)	915 (27.6)	601 (19.8)	20673 (18.8)
36-49	104,790	11434 (18.1)	1557 (12.3)	2118 (13)	1812 (13.8)	1113 (12.4)	646 (25)	478 (14.8)	18665 (17.2)
50-65	80,025	16627 (27.9)	3609 (31.1)	3843 (25.1)	1495 (11.4)	561 (6.5)	409 (21.3)	645 (21.9)	26420 (25.7)
65+	23,025	13590 (23)	4033 (35.2)	5009 (34)	659 (5.3)	157 (1.6)	80 (10.1)	524 (16.6)	21833 (21.4)
Gender									
Male	298,982	36862 (58.7)	6014 (50.2)	7993 (52)	7554 (60.4)	5202 (61.7)	856 (56.8)	1764 (58.9)	61707 (57.3)
Female	277,716	25110 (41.3)	5958 (49.8)	7296 (48)	5106 (39.6)	3359 (38.3)	893 (43.2)	1355 (41.1)	45396 (42.7)
Marital Status									
Never Married	257,794	16912 (24.7)	2719 (20.8)	3987 (24.2)	8708 (67.8)	7450 (86.9)	281 (46.1)	1314 (40.4)	36813 (31.4)
Ever Married	287,768	33257 (55.3)	5541 (46.9)	7094 (47.5)	3086 (25.3)	791 (9.3)	381 (35.8)	1402 (47.2)	50108 (48.8)
Widowed	29,644	11293 (19)	3616 (31.5)	4024 (27.1)	690 (5.4)	190 (2.1)	775 (12.5)	366 (11.1)	18933 (18.5)
divorced/separated	1,590	519 (1)	101 (0.8)	189 (1.1)	177 (1.4)	133 (1.8)	14 (5.5)	39 (1.2)	1271 (1.3)
Area of residence									
Rural	401,474	42222 (71.6)	8809 (76.3)	11121 (74.9)	9164 (72.9)	5974 (69.9)	772 (73.1)	2055 (62.4)	75091 (72.8)
Urban	175,322	19759 (28.4)	3168 (23.7)	4173 (25.1)	3497 (27.1)	2590 (30.1)	279 (26.9)	1066 (37.6)	32034 (27.2)
Educational attainment									
Non-literate	154,126	26376 (44.5)	7160 (62.6)	8365 (57.3)	7119 (56.9)	5846 (69.3)	285 (49.6)	1108 (34.1)	50848 (48.9)

Literate but not formal	169,468	15002 (23.2)	2483 (19.4)	3700 (22.9)	3428 (26.7)	1858 (21)	3329 (23.3)	859 (29)	26145 (23.3)
Upto primary	200,712	16885 (26.5)	1987 (15.5)	2782 (16.9)	1908 (14.9)	808 (9.1)	3523 (24.1)	916 (28.7)	25210 (23.1)
Upto secondary	52,489	3718 (5.8)	347 (2.6)	447 (2.9)	206 (1.5)	52 (0.6)	214 (3.1)	238 (8.2)	4922 (4.6)
Preferred Religion									
Hindu	465,055	49548 (81.9)	9479 (82.9)	12090 (82.6)	9658 (78.7)	6540 (78.7)	10063 (74.7)	2444 (80.8)	84742 (81.5)
Islam	82,924	8375 (12.5)	1601 (12.5)	1927 (11.7)	2021 (15.6)	1366 (15.9)	2467 (18.4)	402 (12.6)	14658 (12.9)
Others	28,817	4058 (5.6)	897 (4.6)	1277 (5.7)	982 (5.7)	658 (5.4)	521 (6.9)	275 (6.5)	7725 (5.5)
Social Group									
Scheduled Tribe	53,251	6049 (8.3)	1491 (9.1)	1923 (9.5)	1478 (9.4)	822 (7.2)	670 (7.8)	452 (12.3)	11729 (8.7)
Scheduled Caste	106,559	12240 (20.4)	2407 (21.3)	2805 (19.4)	2467 (20.5)	1602 (19.2)	2269 (19.9)	574 (17.8)	20925 (20.4)
Other Backward Classes	261,808	26861 (44.7)	5205 (46)	6583 (45.5)	5482 (44.7)	3806 (45.8)	5215 (45.7)	1167 (40.2)	46223 (44.9)
General	155,178	16831 (26.6)	2874 (23.6)	3983 (25.6)	3234 (25.4)	2334 (27.8)	3397 (26.6)	928 (29.7)	28248 (26)
Wealth Index									
Poorer	139,451	17681 (30.2)	3919 (35.1)	4933 (34.7)	3552 (30.1)	2025 (25.3)	1932 (31)	823 (25.8)	31259 (31)
Poor	119,425	12553 (20.5)	2474 (20.8)	3005 (19.4)	2746 (21.4)	1773 (20.9)	2364 (20.5)	524 (16.2)	21959 (20.7)
Middle	116,427	11468 (18.2)	2271 (18.5)	2730 (17.4)	2434 (18.5)	1751 (20)	2302 (18.1)	550 (17.3)	20058 (18.3)
Richer	107,200	10440 (16)	1864 (14.4)	2480 (15.4)	2080 (15.8)	1611 (18.3)	2161 (16.8)	593 (19.9)	17946 (15.9)
Richest	94,293	9839 (15.1)	1449 (11.1)	2146 (13)	1849 (14.2)	1404 (15.5)	992 (13.6)	631 (20.7)	15903 (14.1)
Regions of India									
Northern	80,441	8787 (14.4)	1478 (13.1)	1692 (11.7)	1347 (11.1)	1144 (13.5)	2231 (14.2)	216 (7.6)	14305 (13.8)
Southern	120,725	13448 (23)	2814 (24.7)	4013 (27.3)	2958 (24.8)	2141 (25.6)	3447 (21.3)	714 (25.5)	23699 (23.3)
Western	78,844	8387 (12.7)	1286 (10.1)	1740 (11.1)	1423 (11.3)	1293 (15.2)	1706 (10.6)	540 (17.7)	13708 (12.3)
Eastern	129,717	12790 (20.3)	2538 (21.9)	3238 (22.5)	3248 (27.1)	1762 (21.3)	4272 (26.3)	954 (30.4)	23061 (21.8)
North-Eastern	22,101	3858 (2.1)	1335 (4.5)	1620 (3.7)	1308 (3.4)	594 (2)	982 (2.7)	282 (2.4)	8839 (2.8)
Central	144,968	14711 (27.4)	2526 (25.6)	2991 (23.8)	2377 (22.4)	1630 (22.6)	4413 (24.8)	415 (16.3)	23513 (26)

Table 2: Percentage distribution of different disability types and their associated information, NSS 76th round, India.

	Locomotor	Visual	Hearing	Speech and language	Mental retardation/	Mental illness	Other types of disability	Any Disability
Total sample size	61980	1156	1281	2013	1217	523	768	61980
Causes of disability								
Disease	28673 (46.3)	454 (39.3)	484 (37.8)	1246 (61.9)	NA	NA	NA	NA
Other than disease due to burn	723 (1.2)	88 (0.7)	1 (0.1)	8 (0.4)	NA	NA	NA	NA
Injuries other than burn	13876 (22.4)	156 (13.5)	158 (12.4)	105 (5.2)	NA	NA	NA	NA
Other causes	18702 (30.2)	538 (46.5)	637 (49.7)	654 (32.5)	NA	NA	NA	NA
Disability Since Birth								
Yes	11,488 (18.5)	91 (7.9)	198 (15.4)	1041 (51.7)	955 (78.5)	113 (21.4)	119 (15.5)	11,488 (18.5)
No	50,052 (80.8)	1062 (91.9)	1081 (84.4)	964 (47.9)	258 (21.2)	407 (77.6)	645 (84)	50,052 (80.8)
Not Known	440 (0.7)	3 (0.2)	2 (0.2)	8 (0.4)	4 (0.3)	3 (1)	4 (0.4)	440 (0.7)
Disability commenced in last 365 days								
sample size	48741	1034.2	1052.4	938.7	251.6	294.2	628.6	48741
Yes	2987 (6.1)	72 (7)	65 (6.2)	100 (10.6)	11 (4.4)	46 (10.2)	48 (7.7)	2987 (6.1)
No	45754 (93.9)	961 (93)	987 (93.8)	839 (89.4)	240 (95.6)	358 (89.8)	580 (92.3)	45754 (93.9)
Place of occurrence of disability								
Sample size	14281	161	157	105	33	86	63	14281
Workplace	2308 (16.2)	13 (8.3)	30 (19.2)	11 (10.9)	2 (6.9)	9 (11)	11 (18.1)	2308 (16.2)
Road	5977 (41.9)	46 (28.5)	43 (27.5)	41 (38.7)	9 (25.9)	35 (40.8)	15 (23.8)	5977 (41.9)
Home	4693 (32.9)	93 (57.9)	73 (46.3)	45 (42.4)	19 (58.5)	33 (38.8)	31 (49.5)	4693 (32.9)
Other places	1302 (9.1)	9 (5.3)	11 (7)	8 (8)	3 (8.7)	8 (9.5)	5 (8.6)	1302 (9.1)

Treatment taken/undergoing treatment								
Sample size	61980	1156	1281	2013	1217	523	768	61980
yes: consulting doctor	35,923 (58)	566.6 (49)	617 (48.2)	1,080 (53.7)	710 (58.4)	26 (43)	330 (43)	35923 (58)
Otherwise	1565 (2.5)	22 (1.9)	34 (2.7)	42 (2.1)	36 (2.9)	2	6 (0.7)	1564.5 (2.5)
Yes: consulting doctor, plus undergoing treatment	17329 (28)	375 (32.4)	418 (32.7)	719 (35.7)	355 (29.2)	19 (7)	397 (51.7)	17329 (28)
Otherwise	860 (1.4)	34 (2.9)	21 (1.7)	20 (1)	4 (0.3)	1 (0)	8 (1)	860 (1.4)
Attending special school/special therapy	116 (0.2)	2.9 (0.3)	0 (0)	4 (0.2)	6 (0.5)	1	0 (0)	116 (0.2)
Cannot afford treatment	2040 (3.3)	75 (6.4)	73 (5.7)	72 (3.6)	55 (4.6)	1	8 (1)	2040 (3.3)
No treatment available for the disability	699 (1.1)	13 (1.1)	8 (0.6)	17 (0.8)	16 (1.3)	4 (0.8)	5 (0.7)	699 (1.1)
Not required	2717 (4.4)	60 (5.2)	97 (7.6)	47 (2.3)	26 (2.1)	11 (4)	14 (1.8)	2717 (4.4)
Not known	732 (1.2)	8 (0.7)	12 (0.9)	13 (0.7)	9 (0.7)	1 (0.4)	1 (0.1)	732 (1.2)

Note: *Causes of disability were recorded for individuals with disabilities like locomotor, visual, hearing, and speech. Disability Commenced in the last 365 days was recorded for those individuals who did not have a disability 'since birth' but disability commenced during the last 365 days before the survey.*
Place of occurrence was recorded for individuals with disabilities who are experiencing disability post their birth and for whom the cause of disability was burn, injury or other than burn.

Table 3: Living conditions of the people living with disabilities, NSS76th round India.

Living conditions of the people *(n=sample included in the analysis)*	**Weighted percentage**
Percentage distribution of persons who were not having disability since birth by different age at the onset of disability (n= 48,727)	
0 to 4 years	17.2
5 to 14 years	9.0
15 to 59 years	45.9
60 years and above	28.0
Receipt of aid/help (n=61,712)	
Received aid/help from Government	20.8
Received aid/help from organisations other than government	4.1
Did not receive aid/help	75.1
Living arrangement(n=61,962)	
Living alone or with a spouse	57.0
Living with others	43.0
Arrangement of regular caregiver(n=61,980)	
Care-giver required but not available	0.1
Care-giver is not required	37.1
Care-giver is available	62.8
Access to public Transport (n=61,980)	
Yes	59.6
No	40.4
Accesses to public building (n=61,980)	
Yes	45.6
No	54.4
Difficulty faced accessing public building(n= 27,756)	
difficulty faced: due to stairs and non-availability of ramp, grooved tiles or lift	57.7
in opening doors	4.4
no seating arrangement: in the waiting area	1.6
at the point of receiving service	0.8
no special toilet seats	0.7
no sign for direction/ instruction/no public announcement system	0.3
no difficulty faced	27.6
others	7.0
Working before onset (For persons of age 15 years and above; n=55,819)	
Yes	40.3
No	59.7
Disability causing loss or change in job(n= 21,559**)**	
loss of work	60.7
change of work	18.3
no loss or change of work	21.3
Having Disability Certificate(n=61,980)	
Yes	30.4
No	69.6
Percentage of Disability as per Certificate (n=20,213)	
40% or more but less than 60%	49.3
60% or more but less than 80%	36.3
80% or more	12.8
none of these	1.6

Table 4: Multivariable binary logistic regression analysis exploring the likelihood of living with any disability per the 76th round of the NSS, India.

	Unadjusted Odds ratio (95% C.I)	p-value	Adjusted Odds ratio (95% C.I)	p-value
Age Group (Completed years)				
Up to 5 years	**Reference value**		**Reference value**	
6 - 18 years	2.1(2-2.1)	<0.001	3.5(3.4-3.7)	<0.001
19-35 years	2.3(2.2-2.4)	<0.001	8.4(8-8.8)	<0.001
36-49 years	3.5(3.4-3.7)	<0.001	17.6(16.8-18.5)	<0.001
50-65 years	6.4(6.1-6.7)	<0.001	25.8(24.5-27.1)	<0.001
65+ years	17.5(16.7-18.2)	<0.001	58.4(55.4-61.5)	<0.001
Gender				
Male	**Reference value**		**Reference value**	
Female	0.7(0.7-0.7)	<0.001	0.6(0.6-0.6)	<0.001
Place of Residence				
Rural	**Reference value**		**Reference value**	
Urban	1.02(1.01-1.03)	0.03	1.3(1.2-1.3)	<0.001
Social Group				
Scheduled Tribe	**Reference value**		**Reference value**	
Scheduled Caste	1.1(1.1-1.1)	<0.001	1.1(1.1-1.2)	<0.001
Other Backward Classes	1.1(1-1.1)	<0.001	1.1(1.1-1.2)	<0.001
General	1.1(1.1-1.1)	<0.001	1.3(1.3-1.3)	<0.001
Educational attainment				
No education	**Reference value**		**Reference value**	
Upto Primary class	0.5(0.5-0.5)	<0.001	0.5(0.5-0.5)	<0.001
Upto Secondary Class	0.4(0.4-0.4)	<0.001	0.4(0.4-0.4)	<0.001
Graduate & Above	0.3(0.3-0.4)	<0.001	0.3(0.3-0.3)	<0.001
Preferred Religion				
Hindu	**Reference value**		**Reference value**	
Islam	0.8(0.8-0.9)	<0.001	0.9(0.9-0.9)	<0.001
Others	0.9(0.9-1)	<0.001	1(1-1.1)	0.019
Marital Status				
Never married	**Reference value**		**Reference value**	
Currently married	1.3(1.3-1.3)	<0.001	0.3(0.3-0.3)	<0.001
widowed	5.9(5.8-6.1)	<0.001	0.6(0.5-0.6)	<0.001
Divorced/separated	4.4(4.1-4.8)	<0.001	1.1(1-1.2)	0.011
Wealth Index				
Poorest	**Reference value**		**Reference value**	
Poor	0.6(0.6-0.6)	<0.001	0.7(0.7-0.7)	<0.001
Middle	0.6(0.5-0.6)	<0.001	0.6(0.6-0.6)	<0.001
Richer	0.5(0.5-0.5)	<0.001	0.5(0.5-0.6)	<0.001
Richest	0.4(0.4-0.4)	<0.001	0.5(0.5-0.5)	<0.001
Regions of India				
Northern	**Reference value**		**Reference value**	
Southern	1.42(1.39-1.46)	<0.001	1.1(1.1-1.2)	<0.001
Western	1.13(1.1-1.16)	<0.001	1(1-1.1)	0.065
Eastern	1.15(1.13-1.18)	<0.001	1(0.9-1)	0.001
North-eastern	1(0.97-1.03)	0.961	1(1-1)	0.361
Central	1.01(0.98-1.03)	0.653	0.9(0.8-0.9)	<0.001

Figure Legends

Figure 1: Geographical disparities in the difficulties faced by the people living with disabilities as per the 76th Round of the National Sample Survey, India

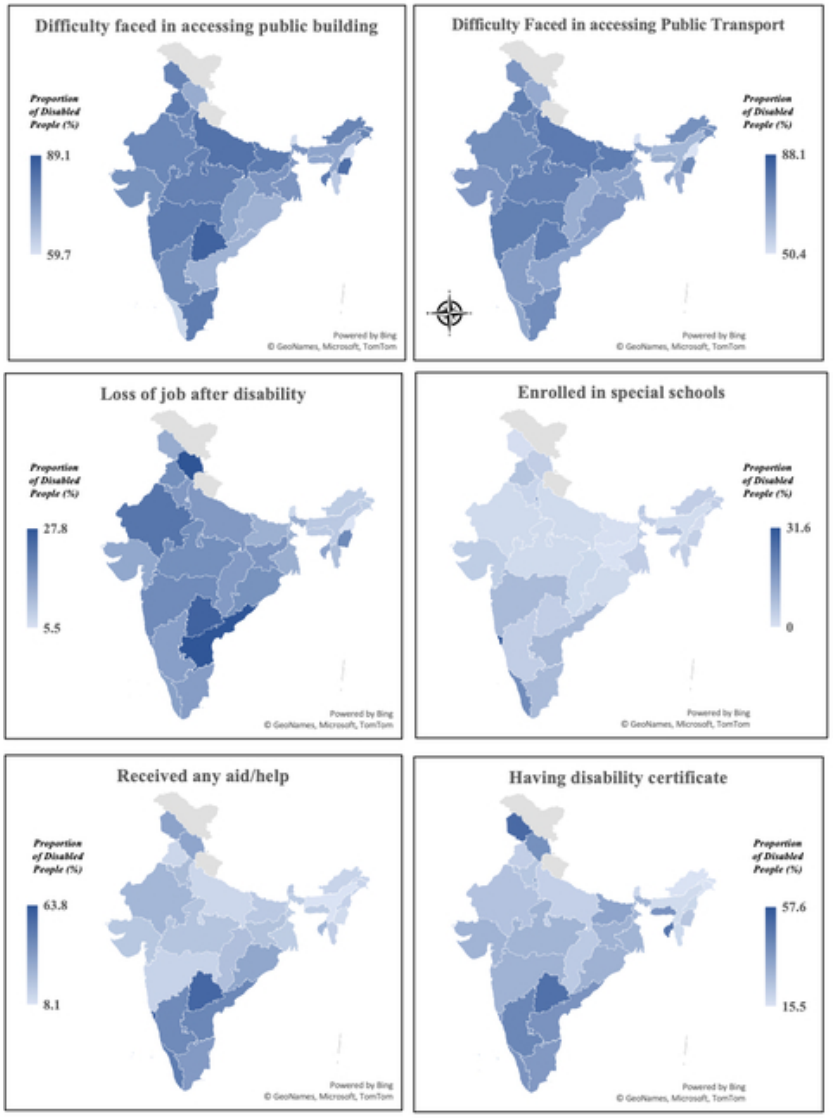

Figure 1: Geographical disparities in the difficulties faced by the people living with disabilities as per the 76th Round of the National Sample Survey, India

40x58mm (300 x 300 DPI)

BMJ Open

Epidemiology of disability and access to disability support and rehabilitation services in India: A secondary data analysis a National Sample Survey (2018).

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2024-090220.R1
Article Type:	Original research
Date Submitted by the Author:	24-Dec-2024
Complete List of Authors:	Mirza, Moonis ; All India Institute of Medical Sciences - Bathinda, Department of Hospital Administration Esht, Vandana; Jazan University College of Applied Medical Sciences, Physical Therapy Department Verma, Madhur ; All India Institute of Medical Sciences Bathinda, Department of Community & Family Medicine Bahadur, Bajarang; International Institute for Population Sciences, Demography Jaiswal, Ajit; International Institute for Population Sciences, Demography Alagarajan, Manoj; International Institute for Population Sciences, Demography Kakkar, Rakesh; All India Institute of Medical Sciences - Bathinda, Department of Community & Family Medicine
Primary Subject Heading:	Public health
Secondary Subject Heading:	Epidemiology, General practice / Family practice, Global health, Health services research, Occupational and environmental medicine
Keywords:	Disabled Persons, PUBLIC HEALTH, Health Equity

I, the Submitting Author has the right to grant and does grant on behalf of all authors of the Work (as defined in the below author licence), an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the terms applicable for US Federal Government officers or employees acting as part of their official duties; on a worldwide, perpetual, irrevocable, royalty-free basis to BMJ Publishing Group Ltd ("BMJ") its licensees and where the relevant Journal is co-owned by BMJ to the co-owners of the Journal, to publish the Work in this journal and any other BMJ products and to exploit all rights, as set out in our licence.

The Submitting Author accepts and understands that any supply made under these terms is made by BMJ to the Submitting Author unless you are acting as an employee on behalf of your employer or a postgraduate student of an affiliated institution which is paying any applicable article publishing charge ("APC") for Open Access articles. Where the Submitting Author wishes to make the Work available on an Open Access basis (and intends to pay the relevant APC), the terms of reuse of such Open Access shall be governed by a Creative Commons licence – details of these licences and which Creative Commons licence will apply to this Work are set out in our licence referred to above.

Other than as permitted in any relevant BMJ Author's Self Archiving Policies, I confirm this Work has not been accepted for publication elsewhere, is not being considered for publication elsewhere and does not duplicate material already published. I confirm all authors consent to publication of this Work and authorise the granting of this licence.

Title Page

Epidemiology of disability and access to disability support and rehabilitation services in India: A secondary data analysis a National Sample Survey (2018).

Type: Original Article

Moonis Mirza*, Vandana Esht[1]*, Madhur Verma*#, Bajarang Bahadur*, Ajit Kumar Jaiswal[3], Manoj Alagarajan, Rakesh Kakkar

*authors contributed equally
#corresponding author

Detailed Author Affiliations:

1. **Moonis Mirza (MD)**
   Associate Professor of Hospital Administration, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: moonismirza@gmail.com.
   Orcid id: 0000-0002-8844-7311

2. **Vandana Esht (Phd)**
   Associate Professor, Physical Therapy Department, College of Applied Medical Sciences, Jazan University, Jazan, Saudi Arabia
   Email: vandanaesht@jazanu.edu.sa.

3. **Madhur Verma (MD)**
   Associate Professor of Community and Family Medicine, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: drmadhurverma@gmail.com

4. **Bajarang Bahadur**
   Mphil, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: bajarang7894@gmail.com.

5. **Ajit Kumar Jaiswal**
   Mphil, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: ajitjaiswal20@gmail.com.

6. **Manoj Alagarajan**
   Assistant Professor, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: alagarajan@iipsindia.ac.in.

7. **Rakesh Kakkar (MD)**
   Professor of Community and Family Medicine, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: drrakesh75@rediffmail.com.

Details of the corresponding author

Dr. Madhur Verma (MD)
Associate Professor of Community and Family Medicine,
All India Institute of Medical Sciences Bathinda (Punjab),
India-151001
Email: drmadhurverma@gmail.com
Phone: +91 9466445513
Orcid id: 0000-0002-1787-8392

Manuscript

Abstract

Objective: The primary aim of this study was to examine the epidemiology of disabilities in India and assess access to disability support and rehabilitation services by people with Disabilities (PWDs).

Design: This study is a secondary analysis of the data from the 76th round of the National Sample Survey (2018), that focussed on disability in India.

Setting: The survey employed a stratified two-stage sampling design based on Census 2011, covering all states and union territories of India. Villages and urban blocks were selected in the first stage, while households were chosen in the second stage across rural and urban areas.

Participants: The survey included data from a population of 576,796 individuals residing in 1,18,152 households from 8,992 village/urban blocks (5,378 rural villages and 3,614 urban blocks). The analysis focussed on 1,07,125 individuals (61,707 males and 45,305 females) who reported at least one disability.

Outcome Measures: The primary outcome was "any disability". Secondary outcomes included access to disability support and rehabilitation services that assessed difficulties faced in accessing public buildings, transport, loss of employment after disability, availability of government support, enrolment in special schools, and possession of a disability certificate.

Results: The overall weighted disability prevalence was 2.2%, with significant disparities across socio-demographic characteristics. Among PWDs, 45.9% of those who acquired disabilities after birth were aged between 15 and 59, and 20.8% received no government aid. About 40% of PWDs struggled to use public transport, and 57.7% had difficulties accessing public buildings. Additionally, 60.7% reported job loss due to disability, and 69.6% lacked a disability certificate.

Conclusion: This study highlights disparities faced by PWDs in accessing disability support and rehabilitation services. There is an urgent need for concerted efforts to minimise such experiences. This will help us enhance the well-being and participation of PWDs and empower them to contribute to society with their true potential.

Keywords: *Disability, inequity, disparities, accessibility, health access.*

Strengths and limitations of this study

- One of the very first comprehensive assessments of accessibility issues of the people living with disability data from the 76th round of the National Sample Survey (2018).
- We estimated the proportion of people with disability who could access basic services through a weighted analysis that makes the results generalisable and highlights actionable points.
- The lack of a standardised definition of disability was the critical limitation of the study, which restricts sub-national and national comparisons over time and regions.
- The possibility of estimates being affected by recall bias and social desirability bias may not be ruled out.
- We were limited by the number of variables available in the primary data, which restricted us from making further conclusions about the social inclusion of people with disability.

Manuscript

Introduction

As per the United Nations Convention on the Rights of Persons with Disabilities (CRPD), persons with disabilities (PWD) include those who have long-term physical, mental, intellectual or sensory impairments which, in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others.[1] Disability is a global concern, impacting 1.3 billion people or 16% of the population.[2] The World Health Organization (WHO) and the World Bank's World Report on Disability highlight that 80% of the global disabled population is of working age, with a substantial proportion residing in developing countries.[3] India is one of the most populous countries, and the burden of disabilities afflicting the population is concerning.[4] With the increasing proportion of the geriatric population, the burden of disability has also proportionately increased (from 21.9 to 26.8 million) over the last two rounds of the national census (2001-2011).[5,6] The reports from the 2011 Census and the 76th round of the National Sample Survey (NSS) estimate disability prevalence to be around 2.2%.[7] But the fifth round of the National Family Health Survey-5 (2019-21) estimates an overall disability prevalence of 4.52%.[8] The discrepancy in available estimates is due to differences in the methodologies, poor quality and inconsistent data, and lack of standardisation of the definition, which underscores the intricate nature of the disability.[9,10]

The CRPD defines disability as an evolving concept as it results from the interaction between persons with impairments and attitudinal and environmental barriers that hinder full and effective participation in society on an equal basis with others.[1] This evolution of the definition highlights the constantly changing needs of PWDs, which are largely unmet.[11,12] Articles 6, 7, 9, 24, and 27 of CRPD talk about the gender, age, accessibility, education, work and employment rights for empowering the PWD by addressing such needs so that they live

independently and participate fully in all aspects of life, who are otherwise less prioritised over the general population.[13–17] Low priority increases the existing disparities, leading to poorer health outcomes, lower educational attainment, and reduced economic opportunities, thereby exacerbating social inequities.[18] Addressing these disparities is a global priority as mandated by the second principle of the Sustainable Development Goals (SDGs), "Leave no one behind", which is the central, transformative promise of the Agenda 2030.[19] The International Human Rights Law and the CRPD also obligate each country to tackle the inequalities faced by PWDs.[1,20] Despite ratification by most countries, the world remains far from fully recognising and upholding the rights and needs of PWDs.[18] The needs of PWD can span from *personal functional assistance* (daily activities and extent of disability), *social integration* (living conditions, caregivers, and public accessibility), *economic rehabilitation* (impact on employment and finances) to *service access* (certification and receipt of government/NGO support) necessitating a comprehensive approach.[21] But access to such services is less studied, and it is crucial to highlight disparities that affect the disability care continuum and also limit the efforts to minimise social exclusion of PWD and foster a social environment that is inclusive and accessible to all.[22]

Previous literature from India has primarily focused on the epidemiology of disability.[10] The lack of disability-friendly infrastructure, affordable assistive technologies, support services, including personal assistance, therapy, aids and vocational rehabilitation, and comprehensive care perpetuates inequalities.[23] Still, it is less explored by the scientific community. Within this context, the 76th NSS collects data regarding disability and PWD's access to different disability support and rehabilitation services and provides an opportunity to study them. Thus, the primary aim of the study was to explore the epidemiology of disabilities and the accessibility of PWDs to various disability support and rehabilitation services to provide insights for specific interventions.

Methodology

Data sources: We conducted a secondary analysis of the cross-sectional data from the 76th National Sample Survey (NSS) conducted by the Ministry of Statistics, Planning, and Implementation (MOSPI) between July and December 2018. MoSPI has formulated a code of ethics that follows the principles of ethics and sets out certain standards of conduct for the members of the Committees in order to protect the confidentiality of the data/information acquired by them by virtue of their membership in such Committees. The NSS collects socio-economic data using scientific sampling methods and serves as a crucial tool to gauge various socio-economic aspects across all states of India. Its primary objective is to identify unmet needs within the population, thereby aiding the government in formulating effective policies to address them.

The survey made its first attempt to collect information on the number of PWDs during the 15th round (July 1959 - June 1960).[24] In the 76th round, the main objective of the survey was to estimate indicators of incidence and prevalence of disability, cause of disability, age at onset of disability, facilities available to the PWDs, difficulties faced in accessing public building/public transport, arrangement of regular caregiver, out-of-pocket expense relating to disability, etc. using a structured questionnaire.[25] Further, estimates were obtained on various employment and unemployment particulars in usual status for the household members with at least one disability. For each household member aged 12 to 59 years, information was collected on whether or not they received vocational/technical training and details related to such training.

Sampling design and sample size: The 76th NSS employed a stratified two-stage sampling design, utilising Census 2011 as the sampling frame.[7] The survey commenced on 1st July 2018 for six months'. In the first stage, villages/urban blocks were selected, followed by the selection of households in rural and urban areas at the second stage. This round of NSS

encompassed all states and union territories of India except the villages in Andaman and Nicobar Islands, which are difficult to access, covering a total of 8,992 village/urban blocks (5,378 rural villages and 3,614 urban blocks) and including 118,152 households representing a population of 576,796 individuals (402,589 in rural areas and 173,980 in urban areas). Within this, the present study focuses on 1,07,125 individuals consisting of 61,707 males and 45,418 females) who reported at least one disability during the survey.

Study Variables

Dependent variable: The presence of "any disability" was our primary dependent variable. - MOSPI defines a "Person with disability" as a person with a long-term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others.[7] The variable is created by the presence of at least one condition among all seven disability types, elaborated subsequently

1. **Locomotor disability:** A person was categorised as living with locomotor disability based on a positive response to any of the following three conditions: *(i) whether having difficulty in using hands, fingers, toes, body movement (including cerebral palsy, muscular dystrophy); (ii)whether having loss of sensation in the body due to paralysis, leprosy, other reasons; or (iii)whether having deformity of the body part(s) like hunch back, dwarfism, deformity due to leprosy, caused by acid attack, etc.*
2. **Visual disability:** It was identified using a direct question: "*Whether having difficulty in seeing, counting fingers of hand from a distance of 10 feet (with spectacles, if using, and both eyes taken together*)."
3. **Hearing disability:** The categorisation was based on the question: *"Whether having difficulty in hearing day-to-day conversational speech (without hearing aid, if using, and both ears taken together)"*

4. **Speech and language disability:** It was assessed using a question: *"Whether having difficulty in speech (unable to speak like a normal person/ speech is not comprehensible, including laryngectomy, aphasia) which is base for speech disability.*

5. **Mental retardation/intellectual disability:** This disability variable has been prepared based on the following question "*Whether having difficulty in understanding/ comprehension or communicating in doing daily activities*"

6. **Mental illness:** This disability was identified when there was a positive response to any of the three conditions: (i) *whether having unnecessary and excessive worry and anxiety, repetitive behaviour/ thoughts, changes of mood or mood swings, talking/laughing to self, staring in space; (ii) whether having unusual experiences of hearing voices, seeing visions, strange smell or sensation or strange taste; or (iii) whether having unusual behaviour or difficulty in social interactions and adaptability.*

7. **Other disabilities:** To identify other types of disability of the persons, the following question was used: "*Whether having any of the following: Parkinson's disease, multiple sclerosis, other chronic neurological conditions, thalassemia, haemophilia, sickle cell disease*".

The access to different disability support and rehabilitation services by the PWD were secondary dependent variables that were assessed by studying the receipt of aid/help (received aid/help from government, received aid/help from organisations other than government, did not receive aid/help), living arrangement(living alone or with a spouse, living with others), arrangement of regular caregiver(care-giver required but not available, care-giver is not required, care-giver is available), access to public transport (yes, no), accesses to public building (yes, no), difficulty faced in accessing public building (difficulty faced due to stairs and non-availability of ramp, grooved tiles or lift, in opening doors, no seating arrangement: in

the waiting area, at the point of receiving service, no special toilet seats, no sign for direction/ instruction/no public announcement system, no difficulty faced, and others), employed/working before onset of disability (yes, no), disability causing loss or change in job (loss of work, change of work , no loss or change of work), having disability certificate(yes, no), and percentage of disability as per certificate (40-60%, 60-80%, >80%, and none of these).

Predictor variables: In the present study, the variables were chosen following a literature review and the scope of data collected in the original survey.[26–29] Research has extensively explored how various socio-demographic factors influence the prevalence and types of disabilities. This review presented key insights from the literature review on how disability is impacted by age group (completed years) categorised as: up to 5, 6-17, 18-35, 36-49, 50-65 and 65+ completed years, sex(male, female), marital status (never married, ever married, widowed, divorced/separated), area of residence (rural, urban), educational attainment (non-literate, literate but not formal, upto primary, upto secondary), preferred religion (Hindu, Islam, others), social group (scheduled tribe, scheduled caste, other backward classes, general), wealth index (poorer, poor, middle, richer, richest), regions of India (northern, southern, western, eastern, north-eastern and central). Specifically, PWDs were characterised using variables like causes of disability (disease, other than disease due to burn, injuries other than burn, other causes), age at the onset of disability (0 to 4, 5 to 14, 15 to 59, and 60 years and above), the origin of disability from birth (yes, no, not known), disability commenced in last 365 days (yes, no), place of occurrence of disability (workplace, road, home, other places), treatment taken/undergoing treatment (yes: consulting doctor, otherwise, yes: consulting doctor, plus undergoing treatment, otherwise, attending special school/special therapy, cannot afford treatment, no treatment available for the disability, not required and not known).

Statistical methodology: The prevalence, along with the dispersion of all disability variables, were estimated as part of a univariate analysis by using already calculated sampling weights

with clustering as provided with the datasets.[30] The details of sampling weight have been described in the NSS 76th round report. We used the SVY command while using sampling weights.[31] Further, the prevalence of all disability types was estimated per socio-economic characteristics, and the associations were tested using bivariate analysis through a chi-squares test. The access to different services was depicted using weighted proportions. The missing data were handled using the Available case analysis (ACA) technique, and the estimates were generated using the available data, leading to the different sample sizes as they vary from variable to variable. It helped us retain more data compared to listwise deletion. Multivariable binary logistic regression analysis was used to explore the independent variables affecting the likelihood of living with 'any disability', *which was* the dependent variable coded by 1 and otherwise 0. Additionally, binary logistic regressions are also employed on all seven types of disabilities. The analysis depicted the unadjusted and adjusted odds ratio (95% confidence interval). All p-values<0.05 were considered statistically significant. All the analysis was done using Stata (version 17.0). Graphical maps were created using MS Excel sheets to depict the regional disparities.

Patient and public involvement: None

Results

Table 1 provides a comprehensive overview of the weighted prevalence of different types of disabilities across various socio-demographic characteristics in India. Of the total participants, 107,125 (2.2%) of the participants had at least one form of disability. The majority of such participants had a locomotor disability 61,981 (1.36%), followed by Hearing 15,294 (0.30%), visual 11,977 (0.23%), speech-related 12,661 (0.23), mental retardation 8,564 (0.16%), mental illness 6,751 (0.16%), and other types 3,121 (0.05%) of disabilities. The highest prevalence of any disability, locomotor, speech and 'other' disabilities was seen in 50-65 years. However, the proportion of participants with visual and hearing disabilities was highest in the eldest age

group, while mental retardation and mental illness were highest in the 6-35 years age group. Further, male sex, ever-married participants from rural areas, with minimal or no educational attainment, following Hinduism, belonging to other backward social castes, poorer wealth index quintile, and Southern part of India depicted the highest prevalence.

We further assessed the origin of disability as per the type (Table **2).** The most common cause of locomotor and speech disability was disease 28,673 (46.3%), 1246 (61.9%), while 'Other causes' were most commonly involved in visual 538 (46.5%) and hearing 637 (49.7%) disabilities. Around 11,488 (18.5%) of PWD had it from birth. Of the total participants, 2987 (6.1%) participants who acquired it in the last year preceding the survey. The most common place of disability origin was road 5977 (41.9%), followed by home, 4693 (32.9%). Only 17,329 (28%) of PWD were consulting doctors and undergoing treatment.

Table 3 depicts the living conditions of people with any disability and access to crucial services, and Supplementary Table 1 provides results in more detail for each type of disability. Overall, nearly half of the PWDs who did not have disability since birth were between 15 and 59 years old (45.9%), while nearly one-fifth (20.8%) had received any aid or help from the government. 57% of PWDs lived with their spouses, and 62.8% reported that caregivers were available. About 40% reported an inability to use public transport, while 54.4% reported inaccessibility to public buildings. Further, 57.7% of PWDs reported facing difficulties while accessing public buildings. Around 60.7% of PWDs reported a loss of work due to disability onset, and 69.6% did not have any official document certifying their disability for administrative purposes. Figure 1 further depicts the geographic disparities in the PWDs' access to basic services.

Table 4 demonstrates the multivariable binary logistic regression analysis results to present the socio-demographic variables affecting the likelihood of living with any type of disability. We found a significantly higher likelihood of living with disability with increasing age (Adjusted

Odds ratio: 58.4; 95% Confidence Interval: 55.4-61.5 in >65 years vs up to 5 years), urban residence (1.3; 1.2-1.3) vs rural, social castes (1.3; 1.3-1.3 in general caste) vs scheduled tribes, and living in a Southern region of India (1.1; 1.1-1.2) compared to those from North India. However, female sex (0.6; 0.6-0.6), more years of education (0.3; 0.3-0.3), Islam followers (0.9; 0.9-0.9), currently married/widowed vs never married (0.3; 0.3-0.3), and higher socio-economic status (0.5; 0.5-0.5) depicted significantly lower likelihood. Supplementary Table 2 provides results from the more detailed regression analysis for each type of disability.

Discussion

We report an investigation that assesses the epidemiology of PWD and their access to disability support and rehabilitation services in India using nationally representative data from India. Our findings reveal critical insights that have profound policy implications. First, we identify concerning disparities in disability prevalence across socio-demographic groups. Second, one-fifth of PWDs reported acquiring their disability at birth. Third, the most common place of disability origin was roads, followed by home. Fourth, approximately half of PWDs reported challenges in using public transport and buildings. Lastly, the majority of PWD reported a loss of work due to disability onset and did not have any official document certifying their disability.

Disability prevalence was notably higher among older individuals, males, rural populations, and those from lower socio-economic backgrounds. Despite a modest 2.2% prevalence rate, this figure represents around 30 million people in India, and it is expected to rise, indicating an urgent need for attention. While there was a preponderance of males with locomotor disabilities, speech and language disabilities were significantly higher in females. As per the estimates obtained from the previous 36th, 47th, and 58th rounds of NSS, there is a constant rise in disability prevalence in rural (1.8% in the 36th round to 2.3% in 76th round) as well as urban (1.4% in 36th round to 2.0% in 76th round) areas, with the overall increase from 1.6%

in 36th round in year 1981 to 2.2% in 76th round in year 2018.[7] Another study based on NFHS-5 depicts an overall disability prevalence of 4.52%, with a higher proportion of locomotor disabilities (44.70%), followed by mental disabilities (20.28%).[4] Similarly, an increased prevalence of locomotor (1.35%), visual (0.23%), and hearing disability (0.30%) among the elderly population belonging to rural areas, with a low level of education and low wealth quintile, respectively.

We observed that a high proportion of survey participants had their disabilities **from** birth. However, the available data limits our further understanding of such disabilities, whether they were congenital or acquired during the birthing process. Still, this high burden calls for mitigation strategies that target pregnancy more comprehensively and screening for intra-uterine pathologies causing disabilities like Down's syndrome and intellectual disabilities, later extending to include screening for auditory and visual disabilities, should be made more accessible.[32] Such screening tests can also help parents make timely decisions for either terminating the pregnancy or preparing for raising a child with a disability. Better awareness through adequate counselling of such bereaved parents may reduce parental anxiety. Further, adopting more rigorous screening toolkits and investigations for newborn screening at the primary healthcare level through the expansion of the Rashtriya Bal Swasthya Karyakram (Indian National program that involves screening of children from birth to 18 years of age for 4 Ds- Defects at birth, Diseases, Deficiencies and Development delays, spanning 32 common health conditions for early detection and free treatment and management, including surgeries at tertiary level) would help in increasing scope for early psychological or therapeutic interventions that would impact the quality of life of affected children.[33] In addition, the Pradhan Mantri Jan Arogya Yojana (PM-JAY) also offers free healthcare for children with disabilities not covered by the RBSK due to various reasons.[34,35] Additionally, the government has various healthcare schemes that cater to the specific needs of PWDs. The

government provides assistive devices and aids such as wheelchairs, hearing aids, and prosthetic limbs at subsidised rates through schemes like the Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances (ADIP).[36] Under ADIP, aids and appliances are provided to PWDs at subsidised rates. Deendayal Disabled Rehabilitation Scheme (DDRS) provides financial assistance to NGOs for various rehabilitation services for persons with disabilities.[37] Apart from this, there is still scope for improvement to address specific issues related to health and ethics, the need to shift societal attitudes toward people with mental disabilities, and the set-up of accessible support systems for affected persons and their families (e.g. schools, vocational training) to improve the social inclusion of people with disabilities since birth.[38]

The most common place of disability origin was road, followed by home. Trauma is an important cause of locomotor disability, and in India, it is the second most common cause of locomotor disability.[39] Previous estimates suggest that road crashes maximally impact the poorest quintiles. Most people who experience road trauma are pedestrians, bicyclists and motorcyclists, are less prone to adopt safety gear while on the road, and also do not have adequate access to medical and social safety nets.[40,41] Anecdotal evidence from Chandigarh, a Union Territory of India, suggests that stringent traffic mutually benefits the public and the administration. On one side, it reduces morbidity due to road traffic acts, while on the other side, penalties generate massive revenues to run and develop the administration and also generate awareness. An increasing number of domestic accidents are equally concerning.[42] Domestic accidents may be subjected to under-reporting as most of the domestic injuries are considered minor, often neglected, and may be easily forgotten and subjected to recall bias. This changing trend is similar to many developed nations where more accidents happen in home than anywhere else. With increasing population and population density, we expect an increase. Domestic accidents depend on the physical and social environment and also on the

functional capacity of the individual. While road traffic accidents are unforeseen and unexpected, it is generally accepted that domestic accidents can be prevented and minimised by taking adequate safety measures well in time.[43]

We observed that there is still scope for improving the accessibility of public buildings and transport by the PWDs, as they must accommodate PWDs' needs. Various schemes and initiatives demonstrate the Indian government's commitment to securing the rights and welfare of disabled populations in the country. India's commitment to the United Nations Convention on the Rights of PWD (UNCRPD) is embodied in the Rights of Persons with Disabilities Act of 2016 (RPWD Act, 2016). It emphasises dignity, autonomy, and non-discrimination for Persons with Disabilities (PWD).[44] The Act further mandates inclusive education, vocational training, and self-employment opportunities without discrimination. To increase the accessibility of public buildings, the Rights of Persons with Disabilities Act 2016 and the National Building Code of India 2016 outline expanded guidelines for building accessibility.[45] Compliance with these standards has been made compulsory, with responsibility falling on those involved in commissioning, designing, constructing, or managing built environments. The building design must adhere to relevant legislation, including equality and safety regulations. This focus on accessibility has fostered the adoption of universal design concepts, leading to numerous best practices for creating inclusive environments. These encompass accessible buildings, parking areas, parks, and recreational facilities, reflecting a concerted effort to ensure equal access and inclusion for people with disabilities in the built environment.

In addition to the above, the Indian government has taken several steps to ensure that the rights of disabled populations are secured. The Right to Education Act (RTE) aims to provide free and compulsory education for children with disabilities up to 18 years.[46] The government-funded higher education institutions reserve 5% of seats for PWDs, fostering diversity and

enhancing workforce opportunities. This legislation reflects India's dedication to empowering individuals with disabilities, ensuring their full participation in society.[44] Additionally, the Samagra Shiksha Abhiyan integrates children with disabilities into mainstream education.[47] The National Education Policy 2020 also prioritises "inclusion" by aiming to fully integrate children with disabilities into the mainstream education system, providing necessary accommodations and support to ensure their active participation in the learning process without segregation or discrimination; this includes accessible infrastructure, specialised teaching methods, and assistive technologies tailored to individual needs.[48]

Likewise, many people lost their current jobs due to the onset of disabilities. Employment can enhance social sustainability and individual well-being.[49] Loss of jobs can be linked to the social stigma associated with impairment or disabilities and the perception of such people being less productive. Many employers have ill-founded views about the work-related abilities of PWDs; these negative views are often a result of interrelated concerns that permeate the entire employment cycle.[50] It is to be emphasised that negative attitudes toward disability disempower individuals with disabilities and lead to their social exclusion and isolation. By contrast, a healthy society encourages positive attitudes toward individuals with disabilities and promotes social inclusion.[51] However, various initiatives have been introduced to promote employment opportunities for PWDs. This includes reservation quotas in government jobs and incentives for the private sector to employ persons with disabilities. The government provides financial assistance and benefits to persons with disabilities through schemes like the National Handicapped Finance and Development Corporation (NHFDC), which offers loans and subsidies for education and training or self-employment ventures.[52] Some prominent schemes introduced for disabled people in India include the National Handicapped Finance and Development Corporation (NHFDC), which provides financial assistance to persons with disabilities for self-employment, education, and training.[52] Scheme for Implementation of

Persons with Disabilities Act (SIPDA) to create barrier-free environments and improve the quality of life for persons with disabilities.[53] Accessible India Campaign (Sugamya Bharat Abhiyan) focuses on making public infrastructure and transportation accessible for persons with disabilities. Inclusive Education for Disabled at Secondary Stage (IEDSS) supports the inclusive education of students with disabilities at the secondary level.[54]

This study has a few strengths and limitations that should be acknowledged. Its major strength lies in its novelty by bringing social science and medicine to a common platform. The estimates generated using the weighted analysis are nationally representative and can serve as robust evidence to help guide the policies that improve accessibility. The present study takes a novel approach by initially delineating the proportions of various types of disabilities. Subsequently, it delves into the analysis concerning "any disability," thus unveiling unique characteristics within this broader category. By doing so, the study not only broadens the scope of understanding but also highlights the nuanced interplay between different types of disabilities and the socio-demographic backgrounds of PWD. This shift towards a more inclusive analysis holds promise for informing policy decisions and healthcare interventions tailored to address the complex needs of individuals with disabilities. The major limitation lies in the study's cross-sectional nature, which limits causality and temporal associations and is limited by recall bias, particularly when assessing disabilities from birth. We need more qualitative studies to better assess the impact of inaccessibility to basic support and rehabilitative services.[12] As a secondary analysis, we are limited by the number of variables that can further explain issues affecting accessibility to services. Due to a limited number of explanatory variables, the possibility of residual confounding cannot be negated. There was also a non-uniformity in the sample size when assessing different questions related to the impact of disability, but it was handled using available case analysis techniques to generate estimates and retain more data compared to listwise deletion. Lastly, some terms used in the manuscript may not be inclusive

or even perceived as offensive by some readers but are coherent with the original survey report to prevent confusion in case some readers want to refer to the original report.

A few policy implications and recommendations emerged from the study. Given the increasing prevalence of disability and the concurrent escalating proportion of the geriatric population, we need to work on improving the accessibility for PWDs. A large number of disabilities originating from birth calls for more robust ante-natal and neonatal screening protocols supported by adequate counselling and rehabilitation services. Our results depict that a high proportion of PWDs have a caretaker who is available. Previous studies have suggested that empowering the caretakers can help improve the quality of life of PWDs. At the same time, there is an added burden on caregivers that should considered. empathetically Despite many schemes touched upon in the manuscript extended by the government to enhance the social inclusion of PWDs, there is a high unmet need that calls for more health advocacy around this issue.

To conclude, while most of the previous research has predominantly emphasised individual heterogeneity among PWDs, our study suggests that a large proportion of PWDs experience disparities in accessing disability support and rehabilitation services. There is an urgent need for concerted efforts to minimise such experiences, enhance the well-being and participation of PWDs, and empower them to contribute to society with their true potential. This will contribute to realising our national goals and stand towards our global commitment to the 2030 Agenda for Sustainable Development, which recognises the promotion of the rights, perspectives and well-being of PWDs as a pre-requisite while envisaging a more sustainable and inclusive world.

Declarations

- **Acknowledgements:** Nil
- **Competing interests:** None

- **Ethics statement:** The ethical approvals were not deemed necessary since it was secondary data analysis. No patient-level data were used in this paper. However, the original survey was conducted by the Ministry of Statistics and Programme Implementation (MoSPI), which is mandated to act as the nodal agency for the integrated development of the statistical systems in India. The Ministry, as part of its comprehensive decision-making process on various matters, has formulated a Code of Ethics for Members of the various Committees constituted by MoSPI or by the Organizations, Institutions, bodies, etc., funded by it that follow the principles of ethics and set out certain standards of conduct for the members of the Committees in order to protect the confidentiality of the data/information acquired by them by virtue of their membership in such Committees.
- **Patient and Public Involvement**: None
- **Funding:** No funding was involved at any stage of this study.
- **Data availability**: Data (Reference ID: DDI-IND-MOSPI-NSSO-76Rnd-Sch26.0-July2018 December 2018) is freely available on the website of the Ministry of Statistics and Programme Implementation (GOI) MOSPI's https://microdata.gov.in/nada43/index.php/catalog/154/overview, and can be accessed as per standard protocols.
- **Ethics approval**: Not applicable
- **Authors' contribution**: MM, BB, and MA conceptualised the study, MV and AKJ collected data, drafted the manuscript, and reviewed it. VE, MV, and AKJ did the analysis and drafted the final version; MA and RK critically reviewed the manuscript from policy and feasibility points of view. All the authors read and approved the final version of the manuscript. MM is responsible for the overall content as guarantor.

References

1. United Nations. Convention on the Rights of Persons with Disabilities [Internet].

Human Rights Instruments. 2008 [cited 2024 Dec 16]. Available from: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities

2. World Health Organization. Global report on health equity for persons with disabilities [Internet]. 2023 [cited 2024 Dec 10]. Available from: https://www.knowledge-action-portal.com/en/content/global-report-health-equity-persons-disabilities

3. World Health Organization. World Report on Disability [Internet]. 2011 [cited 2022 Feb 9]. p. 1–27. Available from: www.who.int/about/licensing/copyright_form/en/index.html

4. Pattnaik S, Murmu J, Agrawal R, Rehman T, Kanungo S, Pati S. Prevalence, pattern and determinants of disabilities in India: Insights from NFHS-5 (2019–21). Front Public Heal. 2023;11:1036499.

5. Ministry of Statistics and Programme Implementation(GOI) - MOSPI. Elderly in India 2021 [Internet]. 2021 [cited 2024 Dec 16]. Available from: https://mospi.gov.in/sites/default/files/publication_reports/Elderly in India 2021.pdf

6. Paul K, Saha S. Burden of Disability in India (1881–2011). J Multidiscip Res Healthc. 2015 Oct 5;2(1):31–54.

7. Ministry of Statistics and Program Implementation Government of India. Persons with Disabilities in India-NSS 76th report [Internet]. NSS Report No 583 (76/26/1). 2018 [cited 2024 Dec 12]. p. 209. Available from: https://www.mospi.gov.in/sites/default/files/publication_reports/Report_583_Final_0.pdf

8. International Institute for Population Sciences. National Family Health Survey (NFHS-5) 2019-21 [Internet]. India Report. 2022 [cited 2024 Dec 16]. Available from: https://dhsprogram.com/pubs/pdf/FR375/FR375.pdf

9. Rashmi R, Mohanty SK. Socioeconomic and geographic variations of disabilities in India: evidence from the National Family Health Survey, 2019–21. Int J Health Geogr. 2024 Dec 1;23(1):1–16.

10. Chanda S, Sekher T V. Identification of Disability for Inclusive Development: Lessons from Disability Census of Kerala, India. SAGE Open. 2023;13(3).

11. Department of Economic and Social Affairs. Disability and Development Report 2018 [Internet]. United Nations. 2019 [cited 2024 Dec 16]. Available from: https://www.un.org/development/desa/disabilities/wp-content/uploads/sites/15/2019/07/disability-report-chapter2.pdf

12. Chavan BS. Relevance of qualitative research in disability. J Disabil Manag Rehabil. 2015;1(1):1–2.
13. United Nations- Division for Inclusive Social Development (DISD). Article 24 - Education [Internet]. Social Development Issues-Disability. [cited 2024 Dec 15]. Available from: https://social.desa.un.org/issues/disability/crpd/article-24-education
14. United Nations- Division for Inclusive Social Development (DISD). Article 27 – Work and employment [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-27-work-and-employment.html
15. United Nations- Division for Inclusive Social Development (DISD). Article 6 - Women with disabilities [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://social.desa.un.org/issues/disability/crpd/article-6-women-with-disabilities
16. United Nations- Division for Inclusive Social Development (DISD). Article 7 - Children with disabilities [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://social.desa.un.org/issues/disability/crpd/article-7-children-with-disabilities
17. United Nations- Division for Inclusive Social Development (DISD). Article 9 - Accessibility [Internet]. Disability. [cited 2024 Dec 10]. Available from: https://social.desa.un.org/issues/disability/crpd/article-9-accessibility
18. Sophie Mitra AP and BV. Disability and Poverty in Developing Countries: A Snapshot from the World Health Survey [Internet]. The World Bank - Social Protection and Lab. 2011 [cited 2024 Dec 17]. Available from: https://documents1.worldbank.org/curated/en/501871468326189306/pdf/625640NWP0110900PUBLIC00BOX361487B.pdf
19. United Nations. Transforming our world: the 2030 Agenda for Sustainable Development [Internet]. Department of Economic and Social Affairs Sustainable Development. 2015 [cited 2024 Dec 12]. Available from: https://sdgs.un.org/2030agenda
20. United Nations. International Human Rights Law [Internet]. Instruments & mechanisms. [cited 2024 Dec 10]. Available from: https://www.ohchr.org/en/instruments-and-mechanisms/international-human-rights-law
21. World Bank Group. Disability Inclusion [Internet]. Understanding Poverty. 2023 [cited

2024 Dec 12]. Available from: https://www.worldbank.org/en/topic/disability

22. Saran A, Hunt X, White H, Kuper H. Protocol: Effectiveness of interventions for improving social inclusion outcomes for people with disabilities in low- and middle-income countries: A systematic review. Campbell Syst Rev. 2021 Sep 29;17(3):e1191.

23. Centers for Disease Control and Prevention. Disability and Health Disability Barriers [Internet]. Disability Inclusion. [cited 2024 Dec 17]. Available from: https://www.cdc.gov/ncbddd/disabilityandhealth/disability-barriers.html

24. Ministry of Statistics and Programme Implementation G of I. Note on sample design and estimation procedure of NSS 76th round. Ministry of Statistics and Programme Implementation, Government of India.

25. National Sample Survey Office, Ministry of Statistics and Program Implementation Government of India. Schedule 26: Survey of persons with disabilities [Internet]. Seventy-Sixth round: July, 2018 - December, 2018, 2018. 2018 [cited 2024 Dec 12]. Available from: https://www.mospi.gov.in/sites/default/files/NSS7612dws/NSS_76_sch_26.0.pdf

26. Okoro CA, Hollis ND, Cyrus AC, Griffin-Blake S. Prevalence of Disabilities and Health Care Access by Disability Status and Type Among Adults - United States, 2016. MMWR Morb Mortal Wkly Rep. 2018 Aug 17;67(32):882–7.

27. Ozawa MN, Hun Yeo Y. Race/ethnicity and socioeconomic class as correlates of disability in old age. J Gerontol Soc Work. 2008;51(3–4):337–65.

28. Kavanagh AM, Krnjacki L, Aitken Z, Lamontagne AD, Beer A, Baker E, et al. Intersections between disability, type of impairment, gender and socio-economic disadvantage in a nationally representative sample of 33,101 working-aged Australians. Disabil Health J. 2015 Apr 1;8(2):191–9.

29. Courtney-Long EA, Carroll DD, Zhang QC, Stevens AC, Griffin-Blake S, Armour BS, et al. Prevalence of Disability and Disability Type Among Adults--United States, 2013. MMWR Morb Mortal Wkly Rep. 2015 Jul 31;64(29):777–82.

[dataset] 30. Ministry of Statistics and Programme Implementation(GOI) - MOSPI. India - Survey of Persons with Disabilities NSS 76th Round : July 2018 - December 2018 - Overview [Internet]. Central Data Catalog. 2018 [cited 2024 Dec 10]. Available from: https://microdata.gov.in/nada43/index.php/catalog/154/overview

31. Stata. SVY estimation — Estimation commands for survey data [Internet]. [SEM] sem — Structural equation model estimation command. [cited 2024 Dec 17]. Available

from: https://www.stata.com/manuals13/svysvyestimation.pdf

32. Acharya K. Prenatal testing for intellectual disability: Misperceptions and reality with lessons from down syndrome. Dev Disabil Res Rev. 2011 Jan 1;17(1):27–31.

33. Bailey DB, Skinner D, Warren SF. Newborn Screening for Developmental Disabilities: Reframing Presumptive Benefit. Am J Public Health. 2005 Nov;95(11):1889.

34. National Health Authority, Government of India. Pradhan Mantri Jan Arogya Yojana (PM-JAY) [Internet]. About PM-JAY. 2019 [cited 2024 Dec 10]. Available from: https://nha.gov.in/PM-JAY

35. Ministry of Health and Family Welfare. Government of India. RBSK-Rashtriya Bal Swasthya Karyakram [Internet]. Schemes. 2024 [cited 2024 Dec 10]. Available from: https://rbsk.mohfw.gov.in/RBSK/

36. Department of Empowerment of Persons with Disabilities (DEPwD). Assistance to Persons with Disabilities for Purchase/Fitting of Aids /Appliances (ADIP) [Internet]. Scheme. [cited 2024 Dec 17]. Available from: https://depwd.gov.in/adip/

37. Department of Empowerment of Persons with Disabilities (DEPwD), Government of India. Deendayal Divyangjan Rehabilitation Scheme (DDRS) [Internet]. Schemes. 2023 [cited 2024 Dec 10]. Available from: https://depwd.gov.in/ddrs/

38. Hayes AM, Bulat J. Disabilities Inclusive Education Systems and Policies Guide for Low- and Middle-Income Countries. RTI Press Publication. Research Triangle Park, NC: RTI Press; 2017 Jul.

39. Dhole RS, Gaur KA, More NS, Popalwar H, Lokhande V. Study of locomotor disability due to various types of Trauma. Natl J Med Res. 2015;5(3):194–8.

40. Musselwhite CBA, Avineri E, Susilo YO, Bhattachary D. Public attitudes towards motorcyclists' safety: A qualitative study from the United Kingdom. Accid Anal Prev. 2012 Nov;49:105–13.

41. World Bank Group. Traffic crash injuries and disabilities: The burden on Indian society [Internet]. Policy Document. 2021 [cited 2024 Dec 17]. Available from: https://www.worldbank.org/en/country/india/publication/traffic-crash-injuries-and-disabilities-the-burden-on-indian-society

42. Cole EOB, Christie SA, Oke R, Motwani G, Dickson D, Chendjou W, et al. Too serious to ignore: The epidemiologic and economic burden of home injuries in the Southwest Region of Cameroon—A community-based study. Bourgeois D, editor. PLoS One. 2022 Sep 22;17(9):e0274686.

43. Rehman T, Sulgante S, Sekhar S. Prevalence and pattern of domestic accidents in the field practice area of Jawaharlal Institute of Urban Health Centre, Puducherry: a cross-sectional analytical study. J Inj Violence Res. 2020;12(1).
44. Department of Empowerment of Persons with Disabilities. The Rights of persons with disabilities act 2016 [Internet]. Policy Document. 2016 [cited 2024 Dec 11]. Available from: https://legislative.gov.in/sites/default/files/A2016-49_1.pdf
45. Bureau of Indian Standards. National building code of India 2016 (NBC 2016) [Internet]. SP 7 : 2016. 2016 [cited 2024 Dec 21]. Available from: https://www.bis.gov.in/standards/technical-department/national-building-code/
46. Centre for Civil Society. Right To Education [Internet]. [cited 2024 Dec 10]. Available from: https://righttoeducation.in/know-your-rte/about
47. Ministry of Education, Government of India. Samagra Shiksha [Internet]. 2021 [cited 2024 Dec 17]. Available from: https://samagra.education.gov.in/about.html
48. The Ministry of Human Resource Development; Government of India. National Education Policy, 2020 [Internet]. 2020 [cited 2024 Dec 17]. Available from: https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
49. Qiu N, Jiang Y, Sun Z, Du M. The impact of disability-related deprivation on employment opportunity at the neighborhood level: does family socioeconomic status matter? Front Public Heal. 2023 Aug 9;11:1232829.
50. Bonaccio S, Connelly CE, Gellatly IR, Jetha A, Martin Ginis KA. The Participation of People with Disabilities in the Workplace Across the Employment Cycle: Employer Concerns and Research Evidence. J Bus Psychol. 2020 Apr 1;35(2):135–58.
51. Babik I, Gardner ES. Factors Affecting the Perception of Disability: A Developmental Perspective. Front Psychol. 2021 Jun 21;12:702166.
52. Department of Empowerment of Persons with Disabilities (DEPwD). National divyangjan finance and development corporation-India [Internet]. Organizations Under DEPwD. 2024 [cited 2024 Dec 10]. Available from: https://depwd.gov.in/national-handicapped-finance-and-development-corporation/
53. Department of Empowerment of Persons with Disabilities (DEPwD), Government of India. Scheme for Implementation of the Rights of Persons with Disabilities Act, 2016 (SIPDA) [Internet]. Schemes. 2016 [cited 2024 Dec 12]. Available from: https://depwd.gov.in/sipda/
54. Ministry of Education, Government of India. Inclusive Education of the Disabled at Secondary Stage [Internet]. About MoE. 2016 [cited 2024 Dec 17]. Available from:

1 https://www.education.gov.in/iedss

Tables

Table 1: Prevalence of different types of disabilities across different socio-demographic characteristics, NSS, 76th round, India (n=576,796)

Background characteristics	Locomotor N (%)	Vision N (%)	Hearing N (%)	Speech N (%)	Mental Retardation N (%)	Mental Illness N (%)	Others N (%)	Any one disability N (%)
	61981 (1.36)	11977 (0.23)	15294 (0.30)	12661 (0.23)	8564 (0.16)	6751 (0.16)	2121 (0.05)	107,125 (2.20)
Age Group (completed years)								
up to 5	1494 (2.2)	182 (1.5)	311 (2)	907 (7.3)	445 (5.3)	41 (0.5)	482 (5.5)	2839 (2.5)
`6-17	7290 (10.8)	1210 (9.2)	1977 (12.6)	4515 (35.8)	3492 (41.2)	1060 (15.4)	1491 (21.5)	16695 (14.4)
18-35	11546 (18)	1386 (10.7)	2036 (13.3)	3273 (26.4)	2796 (33)	1915 (27.6)	1371 (19.8)	20673 (18.8)
36-49	11434 (18.1)	1557 (12.3)	2118 (13)	1812 (13.8)	1113 (12.4)	1646 (25)	1078 (14.8)	18665 (17.2)
50-65	16627 (27.9)	3609 (31.1)	3843 (25.1)	1495 (11.4)	561 (6.5)	1409 (21.3)	1445 (21.9)	26420 (25.7)
65+	13590 (23)	4033 (35.2)	5009 (34)	659 (5.3)	157 (1.6)	680 (10.1)	1154 (16.6)	21833 (21.4)
Sex								
Male	36862 (58.7)	6014 (50.2)	7993 (52)	7554 (60.4)	5202 (61.7)	3856 (56.8)	1264 (58.9)	61707 (57.3)
Female	25110 (41.3)	5958 (49.8)	7296 (48)	5106 (39.6)	3359 (38.3)	2893 (43.2)	1355 (41.1)	45396 (42.7)
Marital Status								
Never Married	16912 (24.7)	2719 (20.8)	3987 (24.2)	8708 (67.8)	7450 (86.9)	3281 (46.1)	1314 (40.4)	36813 (31.4)
Ever Married	33257 (55.3)	5541 (46.9)	7094 (47.5)	3086 (25.3)	791 (9.3)	2381 (35.8)	1502 (47.2)	50108 (48.8)
Widowed	11293 (19)	3616 (31.5)	4024 (27.1)	690 (5.4)	190 (2.1)	775 (12.5)	366 (11.1)	18933 (18.5)
divorced/separated	519 (1)	101 (0.8)	189 (1.1)	177 (1.4)	133 (1.8)	314 (5.5)	39 (1.2)	1271 (1.3)
Area of residence								
Rural	42222 (71.6)	8809 (76.3)	11121 (74.9)	9164 (72.9)	5974 (69.9)	4772 (73.1)	2055 (62.4)	75091 (72.8)
Urban	19759 (28.4)	3168 (23.7)	4173 (25.1)	3497 (27.1)	2590 (30.1)	1979 (26.9)	1066 (37.6)	32034 (27.2)
Educational attainment								
Non-literate	26376 (44.5)	7160 (62.6)	8365 (57.3)	7119 (56.9)	5846 (69.3)	3285 (49.6)	1608 (34.1)	50848 (48.9)

Literate but not formal	15002 (23.2)	2483 (19.4)	3700 (22.9)	3428 (26.7)	1858 (21)	1629 (23.3)	959 (29)	26145 (23.3)
Upto primary	16885 (26.5)	1987 (15.5)	2782 (16.9)	1908 (14.9)	808 (9.1)	1623 (24.1)	926 (28.7)	25210 (23.1)
Upto secondary	3718 (5.8)	347 (2.6)	447 (2.9)	206 (1.5)	52 (0.6)	214 (3.1)	538 (8.2)	4922 (4.6)
Preferred Religion								
Hindu	49548 (81.9)	9479 (82.9)	12090 (82.6)	9658 (78.7)	6540 (78.7)	5063 (74.7)	2444 (80.8)	84742 (81.5)
Islam	8375 (12.5)	1601 (12.5)	1927 (11.7)	2021 (15.6)	1366 (15.9)	1167 (18.4)	382 (12.6)	14658 (12.9)
Others	4058 (5.6)	897 (4.6)	1277 (5.7)	982 (5.7)	658 (5.4)	521 (6.9)	175 (6.5)	7725 (5.5)
Social Group								
Scheduled Tribe	6049 (8.3)	1491 (9.1)	1923 (9.5)	1478 (9.4)	822 (7.2)	670 (7.8)	372 (12.3)	11729 (8.7)
Scheduled Caste	12240 (20.4)	2407 (21.3)	2805 (19.4)	2467 (20.5)	1602 (19.2)	1269 (19.9)	574 (17.8)	20925 (20.4)
Other Backward Classes	26861 (44.7)	5205 (46)	6583 (45.5)	5482 (44.7)	3806 (45.8)	2915 (45.7)	1367 (40.2)	46223 (44.9)
General	16831 (26.6)	2874 (23.6)	3983 (25.6)	3234 (25.4)	2334 (27.8)	1897 (26.6)	928 (29.7)	28248 (26)
Wealth Index								
Poorer	17681 (30.2)	3919 (35.1)	4933 (34.7)	3552 (30.1)	2025 (25.3)	1932 (31)	823 (25.8)	31259 (31)
Poor	12553 (20.5)	2474 (20.8)	3005 (19.4)	2746 (21.4)	1773 (20.9)	1364 (20.5)	544 (16.2)	21959 (20.7)
Middle	11468 (18.2)	2271 (18.5)	2730 (17.4)	2434 (18.5)	1751 (20)	1302 (18.1)	600 (17.3)	20058 (18.3)
Richer	10440 (16)	1864 (14.4)	2480 (15.4)	2080 (15.8)	1611 (18.3)	1161 (16.8)	723 (19.9)	17946 (15.9)
Richest	9839 (15.1)	1449 (11.1)	2146 (13)	1849 (14.2)	1404 (15.5)	992 (13.6)	631 (20.7)	15903 (14.1)
Regions of India								
Northern	8787 (14.4)	1478 (13.1)	1692 (11.7)	1347 (11.1)	1144 (13.5)	931 (14.2)	216 (7.6)	14305 (13.8)
Southern	13448 (23)	2814 (24.7)	4013 (27.3)	2958 (24.8)	2141 (25.6)	1447 (21.3)	774 (25.5)	23699 (23.3)
Western	8387 (12.7)	1286 (10.1)	1740 (11.1)	1423 (11.3)	1293 (15.2)	706 (10.6)	540 (17.7)	13708 (12.3)
Eastern	12790 (20.3)	2538 (21.9)	3238 (22.5)	3248 (27.1)	1762 (21.3)	1672 (26.3)	934 (30.4)	23061 (21.8)
North-Eastern	3858 (2.1)	1335 (4.5)	1620 (3.7)	1308 (3.4)	594 (2)	582 (2.7)	382 (2.4)	8839 (2.8)
Central	14711 (27.4)	2526 (25.6)	2991 (23.8)	2377 (22.4)	1630 (22.6)	1413 (24.8)	515 (16.3)	23513 (26)

1

Table 2: Percentage distribution of different disability types and their associated information, NSS 76th round, India.

	Locomotor	Visual	Hearing	Speech and language	Mental retardation/	Mental illness	Other types of disability	Any Disability
Total sample size	61980	1156	1281	2013	1217	523	768	61980
Causes of disability								
Disease	28673 (46.3)	454 (39.3)	484 (37.8)	1246 (61.9)	NA	NA	NA	NA
Other than disease due to burn	723 (1.2)	88 (0.7)	1 (0.1)	8 (0.4)	NA	NA	NA	NA
Injuries other than burn	13876 (22.4)	156 (13.5)	158 (12.4)	105 (5.2)	NA	NA	NA	NA
Other causes	18702 (30.2)	538 (46.5)	637 (49.7)	654 (32.5)	NA	NA	NA	NA
Disability from Birth								
Yes	11,488 (18.5)	91 (7.9)	198 (15.4)	1041 (51.7)	955 (78.5)	113 (21.4)	119 (15.5)	11,488 (18.5)
No	50,052 (80.8)	1062 (91.9)	1081 (84.4)	964 (47.9)	258 (21.2)	407 (78.6)	645 (84)	50,052 (80.8)
Not Known	440 (0.7)	3 (0.2)	2 (0.2)	8 (0.4)	4 (0.3)	3 (1)	4 (0.4)	440 (0.7)
Disability commenced in last 365 days								
sample size	48741	1034.2	1052.4	938.7	251.6	494.2	628.6	48741
Yes	2987 (6.1)	72 (7)	65 (6.2)	100 (10.6)	11 (4.4)	46 (10.2)	48 (7.7)	2987 (6.1)
No	45754 (93.9)	961 (93)	987 (93.8)	839 (89.4)	240 (95.6)	358 (89.8)	580 (92.3)	45754 (93.9)
Place of occurrence of disability								
Sample size	14281	161	157	105	33	86	63	14281
Workplace	2308 (16.2)	13 (8.3)	30 (19.2)	11 (10.9)	2 (6.9)	9 (11.3)	11 (18.1)	2308 (16.2)
Road	5977 (41.9)	46 (28.5)	43 (27.5)	41 (38.7)	9 (25.9)	35 (40.8)	15 (23.8)	5977 (41.9)
Home	4693 (32.9)	93 (57.9)	73 (46.3)	45 (42.4)	19 (58.5)	33 (38.8)	31 (49.5)	4693 (32.9)
Other places	1302 (9.1)	9 (5.3)	11 (7)	8 (8)	3 (8.7)	8 (9.5)	5 (8.6)	1302 (9.1)

Treatment taken/undergoing treatment								
Sample size	61980	1156	1281	2013	1217	523	768	61980
yes: consulting doctor	35,923 (58)	566.6 (49)	617 (48.2)	1,080 (53.7)	710 (58.4)	26 (43)	330 (43)	35923 (58)
Otherwise	1565 (2.5)	22 (1.9)	34 (2.7)	42 (2.1)	36 (2.9)	2	6 (0.7)	1564.5 (2.5)
Yes: consulting doctor, plus undergoing treatment	17329 (28)	375 (32.4)	418 (32.7)	719 (35.7)	355 (29.2)	19 (7)	397 (51.7)	17329 (28)
Otherwise	860 (1.4)	34 (2.9)	21 (1.7)	20 (1)	4 (0.3)	1	8 (1)	860 (1.4)
Attending special school/special therapy	116 (0.2)	2.9 (0.3)	0 (0)	4 (0.2)	6 (0.5)		0 (0)	116 (0.2)
Cannot afford treatment	2040 (3.3)	75 (6.4)	73 (5.7)	72 (3.6)	55 (4.6)	1	8 (1)	2040 (3.3)
No treatment available for the disability	699 (1.1)	13 (1.1)	8 (0.6)	17 (0.8)	16 (1.3)	4 (0.8)	5 (0.7)	699 (1.1)
Not required	2717 (4.4)	60 (5.2)	97 (7.6)	47 (2.3)	26 (2.1)	1 (4	14 (1.8)	2717 (4.4)
Not known	732 (1.2)	8 (0.7)	12 (0.9)	13 (0.7)	9 (0.7)	1 (0.2)	1 (0.1)	732 (1.2)

Note: *Causes of disability were recorded for individuals with disabilities like locomotor, visual, hearing, and speech. Disability Commenced in the last 365 days was recorded for those individuals who did not have a disability from birth' but disability commenced during the last 365 days before the survey.*
Place of occurrence was recorded for individuals with disabilities who are experiencing disability post their birth and for whom the cause of disability was burn, injury or other than burn.

Table 3: Access to disability support and rehabilitation services by the people with disability as per the 76th round of the National Sample Survey (2018), India.

Living conditions of the people *(n=sample included in the analysis)*	**Weighted percentage**
Age at the onset of disability* (n= 48,727)	
0 to 4 years	17.2
5 to 14 years	9.0
15 to 59 years	45.9
60 years and above	28.0
Receipt of aid/help (n=61,712)	
Received aid/help from Government	20.8
Received aid/help from organisations other than government	4.1
Did not receive aid/help	75.1
Living arrangement(n=61,962)	
Living alone or with a spouse	57.0
Living with others	43.0
Arrangement of regular caregiver(n=61,980)	
Care-giver required but not available	0.1
Care-giver is not required	37.1
Care-giver is available	62.8
Access to public Transport (n=61,980)	
Yes	59.6
No	40.4
Accesses to public building (n=61,980)	
Yes	45.6
No	54.4
Difficulty faced accessing public building(n= 27,756)	
difficulty faced: due to stairs and non-availability of ramp, grooved tiles or lift	57.7
in opening doors	4.4
no seating arrangement: in the waiting area	1.6
at the point of receiving service	0.8
no special toilet seats	0.7
no sign for direction/ instruction/no public announcement system	0.3
no difficulty faced	27.6
others	7.0
Employed/working before onset of disability (For persons of age 15 years and above; n=55,819)	
Yes	40.3
No	59.7
Disability causing loss or change in job(n= 21,559)	
loss of work	60.7
change of work	18.3
no loss or change of work	21.3
Having Disability Certificate(n=61,980)	
Yes	30.4
No	69.6
Percentage of Disability as per Certificate (n=20,213)	
40- <60%	49.3
≥60-<80%	36.3
≥80%	12.8
none of these	1.6

*** For those who have not had a disability since birth.**

Table 4: Multivariable binary logistic regression analysis exploring the likelihood of living with any disability per the 76th round of the NSS, India.

	Unadjusted Odds ratio (95% C.I)	p-value	Adjusted Odds ratio (95% C.I)	p-value
Age Group (Completed years)				
Up to 5 years	**Reference value**		**Reference value**	
6 - 18 years	2.1(2-2.1)	<0.001	3.5(3.4-3.7)	<0.001
19-35 years	2.3(2.2-2.4)	<0.001	8.4(8-8.8)	<0.001
36-49 years	3.5(3.4-3.7)	<0.001	17.6(16.8-18.5)	<0.001
50-65 years	6.4(6.1-6.7)	<0.001	25.8(24.5-27.1)	<0.001
65+ years	17.5(16.7-18.2)	<0.001	58.4(55.4-61.5)	<0.001
Sex				
Male	**Reference value**		**Reference value**	
Female	0.7(0.7-0.7)	<0.001	0.6(0.6-0.6)	<0.001
Place of Residence				
Rural	**Reference value**		**Reference value**	
Urban	1.02(1.01-1.03)	0.03	1.3(1.2-1.3)	<0.001
Social Group				
Scheduled Tribe	**Reference value**		**Reference value**	
Scheduled Caste	1.1(1.1-1.1)	<0.001	1.1(1.1-1.2)	<0.001
Other Backward Classes	1.1(1-1.1)	<0.001	1.1(1.1-1.2)	<0.001
General	1.1(1.1-1.1)	<0.001	1.3(1.3-1.3)	<0.001
Educational attainment				
No education	**Reference value**		**Reference value**	
Upto Primary class	0.5(0.5-0.5)	<0.001	0.5(0.5-0.5)	<0.001
Upto Secondary Class	0.4(0.4-0.4)	<0.001	0.4(0.4-0.4)	<0.001
Graduate & Above	0.3(0.3-0.4)	<0.001	0.3(0.3-0.3)	<0.001
Preferred Religion				
Hindu	**Reference value**		**Reference value**	
Islam	0.8(0.8-0.9)	<0.001	0.9(0.9-0.9)	<0.001
Others	0.9(0.9-1)	<0.001	1(1-1.1)	0.019
Marital Status				
Never married	**Reference value**		**Reference value**	
Currently married	1.3(1.3-1.3)	<0.001	0.3(0.3-0.3)	<0.001
widowed	5.9(5.8-6.1)	<0.001	0.6(0.5-0.6)	<0.001
Divorced/separated	4.4(4.1-4.8)	<0.001	1.1(1-1.2)	0.011
Wealth Index				
Poorest	**Reference value**		**Reference value**	
Poor	0.6(0.6-0.6)	<0.001	0.7(0.7-0.7)	<0.001
Middle	0.6(0.5-0.6)	<0.001	0.6(0.6-0.6)	<0.001
Richer	0.5(0.5-0.5)	<0.001	0.5(0.5-0.6)	<0.001
Richest	0.4(0.4-0.4)	<0.001	0.5(0.5-0.5)	<0.001
Regions of India				
Northern	**Reference value**		**Reference value**	
Southern	1.42(1.39-1.46)	<0.001	1.1(1.1-1.2)	<0.001
Western	1.13(1.1-1.16)	<0.001	1(1-1.1)	0.065
Eastern	1.15(1.13-1.18)	<0.001	1(0.9-1)	0.001
North-eastern	1(0.97-1.03)	0.961	1(1-1)	0.361
Central	1.01(0.98-1.03)	0.653	0.9(0.8-0.9)	<0.001

Figure Legends

Figure 1: Geographical disparities in the difficulties faced by the people living with disabilities as per the 76th Round of the National Sample Survey, India

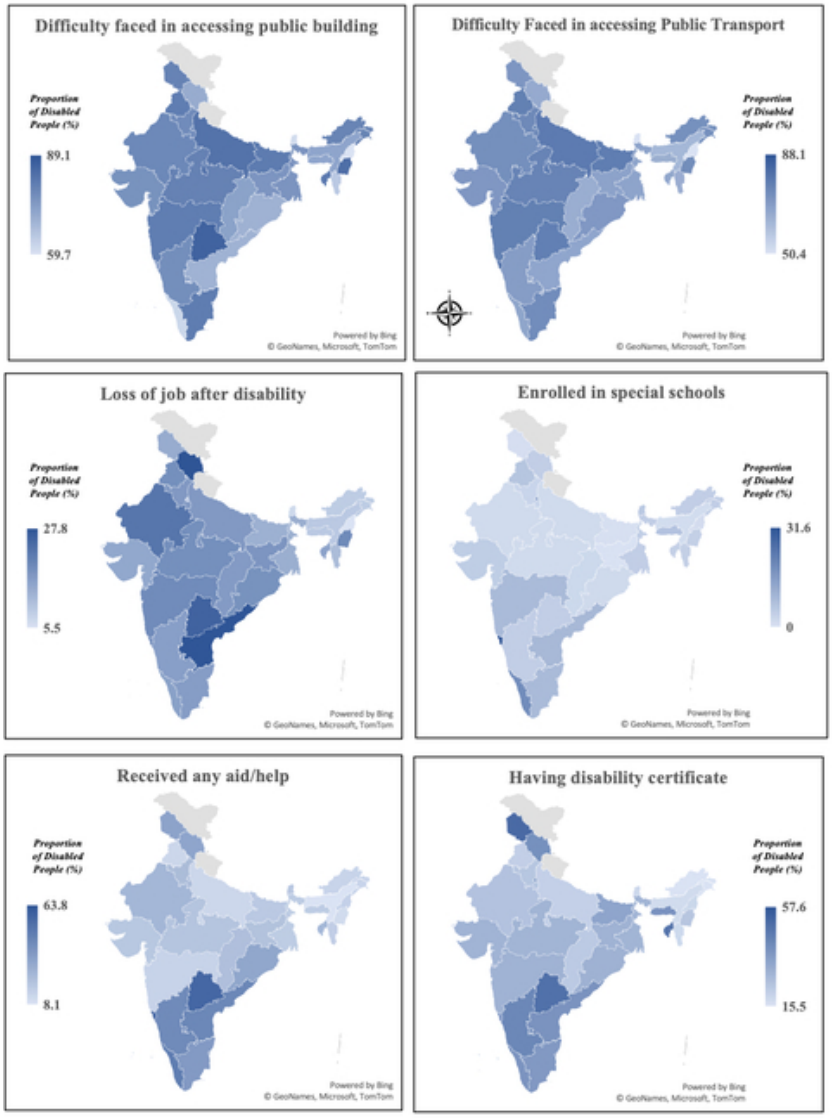

Figure 1: Geographical disparities in the difficulties faced by the people living with disabilities as per the 76th Round of the National Sample Survey, India

40x58mm (300 x 300 DPI)

Supplementary file

Supplementary Table 1: Living conditions of the people living with different types of disabilities, as per the 76th report of the National Sample Survey Organization India (2017-18)

Living conditions of the people *(n=sample included in the analysis)*	**Locomotor**	**Visual**	**Hearing**	**Speech**	**Mental retardness**	**Mental illness**	**Others**
	Weighted %	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*
Age at the onset of disability							
0 to 4 years	17.2	3.0	4.2	21.0	51.0	10.1	9.9
5 to 14 years	9.0	2.3	3.0	9.6	17.3	12.3	7.0
15 to 59 years	45.9	22.1	17.4	40.9	24.0	40.5	49.2
60 years and above	28.0	72.6	75.4	28.4	7.7	37.1	33.8
Total number of participants	48,737	1,035	1,056	946	259	395	632
Receipt of aid/help							
Received aid/help from Government	20.8	22.2	20.7	29.2	37.2	25.5	20.0
Received aid/help from organisations other than government	4.1	10.2	8.6	4.0	3.3	6.0	2.7
Did not receive aid/help	75.1	67.7	70.8	66.8	59.5	68.5	77.3
Total number of participants	61,712	1,145	1,272	2,010	1,215	521	766
Living arrangement							
Living alone or with a spouse	57.0	43.5	41.6	26.8	4.1	35.4	55.8
Living with others	43.0	56.5	58.4	73.2	95.9	64.6	44.2
Total number of participants	61,962	1,156	1,281	2,013	1,217	523	768
Arrangement of regular caregiver							
Care-giver required but not available	0.1	0.0	0.0	0.1	0.9	0.0	0.3
Care-giver is not required	37.1	11.5	15.7	8.8	5.6	10.8	13.4
Care-giver is available	62.8	88.6	84.2	91.1	93.6	89.2	86.3
Total number of participants	61,980	1,156	1,281	2,013	1,217	523	768
Accesses to public building							
Yes	45.6	25.4	29.4	27.2	26.0	26.0	29.9

No	54.4	74.6	70.6	72.8	74.0	74.0	70.1
Total number of participants	61,980	1156	1281	2013	523	523	768
Difficulty faced accessing public building							
difficulty faced: due to stairs and non-availability of ramp, grooved tiles or lift	57.7	63.2	60.7	55.4	49.7	46.7	52.2
in opening doors	4.4	1.6	1.3	2.8	1.0	7.6	2.8
no seating arrangement: in the waiting area	1.6	3.0	2.9	0.7	1.4	1.7	2.1
at the point of receiving service	0.8	5.7	2.1	0.9	0.8	1.3	0.3
no special toilet seats	0.7	0.4	0.0	0.7	0.0	0.8	0.9
no sign for direction/ instruction/no public announcement system	0.3	2.2	2.0	2.2	2.1	1.3	0.0
no difficulty faced	27.6	8.4	17.0	15.2	17.7	24.2	25.8
others	7.0	15.4	13.3	22.1	27.4	16.3	15.8
Total number of participants	27,756	330	433	537	330	134	226
Working before onset (For >15 years and above)							
Yes	40.3	44.4	35.9	32.7	5.6	38.5	53.6
No	59.7	55.6	64.1	67.3	94.4	61.5	46.4
Total number of participants	55,819	1093	1171	1353	690	448	667
Disability causing loss or change in job							
loss of work	60.7	75.3	72.8	86.5	80.9	84.2	82.8
change of work	18.3	11.0	5.7	5.2	2.7	8.7	5.9
no loss or change of work	21.3	13.7	21.5	8.3	16.4	7.1	11.4
Total number of participants	21,559	465	404	425	37	165	343
Having Disability Certificate							
Yes	30.4	14.0	16.1	41.7	59.8	29.9	24.9
No	69.6	86.0	83.9	58.3	40.2	70.1	75.1
Total number of participants	61,980	1156	1281	2013	1217	523	768
Percentage of Disability as per Certificate							
40% or more but less than 60%	49.3	23.2	22.5	16.9	14.6	27.7	29.7
60% or more but less than 80%	36.3	37.6	34.2	32.3	35.5	43.0	37.3
80% or more	12.8	38.7	42.2	50.3	49.1	29.0	31.7
none of these	1.6	0.5	1.1	0.5	0.8	0.4	1.3

Total number of participants	20,213.00	174	221	901	780	168	205

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India.

Covariates	Locomotor disability				Speech and language disability				Mental illness disability			
	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age (Years)												
<18 (Ref)	1		1		1		1		1		1	
18-35	2.39(2.27-2.53)	<0.001	4.08(3.84-4.33)	<0.001	1.07(0.99-1.15)	0.07	8.85(8.16-9.6)	<0.001	14(10.28-19.08)	<0.001	65.34(47.81-89.31)	<0.001
35-49	3.91(3.7-4.13)	<0.001	7.89(7.4-8.41)	<0.001	0.93(0.86-1.01)	0.089	9.87(8.98-10.84)	<0.001	19.06(13.98-25.99)	<0.001	156.16(113.91-214.1)	<0.001
50-59	6.83(6.47-7.21)	<0.001	12.36(11.6-13.17)	<0.001	0.85(0.78-0.92)	<0.001	7.21(6.52-7.97)	<0.001	18.05(13.23-24.62)	<0.001	135.71(98.75-186.49)	<0.001
65+	14.92(14.12-15.77)	<0.001	23.27(21.79-24.85)	<0.001	0.82(0.74-0.91)	<0.001	6.22(5.49-7.03)	<0.001	19.12(13.94-26.21)	<0.001	126.17(91.08-174.77)	<0.001
Gender												
Male (Ref)	1		1		1		1		1		1	
female	0.69(0.68-0.7)	<0.001	0.58(0.57-0.59)	<0.001	0.71(0.68-0.73)	<0.001	0.69(0.67-0.72)	<0.001	0.79(0.75-0.83)	<0.001	0.75(0.71-0.79)	<0.001
Place of residence												
Rural (Ref)	1		1		1		1		1		1	
Urban	1.09(1.07-1.11)	<0.001	1.27(1.24-1.3)	<0.001	0.88(0.85-0.92)	<0.001	1.14(1.09-1.19)	<0.001	0.96(0.91-1.01)	0.12	1.09(1.03-1.16)	0.003
Social groups												
Scheduled tribe (Ref)	1		1		1		1		1		1	
Scheduled caste	1.27(1.23-1.31)	<0.001	1.17(1.13-1.21)	<0.001	1.02(0.96-1.09)	0.493	1.12(1.04-1.2)	0.002	1.16(1.06-1.28)	0.002	1.22(1.11-1.35)	<0.001
Other backward class	1.19(1.16-1.23)	<0.001	1.14(1.1-1.17)	<0.001	0.98(0.92-1.04)	0.482	1.22(1.15-1.31)	<0.001	1.15(1.06-1.25)	0.001	1.31(1.2-1.44)	<0.001
Others	1.26(1.22-1.3)	<0.001	1.21(1.17-1.25)	<0.001	0.97(0.91-1.03)	0.32	1.48(1.38-1.59)	<0.001	1.26(1.15-1.37)	<0.001	1.55(1.4-1.71)	<0.001
Education level												
Illiterate (Ref)	1		1		1		1		1		1	

Primary	0.58(0.56-0.59)	<0.001	0.84(0.82-0.86)	<0.001	0.51(0.49-0.53)	<0.001	0.24(0.23-0.25)	<0.001	0.53(0.5-0.56)	<0.001	0.52(0.49-0.56)	<0.001
Secondary	0.57(0.56-0.58)	<0.001	0.76(0.74-0.78)	<0.001	0.25(0.24-0.26)	<0.001	0.11(0.11-0.12)	<0.001	0.47(0.44-0.49)	<0.001	0.34(0.32-0.36)	<0.001
and Higher Education	0.57(0.55-0.6)	<0.001	0.66(0.63-0.68)	<0.001	0.12(0.11-0.14)	<0.001	0.05(0.04-0.06)	<0.001	0.28(0.24-0.32)	<0.001	0.15(0.13-0.17)	<0.001
Religion												
Hindu (Ref)	1		1		1		1		1		1	
Muslim	0.84(0.82-0.86)	<0.001	0.96(0.94-0.99)	0.004	1.05(1-1.11)	0.031	0.83(0.79-0.87)	0	1.16(1.09-1.24)	<0.001	1.08(1.01-1.16)	0.02
Others	0.84(0.82-0.87)	<0.001	0.99(0.95-1.03)	0.607	1.07(1-1.14)	0.057	1.13(1.05-1.21)	0.001	1.08(0.99-1.18)	0.101	1.17(1.06-1.29)	0.003
Marital status												
Un-married (Ref)	1		1		1		1		1		1	
Currently married	1.89(1.86-1.93)	<0.001	0.52(0.51-0.54)	<0.001	0.31(0.3-0.33)	<0.001	0.15(0.14-0.16)	0	0.66(0.62-0.69)	<0.001	0.13(0.12-0.14)	<0.001
Widowed	5.99(5.83-6.15)	<0.001	0.93(0.89-0.97)	0.001	0.53(0.49-0.57)	<0.001	0.16(0.15-0.18)	0	1.6(1.48-1.74)	<0.001	0.22(0.19-0.24)	<0.001
Divorced/separated	2.98(2.7-3.28)	<0.001	0.92(0.83-1.01)	0.091	1.79(1.54-2.09)	<0.001	0.66(0.56-0.77)	0	9.06(8.02-10.23)	<0.001	1.76(1.54-2.02)	<0.001
Wealth												
Poorest (Ref)	1		1		1		1		1		1	
Poor	0.67(0.66-0.69)	<0.001	0.78(0.76-0.8)	<0.001	0.77(0.73-0.81)	<0.001	0.81(0.77-0.85)	0	0.7(0.65-0.75)	<0.001	0.83(0.77-0.89)	<0.001
Middle	0.6(0.59-0.62)	<0.001	0.67(0.66-0.69)	<0.001	0.67(0.64-0.71)	<0.001	0.74(0.7-0.78)	0	0.66(0.62-0.71)	<0.001	0.8(0.74-0.86)	<0.001
Richer	0.55(0.54-0.56)	<0.001	0.58(0.57-0.6)	<0.001	0.58(0.55-0.61)	<0.001	0.69(0.65-0.73)	0	0.6(0.55-0.64)	<0.001	0.75(0.69-0.81)	<0.001
Richest	0.52(0.51-0.54)	<0.001	0.52(0.5-0.53)	<0.001	0.52(0.49-0.55)	<0.001	0.71(0.66-0.75)	0	0.52(0.48-0.56)	<0.001	0.7(0.64-0.77)	<0.001
Region												
Northern (Ref)	1		1		1		1		1		1	
Southern	1.26(1.22-1.3)	<0.001	0.97(0.94-1)	0.073	1.78(1.67-1.9)	<0.001	1.84(1.72-1.97)	<0.001	1.25(1.15-1.36)	<0.001	1.05(0.96-1.15)	0.257
Western	1.12(1.08-1.15)	<0.001	0.99(0.95-1.02)	0.429	1.23(1.14-1.32)	<0.001	1.29(1.19-1.39)	<0.001	0.88(0.79-0.97)	0.008	0.84(0.76-0.93)	0.001
Eastern	1.02(0.99-1.05)	0.288	0.86(0.84-0.89)	<0.001	1.7(1.59-1.81)	<0.001	1.42(1.33-1.52)	<0.001	1.25(1.16-1.36)	<0.001	1.12(1.03-1.22)	0.008
North-eastern	0.69(0.66-0.71)	<0.001	0.66(0.63-0.69)	<0.001	1.59(1.47-1.71)	<0.001	1.64(1.51-1.78)	<0.001	1.01(0.91-1.12)	0.833	0.95(0.85-1.06)	0.388
Central	1.03(1-1.05)	0.075	0.94(0.91-0.97)	<0.001	1.08(1.01-1.15)	0.026	0.85(0.79-0.92)	<0.001	0.93(0.85-1.01)	0.073	0.85(0.78-0.93)	<0.001

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India (Cont..)

	Hearing disability				Visual disability				Mental retardness.			
	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age (Years)												
<18 (Ref)	1		1		1		1		1		1	
18-35	1.95(1.73-2.2)	<0.001	5.16(4.55-5.85)	0	10.37(1.94-2.65)	<0.001	6.57(5.59-7.72)	<0.001	1.88(1.7-2.08)	<0.001	33.33(30-37.04)	<0.001
35-49	3.23(2.87-3.64)	<0.001	9.31(8.14-10.65)	0	17.8(3.47-4.72)	<0.001	13.95(11.8-16.5)	<0.001	1.17(1.05-1.31)	0.005	34.13(30.24-38.51)	<0.001
50-59	6.63(5.91-7.45)	<0.001	15.34(13.43-17.52)	0	31.04(9.17-12.36)	<0.001	29.2(24.7-34.48)	<0.001	0.65(0.57-0.74)	<0.001	18.86(16.39-21.71)	<0.001
65+	20.67(18.42-23.2)	<0.001	38.97(34.06-44.58)	0	43.68(23.92-32.23)	1	61.23(51.7-72.57)	<0.001	0.4(0.33-0.48)	<0.001	11.39(9.26-14.01)	<0.001
Gender												
Male (Ref)	1		1		1		1		1		1	
female	0.96(0.93-0.99)	0.012	0.73(0.7-0.75)	<0.001	1.04(1.01-1.08)	0.022	0.76(0.73-0.79)	<0.001	0.68(0.65-0.71)	<0.001	0.76(0.73-0.8)	<0.001
Place of residence												
Rural (Ref)	1		1		1		1		1		1	
Urban	0.86(0.83-0.9)	<0.001	1.07(1.03-1.12)	0.001	0.83(0.8-0.86)	<0.001	1.08(1.04-1.13)	0.001	1(0.96-1.05)	0.894	1.18(1.11-1.24)	<0.001
Social groups												
Scheduled tribe (Ref)	1		1		1		1		1		1	
Scheduled caste	0.89(0.84-0.94)	<0.001	0.95(0.89-1.01)	0.084	0.99(0.93-1.06)	0.734	1.04(0.97-1.12)	0.228	1.2(1.1-1.3)	<0.001	1.24(1.13-1.36)	<0.001
Other backward class	0.9(0.86-0.95)	<0.001	1.02(0.96-1.08)	0.544	0.92(0.87-0.98)	0.005	1.03(0.97-1.1)	0.353	1.23(1.14-1.32)	<0.001	1.49(1.37-1.63)	<0.001
Others	0.92(0.87-0.97)	0.002	1.14(1.07-1.21)	<0.001	0.85(0.8-0.91)	<0.001	1.02(0.95-1.09)	0.576	1.26(1.17-1.37)	<0.001	1.91(1.74-2.09)	<0.001
Education level												
Illiterate (Ref)	1		1		1		1		1		1	
Primary	0.47(0.45-0.48)	<0.001	0.65(0.62-0.68)	<0.001	0.36(0.35-0.38)	<0.001	0.57(0.55-0.6)	<0.001	0.34(0.32-0.35)	<0.001	0.1(0.1-0.11)	<0.001
Secondary	0.31(0.29-0.32)	<0.001	0.44(0.42-0.46)	<0.001	0.26(0.24-0.27)	<0.001	0.43(0.4-0.45)	<0.001	0.13(0.12-0.14)	<0.001	0.03(0.03-0.04)	<0.001

and Higher Education	0.22(0.2-0.25)	<0.001	0.29(0.27-0.33)	<0.001	0.2(0.18-0.23)	<0.001	0.33(0.29-0.37)	<0.001	0.04(0.03-0.05)	<0.001	0.01(0.01-0.01)	<0.001
Religion												
Hindu (Ref)	1		1		1		1		1		1	
Muslim	0.8(0.76-0.84)	<0.001	0.88(0.84-0.93)	<0.001	0.85(0.8-0.89)	<0.001	1(0.94-1.06)	0.995	1.05(0.99-1.12)	0.089	0.71(0.67-0.76)	<0.001
Others	1.11(1.05-1.18)	<0.001	1.08(1.01-1.16)	0.024	0.99(0.92-1.06)	0.802	0.94(0.87-1.02)	0.112	1.05(0.97-1.14)	0.195	1.27(1.15-1.39)	<0.001
Marital status												
Un-married (Ref)	1		1		1		1		1		1	
Currently married	1.63(1.57-1.7)	<0.001	0.42(0.39-0.45)	<0.001	1.87(1.78-1.96)	<0.001	0.36(0.33-0.39)	<0.001	0.09(0.09-0.1)	<0.001	0.03(0.03-0.03)	<0.001
Widowed	7.49(7.16-7.84)	<0.001	0.77(0.72-0.84)	<0.001	9.8(9.31-10.31)	<0.001	0.73(0.67-0.8)	<0.001	0.17(0.15-0.19)	<0.001	0.04(0.03-0.05)	<0.001
Divorced/separated	4.27(3.68-4.97)	<0.001	1.15(0.98-1.35)	0.096	3.26(2.67-3.99)	<0.001	0.67(0.54-0.83)	<0.001	1.56(1.31-1.85)	<0.001	0.36(0.3-0.44)	<0.001
Wealth												
Poorest (Ref)	1		1		1		1		1		1	
Poor	0.6(0.57-0.63)	<0.001	0.74(0.71-0.78)	<0.001	0.62(0.59-0.65)	<0.001	0.8(0.76-0.84)	<0.001	0.87(0.82-0.93)	<0.001	0.93(0.87-1)	0.054
Middle	0.54(0.51-0.56)	<0.001	0.67(0.64-0.7)	<0.001	0.56(0.54-0.59)	<0.001	0.73(0.69-0.77)	<0.001	0.85(0.8-0.91)	<0.001	0.92(0.86-0.99)	0.025
Richer	0.49(0.47-0.52)	<0.001	0.62(0.59-0.65)	<0.001	0.47(0.44-0.49)	<0.001	0.61(0.57-0.64)	<0.001	0.79(0.74-0.85)	<0.001	0.92(0.85-0.99)	0.028
Richest	0.43(0.41-0.45)	<0.001	0.57(0.54-0.6)	<0.001	0.37(0.35-0.39)	<0.001	0.5(0.47-0.54)	<0.001	0.7(0.65-0.75)	<0.001	0.91(0.84-0.99)	0.02
Region												
Northern (Ref)	1		1		1		1		1		1	
Southern	1.94(1.83-2.05)	<0.001	1.52(1.43-1.61)	<0.001	1.54(1.45-1.64)	<0.001	1.1(1.03-1.18)	0.006	1.51(1.4-1.62)	<0.001	1.7(1.57-1.84)	<0.001
Western	1.19(1.12-1.28)	<0.001	1.07(1-1.15)	0.053	1.01(0.93-1.08)	0.883	0.88(0.82-0.96)	0.002	1.31(1.21-1.42)	<0.001	1.49(1.37-1.63)	<0.001
Eastern	1.34(1.26-1.42)	<0.001	1.18(1.11-1.26)	<0.001	1.2(1.13-1.28)	<0.001	1(0.93-1.07)	0.981	1.07(1-1.16)	0.062	0.92(0.84-0.99)	0.037
North-eastern	1.57(1.46-1.68)	<0.001	1.58(1.47-1.7)	<0.001	1.47(1.37-1.59)	<0.001	1.52(1.41-1.65)	<0.001	0.84(0.76-0.93)	0.001	0.82(0.74-0.92)	0.001
Central	1.08(1.02-1.15)	0.01	1(0.94-1.06)	0.96	1.05(0.98-1.12)	0.182	0.91(0.85-0.97)	0.006	0.87(0.81-0.94)	<0.001	0.63(0.58-0.69)	<0.001

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India (Cont..)

	Other types of disabilities			
	Un-adjusted OR (95% CI)	**p-value**	**Adjusted OR (95% CI)**	**p-value**
Age (Years)				
<18 (Ref)	1		1	
18-35	0.98(0.83-1.16)	0.8	1.46(1.21-1.77)	<0.001
35-49	1.23(1.04-1.46)	0.018	2.37(1.91-2.93)	<0.001
50-59	1.84(1.56-2.17)	<0.001	3.51(2.84-4.34)	<0.001
65+	3.3(2.78-3.9)	<0.001	6.01(4.81-7.5)	<0.001
Gender				
Male (Ref)	1		1	
female	0.81(0.75-0.87)	<0.001	0.8(0.74-0.86)	<0.001
Place of residence				
Rural (Ref)	1		1	
Urban	1.2(1.12-1.29)	<0.001	1.21(1.11-1.31)	<0.001
Social groups				
Scheduled tribe (Ref)	1		1	
Scheduled caste	0.78(0.69-0.88)	<0.001	0.82(0.72-0.94)	0.004
Other backward class	0.68(0.61-0.76)	<0.001	0.71(0.63-0.81)	<0.001
Others	0.91(0.81-1.02)	0.098	0.89(0.78-1.01)	0.066
Education level				
Illiterate (Ref)	1		1	
Primary	0.84(0.76-0.91)	<0.001	0.88(0.8-0.98)	0.018
Secondary	0.79(0.72-0.86)	<0.001	0.89(0.81-0.99)	0.034

and Higher Education	0.93(0.81-1.07)	0.334	0.97(0.83-1.14)	0.713
Religion				
Hindu (Ref)	1		1	
Muslim	0.83(0.74-0.92)	<0.001	0.88(0.79-0.98)	0.021
Others	1.18(1.04-1.34)	0.01	1.09(0.94-1.26)	0.239
Marital status				
Un-married (Ref)	1		1	
Currently married	0.97(0.9-1.04)	0.409	0.48(0.42-0.54)	<0.001
Widowed	1.89(1.68-2.12)	<0.001	0.55(0.46-0.66)	<0.001
Divorced/separated	2.57(1.86-3.54)	<0.001	1.29(0.92-1.81)	0.142
Wealth				
Poorest (Ref)	1		1	
Poor	0.63(0.57-0.71)	<0.001	0.72(0.64-0.8)	<0.001
Middle	0.66(0.59-0.73)	<0.001	0.76(0.68-0.85)	<0.001
Richer	0.72(0.65-0.8)	<0.001	0.84(0.75-0.94)	0.002
Richest	0.78(0.7-0.86)	<0.001	0.88(0.78-0.99)	0.038
Region				
Northern (Ref)	1		1	
Southern	2.66(2.28-3.1)	<0.001	2.62(2.25-3.07)	<0.001
Western	2.9(2.48-3.4)	<0.001	2.82(2.4-3.31)	<0.001
Eastern	3.09(2.67-3.59)	<0.001	3.23(2.77-3.77)	<0.001
North-eastern	2.12(1.77-2.53)	<0.001	1.98(1.64-2.38)	<0.001
Central	1.17(1-1.38)	0.056	1.26(1.07-1.49)	0.007

BMJ Open

Epidemiology of disability and access to disability support and rehabilitation services in India: A secondary data analysis a National Sample Survey (2018).

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2024-090220.R2
Article Type:	Original research
Date Submitted by the Author:	07-Mar-2025
Complete List of Authors:	Mirza, Moonis ; All India Institute of Medical Sciences - Bathinda, Department of Hospital Administration Esht, Vandana; Jazan University College of Applied Medical Sciences, Physical Therapy Department Verma, Madhur ; All India Institute of Medical Sciences Bathinda, Department of Community & Family Medicine Bahadur, Bajarang; International Institute for Population Sciences, Demography Jaiswal, Ajit; International Institute for Population Sciences, Demography Alagarajan, Manoj; International Institute for Population Sciences, Demography Kakkar, Rakesh; All India Institute of Medical Sciences - Bathinda, Department of Community & Family Medicine
Primary Subject Heading:	Public health
Secondary Subject Heading:	Epidemiology, General practice / Family practice, Global health, Health services research, Occupational and environmental medicine
Keywords:	Disabled Persons, PUBLIC HEALTH, Health Equity

I, the Submitting Author has the right to grant and does grant on behalf of all authors of the Work (as defined in the below author licence), an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the terms applicable for US Federal Government officers or employees acting as part of their official duties; on a worldwide, perpetual, irrevocable, royalty-free basis to BMJ Publishing Group Ltd ("BMJ") its licensees and where the relevant Journal is co-owned by BMJ to the co-owners of the Journal, to publish the Work in this journal and any other BMJ products and to exploit all rights, as set out in our licence.

The Submitting Author accepts and understands that any supply made under these terms is made by BMJ to the Submitting Author unless you are acting as an employee on behalf of your employer or a postgraduate student of an affiliated institution which is paying any applicable article publishing charge ("APC") for Open Access articles. Where the Submitting Author wishes to make the Work available on an Open Access basis (and intends to pay the relevant APC), the terms of reuse of such Open Access shall be governed by a Creative Commons licence – details of these licences and which Creative Commons licence will apply to this Work are set out in our licence referred to above.

Other than as permitted in any relevant BMJ Author's Self Archiving Policies, I confirm this Work has not been accepted for publication elsewhere, is not being considered for publication elsewhere and does not duplicate material already published. I confirm all authors consent to publication of this Work and authorise the granting of this licence.

Title Page

Epidemiology of disability and access to disability support and rehabilitation services in India: A secondary data analysis a National Sample Survey (2018).

Type: Original Article

Moonis Mirza*, Vandana Esht[1]*, Madhur Verma*#, Bajarang Bahadur*, Ajit Kumar Jaiswal[3], Manoj Alagarajan, Rakesh Kakkar

*authors contributed equally
#corresponding author

Detailed Author Affiliations:

1. **Moonis Mirza (MD)**
   Associate Professor of Hospital Administration, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: moonismirza@gmail.com.
   Orcid id: 0000-0002-8844-7311

2. **Vandana Esht (Phd)**
   Associate Professor, Physical Therapy Department, College of Applied Medical Sciences, Jazan University, Jazan, Saudi Arabia
   Email: vandanaesht@jazanu.edu.sa.

3. **Madhur Verma (MD)**
   Associate Professor of Community and Family Medicine, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: drmadhurverma@gmail.com

4. **Bajarang Bahadur**
   Mphil, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: bajarang7894@gmail.com.

5. **Ajit Kumar Jaiswal**
   Mphil, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: ajitjaiswal20@gmail.com.

6. **Manoj Alagarajan**
   Assistant Professor, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: alagarajan@iipsindia.ac.in.

7. **Rakesh Kakkar (MD)**
   Professor of Community and Family Medicine, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: drrakesh75@rediffmail.com.

Details of the corresponding author

Dr. Madhur Verma (MD)
Associate Professor of Community and Family Medicine,
All India Institute of Medical Sciences Bathinda (Punjab),
India-151001
Email: drmadhurverma@gmail.com
Phone: +91 9466445513
Orcid id: 0000-0002-1787-8392

Manuscript

Abstract

Objective: The primary aim of this study was to examine the epidemiology of disability in India and assess access to disability support and rehabilitation services by person with disability (PWD).

Design: This study is a secondary analysis of the data from the 76th round of the National Sample Survey (2018), that focussed on disability in India.

Setting: The survey employed a stratified two-stage sampling design based on Census 2011, covering all states and union territories of India. Villages and urban blocks were selected in the first stage, while households were chosen in the second stage across rural and urban areas.

Participants: The survey included data from a population of 576,796 individuals residing in 1,18,152 households from 8,992 village/urban blocks (5,378 rural villages and 3,614 urban blocks). The analysis focussed on 1,07,125 individuals (61,707 males and 45,305 females) who reported at least one disability.

Outcome Measures: The primary outcome was "any disability". Secondary outcomes included access to disability support and rehabilitation services that assessed difficulties faced in accessing public buildings, transport, loss of employment after disability, availability of government support, enrolment in special schools, and possession of a disability certificate.

Results: The overall weighted disability prevalence was 2.2%, with significant disparities across socio-demographic characteristics. Among PWD, 45.9% of those who acquired disability after birth were aged between 15 and 59, and 20.8% received no government aid. About 40% of PWD struggled to use public transport, and 57.7% had difficulties accessing public buildings. Additionally, 60.7% reported job loss due to disability, and 69.6% lacked a disability certificate.

Conclusion: This study highlights disparities faced by PWD in accessing disability support and rehabilitation services. There is an urgent need for concerted efforts to minimise such experiences. This will help us enhance the well-being and participation of PWD and empower them to contribute to society with their true potential.

Keywords: *Disability, inequity, disparities, accessibility, health access.*

Strengths and limitations of this study

- One of the very first comprehensive assessments of accessibility issues of the people living with disability data from the 76th round of the National Sample Survey (2018).
- We estimated the proportion of person with disability who could access basic services through a weighted analysis that makes the results generalisable and highlights actionable points.
- The lack of a standardised definition of disability was the critical limitation of the study, which restricts sub-national and national comparisons over time and regions.
- The possibility of estimates being affected by recall bias and social desirability bias may not be ruled out.
- We were limited by the number of variables available in the primary data, which restricted us from making further conclusions about the social inclusion of person with disability.

Manuscript

Introduction

As per the United Nations Convention on the Rights of Persons with Disabilities (CRPD), a persons with disability (PWD) includes those who have long-term physical, mental, intellectual, or sensory impairments which, in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others.[1] Disability is a global concern, impacting 1.3 billion people, or 16% of the population.[2] The World Health Organization (WHO) and the World Bank's World Report on Disability highlight that 80% of the global disabled population is of working age, with a substantial proportion residing in developing countries.[3] India is one of the most populous countries, and the proportion of Indian PWD is concerning.[4] With the increasing proportion of the geriatric population, the burden of disability has also proportionately increased (from 21.9 to 26.8 million) over the last two rounds of the national census (2001-2011).[5,6] The reports from the 2011 Census and the 76th round of the National Sample Survey (NSS) estimate disability prevalence to be around 2.2%.[7] But the fifth round of the National Family Health Survey-5 (2019-21) estimates an overall disability prevalence of 4.52%.[8] The discrepancy in available estimates is due to methodological differences, poor quality and inconsistent data, and lack of standardisation of the definition, which underscores the intricate nature of disability.[9,10]

The CRPD identifies disability as an evolving concept and highlights the constantly changing needs of PWD, which are largely unmet. [11–13] The different articles of CRPD (6, 7, 9, 24, and 27) focus on key aspects such as gender, age, accessibility, education, and employment to empower PWD by addressing specific needs. For instance, article 6 caters to gender-related needs, which may include protections against gender-based discrimination and access to reproductive healthcare, while article 7 focuses on the needs of children with disability and that they receive inclusive education (article 24) and older adults with disability access to necessary

social and healthcare services (article 9). These measures aim to enable independent living and full participation in all aspects of life, ensuring that PWD are not deprioritised compared to the general population.[14–18] The limited priority given to the needs of PWD in society increases the existing disparities, leading to poorer health outcomes, lower educational attainment, and reduced economic opportunities, thereby exacerbating social inequities.[19] Addressing these disparities is a global priority as mandated by the second principle of the Sustainable Development Goals (SDGs), "Leave no one behind", which is the central, transformative promise of the Agenda 2030.[20] International human rights law, including the CRPD, Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), Convention on the Rights of the Child (CRC), International Covenant on Civil and Political Rights (ICCPR), International Covenant on Economic, Social and Cultural Rights (ICESCR), collectively uphold the principles of equality and non-discrimination, obligates each country to address the inequalities faced by PWD, ensuring that they have equitable access to services, full participation in society, and protection from exclusionary practices.[1,21] Since March 2007, 192 parties, including India, have ratified CRPD till January 2025. Despite progress, the world still falls short of fully recognising and upholding the rights and needs of PWD.[19] The needs of PWD can span from *personal functional assistance* (daily activities and extent of disability), *social integration* (living conditions, caregivers, and public accessibility), *economic rehabilitation* (impact on employment and finances) to *service access* (certification and receipt of government/NGO support) necessitating a comprehensive approach.[22] However, access to such services is less studied, and it is crucial to highlight disparities that affect the disability care continuum and also limit the efforts to minimise social exclusion of PWD and foster a social environment that is inclusive and accessible to all. [22][23]

Previous literature from India has primarily focused on the epidemiology of disability.[10] The lack of disability-friendly infrastructure, affordable assistive technologies, support services,

including personal assistance, therapy, aids and vocational rehabilitation, and comprehensive care perpetuates inequalities.[24] Still, it is less explored by the scientific community. Within this context, the 76th NSS collects data regarding disability and PWD's access to different disability support and rehabilitation services and provides an opportunity to study them. [7] Thus, the primary aim of the study was to explore the epidemiology of disability and the accessibility of PWD to various disability support and rehabilitation services to provide insights for specific interventions.

Methodology

Data sources: We conducted a secondary analysis of the cross-sectional data from the 76th National Sample Survey (NSS) conducted by the Ministry of Statistics, Planning, and Implementation (MoSPI) between July and December 2018. MoSPI has formulated a code of ethics and sets out certain standards of conduct for the members of the Survey Committees (group of people appointed to conduct and supervise the survey). The data for NSSO is collected in accordance with the Collection of Statistics Act, 2008, which ensures transparency in data collection by issuing public notifications outlining the subject, purpose, and methodology of the survey. Participation in these surveys is generally voluntary, with respondents providing implied consent by answering survey questions after being informed about the study's objectives. Additionally, the Act mandates confidentiality safeguards, ensuring that collected data is used solely for statistical purposes. While respondents are legally obligated to provide accurate information, the data remains anonymous and protected. Thus, the NSSO follows ethical guidelines to uphold privacy while maintaining the integrity of national statistics.[25] The NSS collects socio-economic data using interviews through scientific sampling methods and serves as a crucial tool to gauge various socio-economic aspects across all states of India. Its primary objective is to identify unmet needs within the population, thereby aiding the government in formulating effective policies to address them.

The survey made its first attempt to collect information on the number of PWD during the 15th round (July 1959 - June 1960).[26] In the 76th round, the main objective of the survey was to estimate indicators of incidence and prevalence of disability, cause of disability, age at onset of disability, facilities available to the PWD, difficulties faced in accessing public building/public transport, arrangement of regular caregiver, out-of-pocket expense relating to disability, etc. using a structured questionnaire.[27] Further, estimates were obtained on various employment and unemployment particulars in usual status for the household members with at least one disability. For PWD aged 12 to 59 years, information was collected on whether or not they received vocational/technical training and details related to such training.

Sampling design and sample size: The 76th NSS employed a stratified two-stage sampling design, utilising Census 2011 as the sampling frame.[7] The survey commenced on 1st July 2018 for six months. In the first stage, villages/urban blocks were selected, followed by the selection of households in rural and urban areas in the second stage. This round of NSS encompassed all states and union territories of India except the villages in Andaman and Nicobar Islands, which are difficult to access, covering a total of 8,992 village/urban blocks (5,378 rural villages and 3,614 urban blocks) and including 118,152 households representing a population of 576,796 individuals (402,589 in rural areas and 173,980 in urban areas). Within this, the present study focuses on 1,07,125 individuals consisting of 61,707 males and 45,418 females) who reported at least one disability during the survey.

Study Variables

Dependent variable: The presence of "any disability" was our primary dependent variable. MoSPI defines a "Person with disability" as a person with a long-term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders full and effective participation in society equally with others.[7] The variable is created by the presence of at least one condition among all seven disability types, elaborated subsequently

1. **Locomotor disability:** A person was categorised as living with locomotor disability based on a positive response to any of the following three conditions: *(i) whether having difficulty in using hands, fingers, toes, body movement (including cerebral palsy, muscular dystrophy); (ii)whether having loss of sensation in the body due to paralysis, leprosy, other reasons; or (iii)whether having deformity of the body part(s) like hunch back, dwarfism, deformity due to leprosy, caused by acid attack, etc."*

2. **Visual disability:** It was identified using a direct question: "*Whether having difficulty in seeing, counting fingers of hand from a distance of 10 feet (with spectacles, if using, and both eyes taken together*)."

3. **Hearing disability:** The categorisation was based on the question: *"Whether having difficulty in hearing day-to-day conversational speech (without hearing aid, if using, and both ears taken together)"*

4. **Speech and language disability:** It was assessed using a question: *"Whether having difficulty in speech (unable to speak like a normal person/ speech is not comprehensible, including laryngectomy, aphasia) which is base for speech disability."*

5. **Mental retardation/intellectual disability:** This disability variable has been prepared based on the following question "*Whether having difficulty in understanding/ comprehension or communicating in doing daily activities*"

6. **Mental illness:** This disability was identified when there was a positive response to any of the three conditions: "(i) *whether having unnecessary and excessive worry and anxiety, repetitive behaviour/ thoughts, changes of mood or mood swings, talking/laughing to self, staring in space; (ii) whether having unusual experiences of hearing voices, seeing visions, strange smell or sensation or strange taste; or (iii) whether having unusual behaviour or difficulty in social interactions and adaptability."*

7. **Other disability:** To identify other types of disability of the persons, the following question was used: "*Whether having any of the following: Parkinson's disease, multiple sclerosis, other chronic neurological conditions, thalassemia, haemophilia, sickle cell disease*".

The access to disability support and rehabilitation services by the PWD were secondary dependent variables. For this study, we adopted the United Nations CRPD definition of 'disability support,' which is stated as 'the means to ensure that PWD can fully enjoy their rights and participate equally in society." The original survey assessed disability support by estimating the proportion of PWD ever receiving any aid/help (received aid/help from government, or received aid/help from organisations other than government, did not receive aid/help), living arrangement (living alone or with a spouse, living with others), arrangement of regular caregiver (care-giver required but not available, care-giver is not required, care-giver is available), access to public transport (yes, no), accesses to public building (yes, no), difficulty faced in accessing public building (difficulty faced due to stairs and non-availability of ramp, grooved tiles or lift, in opening doors, no seating arrangement: in the waiting area, at the point of receiving service, no special toilet seats, no sign for direction/ instruction/no public announcement system, no difficulty faced, and others), employed/working before onset of disability (yes, no), disability causing loss or change in job (loss of work, change of work , no loss or change of work), having disability certificate (yes, no), and percentage of disability as per certificate (40-60%, 60-80%, >80%, and none of these). Disability certificate is issued to PWD by the competent medical authorities notified by the State/UT Government and aims to encourage transparency, efficiency and ease of delivering the government benefits to the person with disabilities and to ensure uniformity.[28,29]

Predictor variables: In the present study, the predictor variables were chosen following a literature review and the scope of data collected in the original survey.[30–33] We included

age group (completed years) categorised as; upto 5, 6-17, 18-35, 36-49, 50-65 and 65+ completed years, sex (male, female), marital status (never married, ever married, widowed, divorced/separated), area of residence (rural, urban), educational attainment (non-literate, literate but not formal, upto primary, upto secondary), preferred religion (Hindu, Islam, others), social group (scheduled tribe, scheduled caste, other backward classes, general), wealth index (poorer, poor, middle, richer, richest), regions of India (northern, southern, western, eastern, north-eastern and central). For readers outside India, the term 'backward class, schedule caste and schedule tribe' refers to socially and educationally disadvantaged groups legally recognised by the constitution of India, that have historically faced discrimination and marginalisation, and aim to promote social justice by reducing disparities, enhancing representation in education and employment, and fostering socio-economic inclusion. [34]

Specifically, PWD were characterised using variables like causes of disability (disease, other than disease due to burn, injuries other than burn, other causes), age at the onset of disability (0 to 4, 5 to 14, 15 to 59, and 60 years and above), the origin of disability from birth (yes, no, not known), disability commenced in last 365 days (yes, no), place of occurrence of disability (workplace, road, home, other places), treatment taken/undergoing treatment (yes: consulting doctor, otherwise, yes: consulting doctor, plus undergoing treatment, otherwise, attending special school/special therapy, cannot afford treatment, no treatment available for the disability, not required and not known).

Statistical methodology: The prevalence, along with the dispersion of all disability variables, were estimated as part of a univariate analysis by using already calculated sampling weights with clustering as provided with the datasets.[35] The details of sampling weight have been described in the NSS 76th round report. We used the SVY command while using sampling weights.[36] Further, the prevalence of all disability types was estimated per socio-economic characteristics, and the associations were tested using bivariate analysis through a chi-squared

test. The access to different services was depicted using weighted proportions. The missing data were handled using the Available case analysis (ACA) technique, and the estimates were generated using the available data, leading to the different sample sizes as they vary from variable to variable. It helped us retain more data compared to listwise deletion. However, the relationships between the pattern of missing data and observed variables was studied to assess the nature of the missing data using the Little's MCAR (Missing cases at random) test. The results suggested that the data were not completely at random but likely missing at random (MAR), and therefore, the ACA technique was considered appropriate for retaining more data compared to listwise deletion. Further, a sensitivity analysis was conducted to assess the robustness of the findings to different missing data handling techniques. Results obtained using ACA were compared with those from Complete Case Analysis (CCA), and the findings were consistent across the two methods. Lastly, multivariable binary logistic regression analysis was used to explore the independent variables affecting the likelihood of living with 'any disability', which was the dependent variable coded by 1 and otherwise 0. Additionally, binary logistic regressions are also employed on all seven types of disability. The analysis depicted the unadjusted and adjusted odds ratio (95% confidence interval). All p-values<0.05 were considered statistically significant. All the analysis was done using Stata (version 17.0). Graphical maps were created using MS Excel sheets to depict the regional disparities.

Patient and public involvement: None

Results

Table 1 provides a comprehensive overview of the weighted prevalence of different types of disability across various socio-demographic characteristics in India. Of the total participants, 107,125 (2.2%) of the participants had at least one form of disability. The majority of such participants had a locomotor disability 61,981 (1.36%), followed by hearing 15,294 (0.30%), visual 11,977 (0.23%), speech-related 12,661 (0.23), mental retardation 8,564 (0.16%), mental

illness 6,751 (0.16%), and other types 3,121 (0.05%) of disability. The highest prevalence of any disability, locomotor, speech and 'other' disability was seen in 50-65 years. However, the proportion of participants with visual and hearing disability was highest in the eldest age group, while mental retardation and mental illness were highest in the 6-35 years age group. Disability prevalence was notably higher among older individuals, males, rural populations, and those from lower socioeconomic backgrounds with minimal or no educational attainment, and living in the southern part of India.

We further assessed the origin of disability as per the type (Table 2). The most common cause of locomotor and speech disability was disease 28,673 (46.3%), 1246 (61.9%), while 'other causes' were most commonly involved in visual 538 (46.5%) and hearing 637 (49.7%) disability. Around 11,488 (18.5%) of PWD had their disability from birth. Of the total participants, 2987 (6.1%) participants acquired their disability in the last year preceding the survey. The most common place of disability origin was road 5977 (41.9%), followed by home, 4693 (32.9%). Only 17,329 (28%) of PWD were consulting doctors and undergoing treatment.

Table 3 depicts the living conditions of PWD and access to crucial services, and Supplementary Table 1 provides results in more detail for each type of disability. Overall, nearly half of the PWD who did not have disability since birth were between 15 and 59 years old (45.9%), while nearly one-fifth (20.8%) had received aid or help from the government. 57% of PWD lived with their spouses, and 62.8% reported that caregivers were available. About 40% reported an inability to use public transport, while 54.4% reported inaccessibility to public buildings. Further, 57.7% of PWD reported facing difficulties while accessing public buildings. Around 60.7% of PWD reported a loss of work due to disability onset, and 69.6% did not have any official document certifying their disability for administrative purposes. Figure 1 further depicts the geographic disparities in the PWD' access to basic services.

Table 4 demonstrates the multivariable binary logistic regression analysis results to present the socio-demographic variables affecting the likelihood of living with any type of disability. We found a significantly higher likelihood of living with disability with increasing age (Adjusted Odds ratio: 58.4; 95% Confidence Interval: 55.4-61.5 in >65 years vs up to 5 years), urban residence (1.3; 1.2-1.3) vs rural, social castes (1.3; 1.3-1.3 in general caste) vs scheduled tribes, and living in a Southern region of India (1.1; 1.1-1.2) compared to those from North India. However, female sex (0.6; 0.6-0.6), more years of education (0.3; 0.3-0.3), Islam followers (0.9; 0.9-0.9), currently married/widowed vs never married (0.3; 0.3-0.3), and higher socio-economic status (0.5; 0.5-0.5) depicted significantly lower likelihood of living with disability. Supplementary Table 2 provides results from the more detailed regression analysis for each type of disability.

Discussion

We report an investigation that assesses the epidemiology of PWD and their access to disability support and rehabilitation services in India using nationally representative data. Our key findings have profound policy implications. First, we identify concerning disparities in disability prevalence across socio-demographic groups. Second, one-fifth of PWD reported acquiring their disability at birth. Third, the most common place of disability origin was roads, followed by home. Fourth, approximately half of PWD reported challenges in using public transport and buildings. Lastly, the majority of PWD reported a loss of work due to disability onset and did not have any official document certifying their disability.

Disability prevalence was notably higher among older individuals, males, rural populations, and those from lower socio-economic backgrounds. Despite a modest 2.2% prevalence rate, this figure represents around 30 million people in India, and it is expected to rise, indicating an urgent need for attention. While there was a preponderance of males with locomotor disability, speech and language disability were significantly higher in females. As per the estimates

obtained from the previous 36th, 47th, and 58th rounds of NSS, there is a constant rise in disability prevalence in rural (1.8% in the 36th round to 2.3% in the 76th round) as well as urban (1.4% in 36th round to 2.0% in 76th round) areas, with the overall increase from 1.6% in 36th round in year 1981 to 2.2% in 76th round in year 2018.[7] Secondary analysis of another national survey (NFHS-5) depicts an overall disability prevalence of 0.95%, with a higher proportion of locomotor disability (0.4%), followed by mental disability (0.2%).[37]

We observed that a high proportion of survey participants had their disability **from birth.** However, the available data limits our further understanding of such disability, whether the onset was intrauterine or acquired during the birthing process. Such limited information still necessitates mitigation strategies targeting pregnant females by ensuring accessibility to screening for intra-uterine pathologies causing disability like Down's syndrome and intellectual disability and later extending the access to screening for auditory and visual disability.[38] Further, adopting more rigorous screening toolkits and investigations for newborns at the primary healthcare level through the expansion of the Rashtriya Bal Swasthya Karyakram (Indian National program that involves screening of children from birth to 18 years of age for 4 Ds- Defects at birth, Diseases, Deficiencies and Development delays, spanning 32 common health conditions for early detection and free treatment and management, including surgeries at tertiary level) would help in increasing scope for early psychological or therapeutic interventions that would impact the quality of life of children with disability.[39] In addition, the Pradhan Mantri Jan Arogya Yojana (PM-JAY) offers free healthcare for children with disability, who are not covered under the RBSK scheme.[40,41]

The most common place of disability origin was road, followed by home. Trauma is an important cause of locomotor disability, and in India, it is the second most common cause of locomotor disability.[42] Previous estimates suggest that road crashes maximally impact the poorest quintiles. A lack of appropriate safety gear while on the road is often a factor in road

trauma. People who experience road trauma often have inadequate access to medical and social safety nets after injury.[43,44] Anecdotal evidence from Chandigarh, a Union Territory of India, suggests that strict compliance with the traffic rules can mutually benefit the public and the administration. On one side, it reduces morbidity due to road traffic accidents, while on the other side, penalties due to non-compliance generate revenues and also generate awareness. An increasing number of domestic accidents are equally concerning.[45] Domestic accidents may be subjected to under-reporting as most of the domestic injuries are considered minor, often neglected, and may be easily forgotten and subjected to recall bias. This changing trend is similar to many developed nations where more accidents happen at home than anywhere else. With increasing population and population density, we expect an increase. Domestic accidents depend on the physical and social environment and also on the functional capacity of the individual. While road traffic accidents are unforeseen and unexpected, it is generally accepted that domestic accidents can be prevented and minimised by taking adequate safety measures well in time.[46]

We observed that there is a scope for improving the accessibility of public buildings and transport for the PWD; they must accommodate PWD's needs. Various schemes and initiatives demonstrate the Indian government's commitment to securing the rights and welfare of disabled populations in the country. India's commitment to the United Nations Convention on the Rights of PWD (UNCRPD) is embodied in the Rights of Persons with Disabilities Act of 2016 (RPWD Act, 2016). It emphasises dignity, autonomy, and non-discrimination for PWD.[47] The Act further mandates inclusive education, vocational training, and self-employment opportunities without discrimination. To increase the accessibility of public buildings, the RPWD Act 2016 and the National Building Code of India 2016 outline expanded guidelines for building accessibility.[48] Compliance with these standards has been made compulsory, with responsibility falling on those involved in commissioning, designing, constructing, or

managing built environments. The building design must adhere to relevant legislation, including equality and safety regulations. This focus on accessibility has fostered the adoption of universal design concepts, leading to numerous best practices for creating inclusive environments. These encompass accessible buildings, parking areas, parks, and recreational facilities, reflecting a concerted effort to ensure equal access and inclusion for PWD in the built environment.

Government schemes to improve inclusion and access

The government has a variety of healthcare schemes like the Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances (ADIP) that cater to the specific needs of PWD and provides assistive devices, aids such as wheelchairs, hearing aids, and prosthetic limbs at subsidised rates.[49] The Deendayal Disabled Rehabilitation Scheme (DDRS) provides financial assistance to NGOs for various rehabilitation services for PWD.[50] However, the scheme faces inconsistencies in service availability across different states. The lack of standardisation in rehabilitation programs results in variable quality of care, while administrative delays in fund disbursement further hinder its effectiveness.[51] Moreover, rural and economically weaker sections often struggle to access these services, limiting the scheme's reach and equity. While DDRS aligns with the principle of equal opportunities under the RPWD Act of 2016, its impact is weakened by poor implementation and monitoring mechanisms. Apart from catering to the healthcare needs of PWD, we must address specific issues related to health and ethics and the need to shift societal attitudes toward PWD to improve social inclusion.[52]

In addition to the health-related needs, the Government of India has taken several steps to secure the social rights of PWD. Right to Education Act (RTE) aims to provide free and compulsory education for children with a disability up to 18 years.[53] The 'Samagra Shiksha Abhiyan' integrates children with disability into mainstream education.[54] The National

Education Policy 2020 also prioritises "inclusion" by aiming to fully integrate children with disability into the mainstream education system, providing necessary accommodations and support to ensure their active participation in the learning process without segregation or discrimination; this includes accessible infrastructure, specialised teaching methods, and assistive technologies tailored to individual needs.[55] Training gaps for teachers for PWD, lack of assistive technology, and poor enforcement of inclusive education policies hinder meaningful inclusion.[56] The government-funded higher education institutions in India reserve 5% of seats for PWD to foster diversity and enhance employment opportunities, but the effectiveness of such policies is hindered by challenges [57] such as infrastructural barriers, lack of accessible learning materials, and inadequate support services. Many PWDs also lack access to skill development programs, which limits their employability. The government also provides financial assistance and benefits to PWD through schemes like the National Handicapped Finance and Development Corporation (NHFDC); which offers loans and subsidies for education and training or self-employment ventures.[58]

Employment can enhance social sustainability and individual well-being.[59] But, we observed that a very high proportion of PWDs had a change or loss of their jobs due to the onset of disability. Loss of jobs can be linked to the social stigma associated with impairment or disability and the perception of such people being less productive. Many employers have ill-founded views about the work-related abilities of PWD; these negative views are often a result of interrelated concerns that permeate the entire employment cycle.[60] It is to be emphasised that negative attitudes toward disability disempower PWD and lead to social exclusion. By contrast, a healthy society encourages positive attitudes toward PWD and promotes social inclusion.[61] Various initiatives have been introduced to promote employment opportunities for PWD. But, a lack of awareness and red tape discourages many PWDs from receiving

employment benefits. While the RPWD Act mandates non-discrimination in employment, the absence of accountability measures continues to hinder its success. Many PWDs also lack formal certification as seen in our study, restricting their access to essential services and benefits.[62][63]

Other prominent schemes introduced for PWD in India include the National Handicapped Finance and Development Corporation (NHFDC) which provides financial assistance to persons with disability for self-employment, education, and training; Scheme for Implementation of Persons with Disabilities Act (SIPDA) to create barrier-free environments and improve the quality of life for PWD; Accessible India Campaign (Sugamya Bharat Abhiyan) focuses on making public infrastructure and transportation accessible for person with disability and Inclusive Education for Disabled at Secondary Stage (IEDSS) supports the inclusive education of students with disability at the secondary level.[58][64][65] Despite multiple policy frameworks supporting disability inclusion, several gaps remain in implementation and enforcement. [66] The mere existence of legislation and policies does not guarantee their effectiveness. There is a pressing need for stronger monitoring mechanisms, improved financial transparency, and enhanced awareness campaigns to bridge the gap between policy intent and real-world impact. The government must prioritise accountability measures to ensure scheme implementation and greater investment in infrastructure and assistive technologies to create an inclusive environment for PWD. [67]

Strengths and limitations of the study

The studies major strength lies in its novelty by bringing social science and medicine to a common platform. The estimates generated using the weighted analysis are nationally representative, and depict strong external validity due to its national coverage, stratified sampling approach, and standardised definitions. The emerging results can serve as robust evidence to help guide the policies that improve accessibility. The present study takes a novel

approach by initially delineating the proportions of various types of disability. Subsequently, it delves into the analysis concerning "any disability," thus unveiling unique characteristics within this broader category. By doing so, the study not only broadens the scope of understanding but also highlights the nuanced interplay between different types of disability and the socio-demographic backgrounds of PWD. This shift towards a more inclusive analysis holds promise for informing policy decisions and healthcare interventions tailored to address the complex needs of individuals with disability. The major limitation lies in the study's cross-sectional nature, which limits causality and temporal associations and is limited by recall bias, particularly when assessing disability from birth. We need more qualitative studies to better assess the impact of inaccessibility to basic support and rehabilitative services.[12] As a secondary analysis, we are limited by the number of variables that can further explain issues affecting accessibility to services. Due to a limited number of explanatory variables, the possibility of residual confounding cannot be negated. There was also a non-uniformity in the sample size when assessing different questions related to the impact of disability, but it was handled using available case analysis techniques to generate estimates and retain more data compared to listwise deletion. Lastly, some terms used in the manuscript, like the categorisation of disability (e.g., using “mental retardation” instead of “intellectual disability”), the terminology used to describe social classes (“backward classes” instead of “disadvantaged classes”) is non-inclusive, outdated, perceived offensive by the PWD, and lacks alignment with the global vision targeting inclusion and discrimination. However, it is still being used so that the manuscript is coherent with the original survey report and would help prevent confusion in case some readers want to refer to the original report.

Policy implications and recommendations

A few policy implications and recommendations emerged from the study. Given the increasing prevalence of disability and the concurrent escalating proportion of the geriatric population,

we need to work on improving the accessibility for PWD. A large number of disability originating from birth calls for more robust ante-natal and neonatal screening protocols supported by adequate counselling and rehabilitation services. Our results depict that a high proportion of PWD have a caretaker who is available. Previous studies have suggested that empowering the caretakers can help improve the quality of life of PWD.[68] We must simultaneously think of ways (like investing in developing more assistive devices and making them affordable) to help us share the added burden on caregivers.[68] Despite many schemes extended by the government to enhance the social inclusion of PWD that have been briefly described in the manuscript, there is a need for health advocacy drives to sensitise the population about the needs of PWD, improve social inclusion and minimise discrimination. The use of non-inclusive language in the original dataset used in the study necessitates using more appropriate language to promote inclusivity. It is recommended that future national surveys focus on more inclusive language, which is compliant with the CRPD and the globally ongoing disability rights movements.

Conclusions

While previous research has primarily emphasised individual heterogeneity among PWDs, our study indicated that a large proportion of PWD experience systemic disparities in accessing disability support and rehabilitation services. The high prevalence varies significantly as per the studied socio-demographic characteristics, reinforcing the urgent need for targeted interventions. We acknowledge that while individual differences exist, these do not negate the common challenges faced by PWDs in securing equitable access to essential services. Despite government initiatives, there remain gaps in accessibility, public awareness, and enforcement of disability rights. There is an urgent need for concerted efforts to minimise these disparities, enhance the well-being and participation of PWD, and empower them to contribute meaningfully to society. Furthermore, our findings underscore that many disabilities originate from birth or early childhood, yet the availability of early screening, diagnostic services, and

timely interventions remains inadequate. Strengthening antenatal and neonatal screening, particularly for intrauterine conditions and birth-related complications, could significantly improve early detection and management of disabilities. As a society, we must work toward reshaping societal and institutional perceptions of disability, shifting the focus from viewing disability as a personal deficit or burden to recognising it as a societal construct that can be addressed through inclusion, accessibility, and policy-driven structural changes. A more inclusive and disability-friendly society is essential not only for ensuring the dignity and rights of PWD but also for achieving socioeconomic development and social justice. These efforts align with India's commitment to the CRPD and contribute to the global vision set by the 2030 Agenda for Sustainable Development, which recognises the promotion of the rights, perspectives, and well-being of PWD as a fundamental prerequisite for a more sustainable and inclusive world.

Declarations

- **Acknowledgements:** This study used the National Sample Survey (NSS), 76th round Person with Disability in India Survey 2018. The authors gratefully acknowledge members of the study field team, including those who were involved in mapping/listing/segmentation and the main survey during data collection. The authors also acknowledge all the respondents for their active participation in this study.

- **Competing interests:** None

- **Ethics statement:** The ethical approvals were not deemed necessary since it was secondary data analysis. No patient-level data were used in this paper. However, the original survey was conducted by the Ministry of Statistics and Programme Implementation (MOSPI), which is mandated to act as the nodal agency for the integrated development of the statistical systems in India. The Ministry, as part of its comprehensive decision-making process on various matters, has formulated a Code of Ethics for Members of the various Committees

constituted by MOSPI or by the Organizations, Institutions, bodies, etc., funded by it that follow the principles of ethics and set out certain standards of conduct for the members of the Committees in order to protect the confidentiality of the data/information acquired by them by virtue of their membership in such Committees.

- **Patient and Public Involvement**: None
- **Funding:** No funding was involved at any stage of this study.
- **Data availability**: Data (Reference ID: DDI-IND-MOSPI-NSSO-76Rnd-Sch26.0-July2018 December 2018) is freely available on the website of the Ministry of Statistics and Programme Implementation (GOI) MOSPI's https://microdata.gov.in/nada43/index.php/catalog/154/overview, and can be accessed as per standard protocols.
- **Ethics approval**: Not applicable
- **Authors' contribution**: MM, BB, and MA conceptualised the study, MV and AKJ collected data, drafted the manuscript, and reviewed it. VE, MV, and AKJ did the analysis and drafted the final version; MA and RK critically reviewed the manuscript from policy and feasibility points of view. All the authors read and approved the final version of the manuscript. MM is responsible for the overall content as guarantor.

References

1. United Nations. Convention on the Rights of Persons with Disabilities [Internet]. Human Rights Instruments. 2008 [cited 2024 Dec 16]. Available from: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities
2. World Health Organization. Global report on health equity for persons with disabilities [Internet]. 2023 [cited 2024 Dec 10]. Available from: https://www.knowledge-action-portal.com/en/content/global-report-health-equity-persons-disabilities

3. World Health Organization. World Report on Disability [Internet]. 2011 [cited 2022 Feb 9]. p. 1–27. Available from: www.who.int/about/licensing/copyright_form/en/index.html
4. Pattnaik S, Murmu J, Agrawal R, Rehman T, Kanungo S, Pati S. Prevalence, pattern and determinants of disabilities in India: Insights from NFHS-5 (2019–21). Front Public Health. 2023;11:1036499.
5. Ministry of Statistics and Programme Implementation(GOI) - MOSPI. Elderly in India 2021 [Internet]. 2021 [cited 2024 Dec 16]. Available from: https://mospi.gov.in/sites/default/files/publication_reports/Elderly in India 2021.pdf
6. Paul K, Saha S. Burden of Disability in India (1881–2011). Journal of Multidisciplinary Research in Healthcare. 2015 Oct 5;2(1):31–54.
7. Ministry of Statistics and Program Implementation Government of India. Persons with Disabilities in India-NSS 76th report [Internet]. NSS Report No 583 (76/26/1). 2018 [cited 2024 Dec 12]. p. 209. Available from: https://www.mospi.gov.in/sites/default/files/publication_reports/Report_583_Final_0.pdf
8. International Institute for Population Sciences. National Family Health Survey (NFHS-5) 2019-21 [Internet]. India Report. 2022 [cited 2024 Dec 16]. Available from: https://dhsprogram.com/pubs/pdf/FR375/FR375.pdf
9. Rashmi R, Mohanty SK. Socioeconomic and geographic variations of disabilities in India: evidence from the National Family Health Survey, 2019–21. Int J Health Geogr. 2024 Dec 1;23(1):1–16.
10. Chanda S, Sekher T V. Identification of Disability for Inclusive Development: Lessons from Disability Census of Kerala, India. Sage Open. 2023;13(3).
11. Department of Economic and Social Affairs. Disability and Development Report 2018 [Internet]. United Nations. 2019 [cited 2024 Dec 16]. Available from: https://www.un.org/development/desa/disabilities/wp-content/uploads/sites/15/2019/07/disability-report-chapter2.pdf
12. Chavan BS. Relevance of qualitative research in disability. Journal of Disability Management and Rehabilitation. 2015;1(1):1–2.
13. United Nations. Convention on the Rights of Persons with Disabilities [Internet]. Human Rights Instruments. 2008 [cited 2024 Dec 16]. Available from: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities

14. United Nations- Division for Inclusive Social Development (DISD). Article 24 - Education [Internet]. Social Development Issues-Disability. [cited 2024 Dec 15]. Available from: https://social.desa.un.org/issues/disability/crpd/article-24-education
15. United Nations- Division for Inclusive Social Development (DISD). Article 27 – Work and employment [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-27-work-and-employment.html
16. United Nations- Division for Inclusive Social Development (DISD). Article 6 - Women with disabilities [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://social.desa.un.org/issues/disability/crpd/article-6-women-with-disabilities
17. United Nations- Division for Inclusive Social Development (DISD). Article 7 - Children with disabilities [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://social.desa.un.org/issues/disability/crpd/article-7-children-with-disabilities
18. United Nations- Division for Inclusive Social Development (DISD). Article 9 - Accessibility [Internet]. Disability. [cited 2024 Dec 10]. Available from: https://social.desa.un.org/issues/disability/crpd/article-9-accessibility
19. Sophie Mitra AP and BV. Disability and Poverty in Developing Countries: A Snapshot from the World Health Survey [Internet]. The World Bank - Social Protection and Lab. 2011 [cited 2024 Dec 17]. Available from: https://documents1.worldbank.org/curated/en/501871468326189306/pdf/625640NWP0110900PUBLIC00BOX361487B.pdf
20. United Nations. Transforming our world: the 2030 Agenda for Sustainable Development [Internet]. Department of Economic and Social Affairs Sustainable Development. 2015 [cited 2024 Dec 12]. Available from: https://sdgs.un.org/2030agenda
21. United Nations. International Human Rights Law [Internet]. Instruments & mechanisms. [cited 2024 Dec 10]. Available from: https://www.ohchr.org/en/instruments-and-mechanisms/international-human-rights-law
22. World Bank Group. Disability Inclusion [Internet]. Understanding Poverty. 2023 [cited 2024 Dec 12]. Available from: https://www.worldbank.org/en/topic/disability
23. Saran A, Hunt X, White H, Kuper H. Protocol: Effectiveness of interventions for improving social inclusion outcomes for people with disabilities in low- and

middle-income countries: A systematic review. Campbell Systematic Reviews. 2021 Sep 29;17(3):e1191.

24. Centers for Disease Control and Prevention. Disability and Health Disability Barriers [Internet]. Disability Inclusion. [cited 2024 Dec 17]. Available from: https://www.cdc.gov/ncbddd/disabilityandhealth/disability-barriers.html

25. Ministry of state for statistics and Program implementation. Handbook on Collection of statistics act, 2008 [Internet]. Ministry of Law and Justice. 2008 [cited 2025 Mar 4]. Available from: https://www.mospi.gov.in/sites/default/files/main_menu/handbook_%20collection_of_statistic_act/hand_col_stat_act_2008.pdf

26. Ministry of Statistics and Programme Implementation G of I. Note on sample design and estimation procedure of NSS 76th round. Ministry of Statistics and Programme Implementation, Government of India.

27. National Sample Survey Office, Ministry of Statistics and Program Implementation Government of India. Schedule 26: Survey of persons with disabilities [Internet]. Seventy-Sixth round: July, 2018 - December, 2018, 2018. 2018 [cited 2024 Dec 12]. Available from: https://www.mospi.gov.in/sites/default/files/NSS7612dws/NSS_76_sch_26.0.pdf

28. Government of Assam H and FW. Disability Certificate | Health & Family Welfare | Government Of Assam, India [Internet]. Disability Certificate. [cited 2025 Feb 17]. Available from: https://hfw.assam.gov.in/information-services/disability-certificate

29. Disabilities. D of E of P with. Unique Disability ID [Internet]. Ministry of Social Justice and Empowerment, Governmenet of India of India. [cited 2025 Mar 3]. Available from: https://swavlambancard.gov.in/faqs

30. Okoro CA, Hollis ND, Cyrus AC, Griffin-Blake S. Prevalence of Disabilities and Health Care Access by Disability Status and Type Among Adults - United States, 2016. MMWR Morb Mortal Wkly Rep. 2018 Aug 17;67(32):882–7.

31. Ozawa MN, Hun Yeo Y. Race/ethnicity and socioeconomic class as correlates of disability in old age. J Gerontol Soc Work. 2008;51(3–4):337–65.

32. Kavanagh AM, Krnjacki L, Aitken Z, Lamontagne AD, Beer A, Baker E, et al. Intersections between disability, type of impairment, gender and socio-economic disadvantage in a nationally representative sample of 33,101 working-aged Australians. Disabil Health J. 2015 Apr 1;8(2):191–9.

33. Courtney-Long EA, Carroll DD, Zhang QC, Stevens AC, Griffin-Blake S, Armour BS, et al. Prevalence of Disability and Disability Type Among Adults--United States, 2013. MMWR Morb Mortal Wkly Rep. 2015 Jul 31;64(29):777–82.

34. Department of Social Justice and Empowerment M of SJ and EG of I. About the Division | Department of Social Justice and Empowerment - Government of India [Internet]. [cited 2025 Mar 3]. Available from: https://socialjustice.gov.in/common/31548

[dataset] 35. Ministry of Statistics and Programme Implementation(GOI) - MOSPI. India - Survey of Persons with Disabilities NSS 76th Round : July 2018 - December 2018 - Overview [Internet]. Central Data Catalog. 2018 [cited 2024 Dec 10]. Available from: https://microdata.gov.in/nada43/index.php/catalog/154/overview

36. Stata. SVY estimation — Estimation commands for survey data [Internet]. [SEM] sem — Structural equation model estimation command. [cited 2024 Dec 17]. Available from: https://www.stata.com/manuals13/svysvyestimation.pdf

37. Rashmi R, Mohanty SK. Socioeconomic and geographic variations of disabilities in India: evidence from the National Family Health Survey, 2019–21. Int J Health Geogr [Internet]. 2024 Dec 1 [cited 2025 Mar 3];23(1):1–16. Available from: https://ij-healthgeographics.biomedcentral.com/articles/10.1186/s12942-024-00363-w

38. Acharya K. Prenatal testing for intellectual disability: Misperceptions and reality with lessons from down syndrome. Dev Disabil Res Rev. 2011 Jan 1;17(1):27–31.

39. Bailey DB, Skinner D, Warren SF. Newborn Screening for Developmental Disabilities: Reframing Presumptive Benefit. Am J Public Health. 2005 Nov;95(11):1889.

40. National Health Authority, Government of India. Pradhan Mantri Jan Arogya Yojana (PM-JAY) [Internet]. About PM-JAY. 2019 [cited 2024 Dec 10]. Available from: https://nha.gov.in/PM-JAY

41. Ministry of Health and Family Welfare. Government of India. RBSK-Rashtriya Bal Swasthya Karyakram [Internet]. Schemes. 2024 [cited 2024 Dec 10]. Available from: https://rbsk.mohfw.gov.in/RBSK/

42. Dhole RS, Gaur KA, More NS, Popalwar H, Lokhande V. Study of locomotor disability due to various types of Trauma. National journal of medical research. 2015;5(3):194–8.

43. Musselwhite CBA, Avineri E, Susilo YO, Bhattachary D. Public attitudes towards motorcyclists' safety: A qualitative study from the United Kingdom. Accid Anal Prev. 2012 Nov;49:105–13.

44. World Bank Group. Traffic crash injuries and disabilities: The burden on Indian society [Internet]. Policy Document. 2021 [cited 2024 Dec 17]. Available from: https://www.worldbank.org/en/country/india/publication/traffic-crash-injuries-and-disabilities-the-burden-on-indian-society

45. Cole EOB, Christie SA, Oke R, Motwani G, Dickson D, Chendjou W, et al. Too serious to ignore: The epidemiologic and economic burden of home injuries in the Southwest Region of Cameroon—A community-based study. Bourgeois D, editor. PLoS One. 2022 Sep 22;17(9):e0274686.

46. Rehman T, Sulgante S, Sekhar S. Prevalence and pattern of domestic accidents in the field practice area of Jawaharlal Institute of Urban Health Centre, Puducherry: a cross-sectional analytical study. J Inj Violence Res. 2020;12(1).

47. Department of Empowerment of Persons with Disabilities. The Rights of persons with disabilities act 2016 [Internet]. Policy Document. 2016 [cited 2024 Dec 11]. Available from: https://legislative.gov.in/sites/default/files/A2016-49_1.pdf

48. Bureau of Indian Standards. National building code of India 2016 (NBC 2016) [Internet]. SP 7 : 2016. 2016 [cited 2024 Dec 21]. Available from: https://www.bis.gov.in/standards/technical-department/national-building-code/

49. Department of Empowerment of Persons with Disabilities (DEPwD). Assistance to Persons with Disabilities for Purchase/Fitting of Aids /Appliances (ADIP) [Internet]. Scheme. [cited 2024 Dec 17]. Available from: https://depwd.gov.in/adip/

50. Department of Empowerment of Persons with Disabilities (DEPwD), Government of India. Deendayal Divyangjan Rehabilitation Scheme (DDRS) [Internet]. Schemes. 2023 [cited 2024 Dec 10]. Available from: https://depwd.gov.in/ddrs/

51. Kumar SG, Roy G, Kar SS. Disability and Rehabilitation Services in India: Issues and Challenges. J Family Med Prim Care [Internet]. 2012 [cited 2025 Mar 3];1(1):69. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC3893941/

52. Hayes AM, Bulat J. Disabilities Inclusive Education Systems and Policies Guide for Low- and Middle-Income Countries. RTI Press Publication. Research Triangle Park, NC: RTI Press; 2017 Jul.

53. Centre for Civil Society. Right To Education [Internet]. [cited 2024 Dec 10]. Available from: https://righttoeducation.in/know-your-rte/about

54. Ministry of Education, Government of India. Samagra Shiksha [Internet]. 2021 [cited 2024 Dec 17]. Available from: https://samagra.education.gov.in/about.html

55. The Ministry of Human Resource Development; Government of India. National Education Policy, 2020 [Internet]. 2020 [cited 2024 Dec 17]. Available from: https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
56. Ahmed SK, Jeffries D, Chakraborty A, Carslake T, Lietz P, Rahayu B, et al. Teacher professional development for disability inclusion in low- and middle-income Asia-Pacific countries: An evidence and gap map. Campbell Systematic Reviews [Internet]. 2022 Dec 1 [cited 2025 Mar 3];18(4):e1287. Available from: https://onlinelibrary.wiley.com/doi/full/10.1002/cl2.1287
57. Bera M, Kartick Chandra Pramanik P. Access Challenges For Students With Disabilities In Higher Education. 2023 [cited 2025 Mar 3];11:2320–882. Available from: www.ijcrt.org
58. Department of Empowerment of Persons with Disabilities (DEPwD). National divyangjan finance and development corporation-India [Internet]. Organizations Under DEPwD. 2024 [cited 2024 Dec 10]. Available from: https://depwd.gov.in/national-handicapped-finance-and-development-corporation/
59. Qiu N, Jiang Y, Sun Z, Du M. The impact of disability-related deprivation on employment opportunity at the neighborhood level: does family socioeconomic status matter? Front Public Health. 2023 Aug 9;11:1232829.
60. Bonaccio S, Connelly CE, Gellatly IR, Jetha A, Martin Ginis KA. The Participation of People with Disabilities in the Workplace Across the Employment Cycle: Employer Concerns and Research Evidence. J Bus Psychol. 2020 Apr 1;35(2):135–58.
61. Babik I, Gardner ES. Factors Affecting the Perception of Disability: A Developmental Perspective. Front Psychol. 2021 Jun 21;12:702166.
62. Jameel S. Disability in the Context of Higher Education: Issues and Concerns in India. Electronic Journal for Inclusive Education. 2011 Jan 1;2(7).
63. Moumita Barman. Barriers to higher education for persons with disabilities block their meaningful growth. News article - The Siasat Daily. 2024 Jan 26;
64. Department of Empowerment of Persons with Disabilities (DEPwD), Government of India. Scheme for Implementation of the Rights of Persons with Disabilities Act, 2016 (SIPDA) [Internet]. Schemes. 2016 [cited 2024 Dec 12]. Available from: https://depwd.gov.in/sipda/
65. Ministry of Education, Government of India. Inclusive Education of the Disabled at Secondary Stage [Internet]. About MoE. 2016 [cited 2024 Dec 17]. Available from: https://www.education.gov.in/iedss

66. Disempowering the Empowered: The Systemic Failures of India's Disability Welfare Schemes [Internet]. [cited 2025 Mar 3]. Available from: https://www.salzburgglobal.org/news/fellows/article/disempowering-the-empowered-the-systemic-failures-of-indias-disability-welfare-schemes

67. Lawson A, Pineda VS, Walker J, Jain S, Jain M. Revisiting the Conceptual Terrains of the Right to Accessibility in India: The Role of Judicial Enforcement. Laws 2024, Vol 13, Page 54 [Internet]. 2024 Aug 16 [cited 2025 Mar 3];13(4):54. Available from: https://www.mdpi.com/2075-471X/13/4/54/htm

68. Arasu S, Shanbhag D. Quality of Life and Burden of Caregiving Among the Primary Caregivers of Children with Disability in Rural Karnataka. J Family Med Prim Care. 2021 Aug 27;10(8):2804–9.

Tables

Table 1: Prevalence of different types of disabilities across different socio-demographic characteristics, NSS, 76th round, India (n=576,796)

Background characteristics	Locomotor N (%)	Vision N (%)	Hearing N (%)	Speech N (%)	Mental Retardation N (%)	Mental Illness N (%)	Others N (%)	Any one disability N (%)
	61981 (1.36)	11977 (0.23)	15294 (0.30)	12661 (0.23)	8564 (0.16)	6751 (0.16)	221 (0.05)	107,125 (2.20)
Age Group (completed years)								
up to 5	1494 (2.2)	182 (1.5)	311 (2)	907 (7.3)	445 (5.3)	41 (0.5)	82 (5.5)	2839 (2.5)
`6-17	7290 (10.8)	1210 (9.2)	1977 (12.6)	4515 (35.8)	3492 (41.2)	1060 (15.4)	321 (21.5)	16695 (14.4)
18-35	11546 (18)	1386 (10.7)	2036 (13.3)	3273 (26.4)	2796 (33)	1915 (27.6)	301 (19.8)	20673 (18.8)
36-49	11434 (18.1)	1557 (12.3)	2118 (13)	1812 (13.8)	1113 (12.4)	1646 (25)	178 (14.8)	18665 (17.2)
50-65	16627 (27.9)	3609 (31.1)	3843 (25.1)	1495 (11.4)	561 (6.5)	1409 (21.3)	345 (21.9)	26420 (25.7)
65+	13590 (23)	4033 (35.2)	5009 (34)	659 (5.3)	157 (1.6)	680 (10.1)	324 (16.6)	21833 (21.4)
Sex								
Male	36862 (58.7)	6014 (50.2)	7993 (52)	7554 (60.4)	5202 (61.7)	3856 (56.8)	1264 (58.9)	61707 (57.3)
Female	25110 (41.3)	5958 (49.8)	7296 (48)	5106 (39.6)	3359 (38.3)	2893 (43.2)	1355 (41.1)	45396 (42.7)
Marital Status								
Never Married	16912 (24.7)	2719 (20.8)	3987 (24.2)	8708 (67.8)	7450 (86.9)	3281 (46.1)	1214 (40.4)	36813 (31.4)
Ever Married	33257 (55.3)	5541 (46.9)	7094 (47.5)	3086 (25.3)	791 (9.3)	2381 (35.8)	1502 (47.2)	50108 (48.8)
Widowed	11293 (19)	3616 (31.5)	4024 (27.1)	690 (5.4)	190 (2.1)	775 (12.5)	366 (11.1)	18933 (18.5)
divorced/separated	519 (1)	101 (0.8)	189 (1.1)	177 (1.4)	133 (1.8)	314 (5.5)	59 (1.2)	1271 (1.3)
Area of residence								
Rural	42222 (71.6)	8809 (76.3)	11121 (74.9)	9164 (72.9)	5974 (69.9)	4772 (73.1)	2055 (62.4)	75091 (72.8)
Urban	19759 (28.4)	3168 (23.7)	4173 (25.1)	3497 (27.1)	2590 (30.1)	1979 (26.9)	1166 (37.6)	32034 (27.2)
Educational attainment								
Non-literate	26376 (44.5)	7160 (62.6)	8365 (57.3)	7119 (56.9)	5846 (69.3)	3285 (49.6)	1408 (34.1)	50848 (48.9)

Literate but not formal	15002 (23.2)	2483 (19.4)	3700 (22.9)	3428 (26.7)	1858 (21)	1629 (23.3)	359 (29)	26145 (23.3)
Upto primary	16885 (26.5)	1987 (15.5)	2782 (16.9)	1908 (14.9)	808 (9.1)	1623 (24.1)	316 (28.7)	25210 (23.1)
Upto secondary	3718 (5.8)	347 (2.6)	447 (2.9)	206 (1.5)	52 (0.6)	214 (3.1)	38 (8.2)	4922 (4.6)
Preferred Religion								
Hindu	49548 (81.9)	9479 (82.9)	12090 (82.6)	9658 (78.7)	6540 (78.7)	5063 (74.7)	444 (80.8)	84742 (81.5)
Islam	8375 (12.5)	1601 (12.5)	1927 (11.7)	2021 (15.6)	1366 (15.9)	1167 (18.4)	92 (12.6)	14658 (12.9)
Others	4058 (5.6)	897 (4.6)	1277 (5.7)	982 (5.7)	658 (5.4)	521 (6.9)	75 (6.5)	7725 (5.5)
Social Group								
Scheduled Tribe	6049 (8.3)	1491 (9.1)	1923 (9.5)	1478 (9.4)	822 (7.2)	670 (7.8)	92 (12.3)	11729 (8.7)
Scheduled Caste	12240 (20.4)	2407 (21.3)	2805 (19.4)	2467 (20.5)	1602 (19.2)	1269 (19.9)	74 (17.8)	20925 (20.4)
Other Backward Classes	26861 (44.7)	5205 (46)	6583 (45.5)	5482 (44.7)	3806 (45.8)	2915 (45.7)	167 (40.2)	46223 (44.9)
General	16831 (26.6)	2874 (23.6)	3983 (25.6)	3234 (25.4)	2334 (27.8)	1897 (26.6)	88 (29.7)	28248 (26)
Wealth Index								
Poorer	17681 (30.2)	3919 (35.1)	4933 (34.7)	3552 (30.1)	2025 (25.3)	1932 (31)	223 (25.8)	31259 (31)
Poor	12553 (20.5)	2474 (20.8)	3005 (19.4)	2746 (21.4)	1773 (20.9)	1364 (20.5)	124 (16.2)	21959 (20.7)
Middle	11468 (18.2)	2271 (18.5)	2730 (17.4)	2434 (18.5)	1751 (20)	1302 (18.1)	100 (17.3)	20058 (18.3)
Richer	10440 (16)	1864 (14.4)	2480 (15.4)	2080 (15.8)	1611 (18.3)	1161 (16.8)	93 (19.9)	17946 (15.9)
Richest	9839 (15.1)	1449 (11.1)	2146 (13)	1849 (14.2)	1404 (15.5)	992 (13.6)	91 (20.7)	15903 (14.1)
Regions of India								
Northern	8787 (14.4)	1478 (13.1)	1692 (11.7)	1347 (11.1)	1144 (13.5)	931 (14.2)	116 (7.6)	14305 (13.8)
Southern	13448 (23)	2814 (24.7)	4013 (27.3)	2958 (24.8)	2141 (25.6)	1447 (21.3)	174 (25.5)	23699 (23.3)
Western	8387 (12.7)	1286 (10.1)	1740 (11.1)	1423 (11.3)	1293 (15.2)	706 (10.6)	140 (17.7)	13708 (12.3)
Eastern	12790 (20.3)	2538 (21.9)	3238 (22.5)	3248 (27.1)	1762 (21.3)	1672 (26.3)	254 (30.4)	23061 (21.8)
North-Eastern	3858 (2.1)	1335 (4.5)	1620 (3.7)	1308 (3.4)	594 (2)	582 (2.7)	82 (2.4)	8839 (2.8)
Central	14711 (27.4)	2526 (25.6)	2991 (23.8)	2377 (22.4)	1630 (22.6)	1413 (24.8)	175 (16.3)	23513 (26)

Table 2: Percentage distribution of different disability types and their associated information, NSS 76th round, India.

	Locomotor	Visual	Hearing	Speech and language	Mental retardation/	Mental Illness	Other types of disability	Any Disability
Total sample size	61980	1156	1281	2013	1217	768	768	61980
Causes of disability								
Disease	28673 (46.3)	454 (39.3)	484 (37.8)	1246 (61.9)	NA	NA	NA	NA
Other than disease due to burn	723 (1.2)	88 (0.7)	1 (0.1)	8 (0.4)	NA	NA	NA	NA
Injuries other than burn	13876 (22.4)	156 (13.5)	158 (12.4)	105 (5.2)	NA	NA	NA	NA
Other causes	18702 (30.2)	538 (46.5)	637 (49.7)	654 (32.5)	NA	NA	NA	NA
Disability from Birth								
Yes	11,488 (18.5)	91 (7.9)	198 (15.4)	1041 (51.7)	955 (78.5)	112 (21.4)	119 (15.5)	11,488 (18.5)
No	50,052 (80.8)	1062 (91.9)	1081 (84.4)	964 (47.9)	258 (21.2)	403 (78.6)	645 (84)	50,052 (80.8)
Not Known	440 (0.7)	3 (0.2)	2 (0.2)	8 (0.4)	4 (0.3)	8 (1.)	4 (0.4)	440 (0.7)
Disability commenced in last 365 days								
sample size	48741	1034.2	1052.4	938.7	251.6	494.2	628.6	48741
Yes	2987 (6.1)	72 (7)	65 (6.2)	100 (10.6)	11 (4.4)	40 (10.2)	48 (7.7)	2987 (6.1)
No	45754 (93.9)	961 (93)	987 (93.8)	839 (89.4)	240 (95.6)	354 (89.8)	580 (92.3)	45754 (93.9)
Place of occurrence of disability								
Sample size	14281	161	157	105	33	86	63	14281
Workplace	2308 (16.2)	13 (8.3)	30 (19.2)	11 (10.9)	2 (6.9)	9 (11.)	11 (18.1)	2308 (16.2)
Road	5977 (41.9)	46 (28.5)	43 (27.5)	41 (38.7)	9 (25.9)	35 (40.)	15 (23.8)	5977 (41.9)
Home	4693 (32.9)	93 (57.9)	73 (46.3)	45 (42.4)	19 (58.5)	33 (38.)	31 (49.5)	4693 (32.9)

Other places	1302 (9.1)	9 (5.3)	11 (7)	8 (8)	3 (8.7)	5 (9.8)	5 (8.6)	1302 (9.1)
Treatment taken/undergoing treatment								
Sample size	61980	1156	1281	2013	1217	768	768	61980
yes: consulting doctor	35,923 (58)	566.6 (49)	617 (48.2)	1,080 (53.7)	710 (58.4)	26[illegible] (43)	330 (43)	35923 (58)
Otherwise	1565 (2.5)	22 (1.9)	34 (2.7)	42 (2.1)	36 (2.9)	6	6 (0.7)	1564.5 (2.5)
Yes: consulting doctor, plus undergoing treatment	17329 (28)	375 (32.4)	418 (32.7)	719 (35.7)	355 (29.2)	19[illegible] (25.7)	397 (51.7)	17329 (28)
Otherwise	860 (1.4)	34 (2.9)	21 (1.7)	20 (1)	4 (0.3)	1[illegible] (1)	8 (1)	860 (1.4)
Attending special school/special therapy	116 (0.2)	2.9 (0.3)	0 (0)	4 (0.2)	6 (0.5)	[illegible]	0 (0)	116 (0.2)
Cannot afford treatment	2040 (3.3)	75 (6.4)	73 (5.7)	72 (3.6)	55 (4.6)	1[illegible] (3.[illegible])	8 (1)	2040 (3.3)
No treatment available for the disability	699 (1.1)	13 (1.1)	8 (0.6)	17 (0.8)	16 (1.3)	4 (0.[illegible])	5 (0.7)	699 (1.1)
Not required	2717 (4.4)	60 (5.2)	97 (7.6)	47 (2.3)	26 (2.1)	41 (4.[illegible])	14 (1.8)	2717 (4.4)
Not known	732 (1.2)	8 (0.7)	12 (0.9)	13 (0.7)	9 (0.7)	1 (0.[illegible])	1 (0.1)	732 (1.2)

Note: *Causes of disability were recorded for individuals with disabilities like locomotor, visual, hearing, and speech.*
Disability Commenced in the last 365 days was recorded for those individuals who did not have a disability 'from birth' but disability commenced during the last 365 days before the survey.
Place of occurrence was recorded for individuals with disability who are experiencing disability post their birth and for whom the cause of disability was burn, injury or other than burn.

Table 3: Access to disability support and rehabilitation services by the person with disability as per the 76th round of the National Sample Survey (2018), India.

Living conditions of the person with disability *(n=sample included in the analysis)*	**Weighted percentage**
Age at the onset of disability* (n= 48,727)	
0 to 4 years	17.2
5 to 14 years	9.0
15 to 59 years	45.9
60 years and above	28.0
Receipt of aid/help (n=61,712)	
Received aid/help from Government	20.8
Received aid/help from organisations other than government	4.1
Did not receive aid/help	75.1
Living arrangement(n=61,962)	
Living alone or with a spouse	57.0
Living with others	43.0
Arrangement of regular caregiver(n=61,980)	
Care-giver required but not available	0.1
Care-giver is not required	37.1
Care-giver is available	62.8
Access to public Transport (n=61,980)	
Yes	59.6
No	40.4
Accesses to public building (n=61,980)	
Yes	45.6
No	54.4
Difficulty faced accessing public building (n= 27,756)	
difficulty faced: due to stairs and non-availability of ramp, grooved tiles or lift	57.7
in opening doors	4.4
no seating arrangement: in the waiting area	1.6
at the point of receiving service	0.8
no special toilet seats	0.7
no sign for direction/ instruction/no public announcement system	0.3
no difficulty faced	27.6
others	7.0
Employed/working before onset of disability (For person of age 15 years and above; n=55,819)	
Yes	40.3
No	59.7
Disability causing loss or change in job(n= 21,559**)**	
loss of work	60.7
change of work	18.3
no loss or change of work	21.3
Having Disability Certificate(n=61,980)	
Yes	30.4
No	69.6
Percentage of Disability as per Certificate (n=20,213)	
40- <60%	49.3
≥60-<80%	36.3
≥80%	12.8
none of these	1.6

*** For those who have not had a disability since birth.**

Table 4: Multivariable binary logistic regression analysis exploring the likelihood of living with any disability per the 76th round of the NSS, India.

	Unadjusted Odds ratio (95% C.I)	p-value	Adjusted Odds ratio (95% C.I)	p-value
Age Group (Completed years)				
Up to 5 years	**Reference value**		**Reference value**	
6 - 18 years	2.1(2-2.1)	<0.001	3.5(3.4-3.7)	<0.001
19-35 years	2.3(2.2-2.4)	<0.001	8.4(8-8.8)	<0.001
36-49 years	3.5(3.4-3.7)	<0.001	17.6(16.8-18.5)	<0.001
50-65 years	6.4(6.1-6.7)	<0.001	25.8(24.5-27.1)	<0.001
65+ years	17.5(16.7-18.2)	<0.001	58.4(55.4-61.5)	<0.001
Sex				
Male	**Reference value**		**Reference value**	
Female	0.7(0.7-0.7)	<0.001	0.6(0.6-0.6)	<0.001
Place of Residence				
Rural	**Reference value**		**Reference value**	
Urban	1.02(1.01-1.03)	0.03	1.3(1.2-1.3)	<0.001
Social Group				
Scheduled Tribe	**Reference value**		**Reference value**	
Scheduled Caste	1.1(1.1-1.1)	<0.001	1.1(1.1-1.2)	<0.001
Other Backward Classes	1.1(1-1.1)	<0.001	1.1(1.1-1.2)	<0.001
General	1.1(1.1-1.1)	<0.001	1.3(1.3-1.3)	<0.001
Educational attainment				
No education	**Reference value**		**Reference value**	
Upto Primary class	0.5(0.5-0.5)	<0.001	0.5(0.5-0.5)	<0.001
Upto Secondary Class	0.4(0.4-0.4)	<0.001	0.4(0.4-0.4)	<0.001
Graduate & Above	0.3(0.3-0.4)	<0.001	0.3(0.3-0.3)	<0.001
Preferred Religion				
Hindu	**Reference value**		**Reference value**	
Islam	0.8(0.8-0.9)	<0.001	0.9(0.9-0.9)	<0.001
Others	0.9(0.9-1)	<0.001	1(1-1.1)	0.019
Marital Status				
Never married	**Reference value**		**Reference value**	
Currently married	1.3(1.3-1.3)	<0.001	0.3(0.3-0.3)	<0.001
widowed	5.9(5.8-6.1)	<0.001	0.6(0.5-0.6)	<0.001
Divorced/separated	4.4(4.1-4.8)	<0.001	1.1(1-1.2)	0.011
Wealth Index				
Poorest	**Reference value**		**Reference value**	
Poor	0.6(0.6-0.6)	<0.001	0.7(0.7-0.7)	<0.001
Middle	0.6(0.5-0.6)	<0.001	0.6(0.6-0.6)	<0.001
Richer	0.5(0.5-0.5)	<0.001	0.5(0.5-0.6)	<0.001
Richest	0.4(0.4-0.4)	<0.001	0.5(0.5-0.5)	<0.001
Regions of India				
Northern	**Reference value**		**Reference value**	
Southern	1.42(1.39-1.46)	<0.001	1.1(1.1-1.2)	<0.001
Western	1.13(1.1-1.16)	<0.001	1(1-1.1)	0.065
Eastern	1.15(1.13-1.18)	<0.001	1(0.9-1)	0.001
North-eastern	1(0.97-1.03)	0.961	1(1-1)	0.361
Central	1.01(0.98-1.03)	0.653	0.9(0.8-0.9)	<0.001

Figure Legends

Figure 1: Geographical disparities in the difficulties faced by the people living with disability as per the 76th Round of the National Sample Survey, India

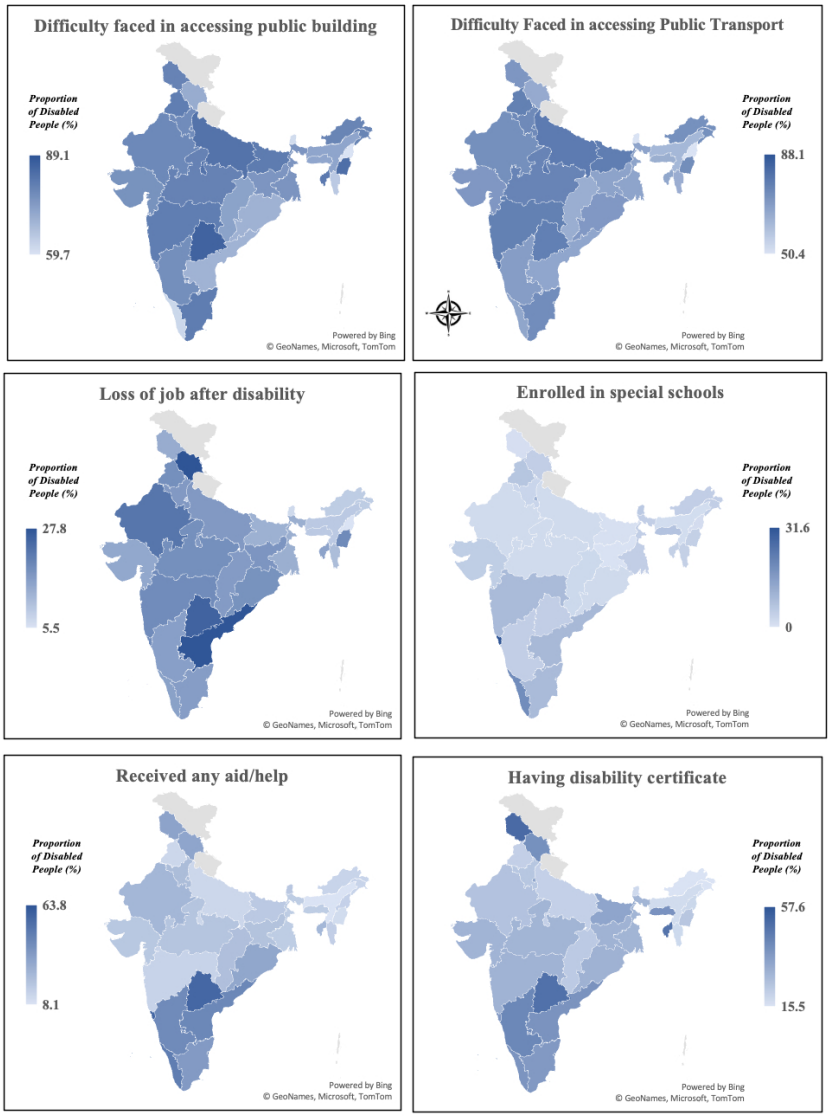

Figure 1: Geographical disparities in the difficulties faced by the people living with disabilities as per the 76th Round of the National Sample Survey, India

40x58mm (600 x 600 DPI)

Supplementary file

Supplementary Table 1: Living conditions of the people living with different types of disabilities, as per the 76th report of the National Sample Survey Organization India (2017-18)

Living conditions of the people *(n=sample included in the analysis)*	**Locomotor**	**Visual**	**Hearing**	**Speech**	**Mental retardness**	**Mental illness**	**Others**
	Weighted %	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*
Age at the onset of disability							
0 to 4 years	17.2	3.0	4.2	21.0	51.0	10.1	9.9
5 to 14 years	9.0	2.3	3.0	9.6	17.3	12.3	7.0
15 to 59 years	45.9	22.1	17.4	40.9	24.0	40.5	49.2
60 years and above	28.0	72.6	75.4	28.4	7.7	37.1	33.8
Total number of participants	48,737	1,035	1,056	946	259	395	632
Receipt of aid/help							
Received aid/help from Government	20.8	22.2	20.7	29.2	37.2	25.5	20.0
Received aid/help from organisations other than government	4.1	10.2	8.6	4.0	3.3	6.0	2.7
Did not receive aid/help	75.1	67.7	70.8	66.8	59.5	68.5	77.3
Total number of participants	61,712	1,145	1,272	2,010	1,215	521	766
Living arrangement							
Living alone or with a spouse	57.0	43.5	41.6	26.8	4.1	35.4	55.8
Living with others	43.0	56.5	58.4	73.2	95.9	64.6	44.2
Total number of participants	61,962	1,156	1,281	2,013	1,217	523	768
Arrangement of regular caregiver							
Care-giver required but not available	0.1	0.0	0.0	0.1	0.9	0.0	0.3
Care-giver is not required	37.1	11.5	15.7	8.8	5.6	10.8	13.4
Care-giver is available	62.8	88.6	84.2	91.1	93.6	89.2	86.3
Total number of participants	61,980	1,156	1,281	2,013	1,217	523	768
Accesses to public building							
Yes	45.6	25.4	29.4	27.2	26.0	26.0	29.9

No	54.4	74.6	70.6	72.8	74.0	74.0	70.1
Total number of participants	61,980	1156	1281	2013	523	523	768
Difficulty faced accessing public building							
difficulty faced: due to stairs and non-availability of ramp, grooved tiles or lift	57.7	63.2	60.7	55.4	49.7	46.7	52.2
in opening doors	4.4	1.6	1.3	2.8	1.0	7.6	2.8
no seating arrangement: in the waiting area	1.6	3.0	2.9	0.7	1.4	1.7	2.1
at the point of receiving service	0.8	5.7	2.1	0.9	0.8	1.3	0.3
no special toilet seats	0.7	0.4	0.0	0.7	0.0	0.8	0.9
no sign for direction/ instruction/no public announcement system	0.3	2.2	2.0	2.2	2.1	1.3	0.0
no difficulty faced	27.6	8.4	17.0	15.2	17.7	24.2	25.8
others	7.0	15.4	13.3	22.1	27.4	16.3	15.8
Total number of participants	27,756	330	433	537	330	134	226
Working before onset (For >15 years and above)							
Yes	40.3	44.4	35.9	32.7	5.6	38.5	53.6
No	59.7	55.6	64.1	67.3	94.4	61.5	46.4
Total number of participants	55,819	1093	1171	1353	690	448	667
Disability causing loss or change in job							
loss of work	60.7	75.3	72.8	86.5	80.9	84.2	82.8
change of work	18.3	11.0	5.7	5.2	2.7	8.7	5.9
no loss or change of work	21.3	13.7	21.5	8.3	16.4	7.1	11.4
Total number of participants	21,559	465	404	425	37	165	343
Having Disability Certificate							
Yes	30.4	14.0	16.1	41.7	59.8	29.9	24.9
No	69.6	86.0	83.9	58.3	40.2	70.1	75.1
Total number of participants	61,980	1156	1281	2013	1217	523	768
Percentage of Disability as per Certificate							
40% or more but less than 60%	49.3	23.2	22.5	16.9	14.6	27.7	29.7
60% or more but less than 80%	36.3	37.6	34.2	32.3	35.5	43.0	37.3
80% or more	12.8	38.7	42.2	50.3	49.1	29.0	31.7
none of these	1.6	0.5	1.1	0.5	0.8	0.4	1.3

Total number of participants	20,213.00	174	221	901	780	168	205

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India.

Covariates	Locomotor disability				Speech and language disability				Mental illness disability			
	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age (Years)												
<18 (Ref)	1		1		1		1		1		1	
18-35	2.39(2.27-2.53)	<0.001	4.08(3.84-4.33)	<0.001	1.07(0.99-1.15)	0.07	8.85(8.16-9.6)	<0.001	14(10.28-19.08)	<0.001	65.34(47.81-89.31)	<0.001
35-49	3.91(3.7-4.13)	<0.001	7.89(7.4-8.41)	<0.001	0.93(0.86-1.01)	0.089	9.87(8.98-10.84)	<0.001	19.06(13.98-25.99)	<0.001	156.16(113.91-214.1)	<0.001
50-59	6.83(6.47-7.21)	<0.001	12.36(11.6-13.17)	<0.001	0.85(0.78-0.92)	<0.001	7.21(6.52-7.97)	<0.001	18.05(13.23-24.62)	<0.001	135.71(98.75-186.49)	<0.001
65+	14.92(14.12-15.77)	<0.001	23.27(21.79-24.85)	<0.001	0.82(0.74-0.91)	<0.001	6.22(5.49-7.03)	<0.001	19.12(13.94-26.21)	<0.001	126.17(91.08-174.77)	<0.001
Gender												
Male (Ref)	1		1		1		1		1		1	
female	0.69(0.68-0.7)	<0.001	0.58(0.57-0.59)	<0.001	0.71(0.68-0.73)	<0.001	0.69(0.67-0.72)	<0.001	0.79(0.75-0.83)	<0.001	0.75(0.71-0.79)	<0.001
Place of residence												
Rural (Ref)	1		1		1		1		1		1	
Urban	1.09(1.07-1.11)	<0.001	1.27(1.24-1.3)	<0.001	0.88(0.85-0.92)	<0.001	1.14(1.09-1.19)	<0.001	0.96(0.91-1.01)	0.12	1.09(1.03-1.16)	0.003
Social groups												
Scheduled tribe (Ref)	1		1		1		1		1		1	
Scheduled caste	1.27(1.23-1.31)	<0.001	1.17(1.13-1.21)	<0.001	1.02(0.96-1.09)	0.493	1.12(1.04-1.2)	0.002	1.16(1.06-1.28)	0.002	1.22(1.11-1.35)	<0.001
Other backward class	1.19(1.16-1.23)	<0.001	1.14(1.1-1.17)	<0.001	0.98(0.92-1.04)	0.482	1.22(1.15-1.31)	<0.001	1.15(1.06-1.25)	0.001	1.31(1.2-1.44)	<0.001
Others	1.26(1.22-1.3)	<0.001	1.21(1.17-1.25)	<0.001	0.97(0.91-1.03)	0.32	1.48(1.38-1.59)	<0.001	1.26(1.15-1.37)	<0.001	1.55(1.4-1.71)	<0.001
Education level												
Illiterate (Ref)	1		1		1		1		1		1	

Primary	0.58(0.56-0.59)	<0.001	0.84(0.82-0.86)	<0.001	0.51(0.49-0.53)	<0.001	0.24(0.23-0.25)	<0.001	0.53(0.5-0.56)	<0.001	0.52(0.49-0.56)	<0.001
Secondary	0.57(0.56-0.58)	<0.001	0.76(0.74-0.78)	<0.001	0.25(0.24-0.26)	<0.001	0.11(0.11-0.12)	<0.001	0.47(0.44-0.49)	<0.001	0.34(0.32-0.36)	<0.001
and Higher Education	0.57(0.55-0.6)	<0.001	0.66(0.63-0.68)	<0.001	0.12(0.11-0.14)	<0.001	0.05(0.04-0.06)	<0.001	0.28(0.24-0.32)	<0.001	0.15(0.13-0.17)	<0.001
Religion												
Hindu (Ref)	1		1		1		1		1		1	
Muslim	0.84(0.82-0.86)	<0.001	0.96(0.94-0.99)	0.004	1.05(1-1.11)	0.031	0.83(0.79-[illegible])	0	1.16(1.09-1.24)	<0.001	1.08(1.01-1.16)	0.02
Others	0.84(0.82-0.87)	<0.001	0.99(0.95-1.03)	0.607	1.07(1-1.14)	0.057	1.13(1.05-1.22)	0.001	1.08(0.99-1.18)	0.101	1.17(1.06-1.29)	0.003
Marital status												
Un-married (Ref)	1		1		1		1		1		1	
Currently married	1.89(1.86-1.93)	<0.001	0.52(0.51-0.54)	<0.001	0.31(0.3-0.33)	<0.001	0.15(0.14-[illegible])	0	0.66(0.62-0.69)	<0.001	0.13(0.12-0.14)	<0.001
Widowed	5.99(5.83-6.15)	<0.001	0.93(0.89-0.97)	0.001	0.53(0.49-0.57)	<0.001	0.16(0.15-[illegible])	0	1.6(1.48-1.74)	<0.001	0.22(0.19-0.24)	<0.001
Divorced/separated	2.98(2.7-3.28)	<0.001	0.92(0.83-1.01)	0.091	1.79(1.54-2.09)	<0.001	0.66(0.56-[illegible])	0	9.06(8.02-10.23)	<0.001	1.76(1.54-2.02)	<0.001
Wealth												
Poorest (Ref)	1		1		1		1		1		1	
Poor	0.67(0.66-0.69)	<0.001	0.78(0.76-0.8)	<0.001	0.77(0.73-0.81)	<0.001	0.81(0.77-0.85)	0	0.7(0.65-0.75)	<0.001	0.83(0.77-0.89)	<0.001
Middle	0.6(0.59-0.62)	<0.001	0.67(0.66-0.69)	<0.001	0.67(0.64-0.71)	<0.001	0.74(0.7-0.78)	0	0.66(0.62-0.71)	<0.001	0.8(0.74-0.86)	<0.001
Richer	0.55(0.54-0.56)	<0.001	0.58(0.57-0.6)	<0.001	0.58(0.55-0.61)	<0.001	0.69(0.65-0.73)	0	0.6(0.55-0.64)	<0.001	0.75(0.69-0.81)	<0.001
Richest	0.52(0.51-0.54)	<0.001	0.52(0.5-0.53)	<0.001	0.52(0.49-0.55)	<0.001	0.71(0.66-0.75)	0	0.52(0.48-0.56)	<0.001	0.7(0.64-0.77)	<0.001
Region												
Northern (Ref)	1		1		1		1		1		1	
Southern	1.26(1.22-1.3)	<0.001	0.97(0.94-1)	0.073	1.78(1.67-1.9)	<0.001	1.84(1.72-1.97)	<0.001	1.25(1.15-1.36)	<0.001	1.05(0.96-1.15)	0.257
Western	1.12(1.08-1.15)	<0.001	0.99(0.95-1.02)	0.429	1.23(1.14-1.32)	<0.001	1.29(1.19-1.39)	<0.001	0.88(0.79-0.97)	0.008	0.84(0.76-0.93)	0.001
Eastern	1.02(0.99-1.05)	0.288	0.86(0.84-0.89)	<0.001	1.7(1.59-1.81)	<0.001	1.42(1.33-1.52)	<0.001	1.25(1.16-1.36)	<0.001	1.12(1.03-1.22)	0.008
North-eastern	0.69(0.66-0.71)	<0.001	0.66(0.63-0.69)	<0.001	1.59(1.47-1.71)	<0.001	1.64(1.51-1.78)	<0.001	1.01(0.91-1.12)	0.833	0.95(0.85-1.06)	0.388
Central	1.03(1-1.05)	0.075	0.94(0.91-0.97)	<0.001	1.08(1.01-1.15)	0.026	0.85(0.79-0.92)	<0.001	0.93(0.85-1.01)	0.073	0.85(0.78-0.93)	<0.001

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India (Cont..)

	Hearing disability				Visual disability				Mental retardness.			
	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age (Years)												
<18 (Ref)	1		1		1		1		1		1	
18-35	1.95(1.73-2.2)	<0.001	5.16(4.55-5.85)	0	10.37(1.94-2.65)	<0.001	6.57(5.59-7.72)	<0.001	1.88(1.7-2.08)	<0.001	33.33(30-37.04)	<0.001
35-49	3.23(2.87-3.64)	<0.001	9.31(8.14-10.65)	0	17.8(3.47-4.72)	<0.001	13.95(11.8-16.5)	<0.001	1.17(1.05-1.31)	0.005	34.13(30.24-38.51)	<0.001
50-59	6.63(5.91-7.45)	<0.001	15.34(13.43-17.52)	0	31.04(9.17-12.36)	<0.001	29.2(24.7-34.48)	<0.001	0.65(0.57-0.74)	<0.001	18.86(16.39-21.71)	<0.001
65+	20.67(18.42-23.2)	<0.001	38.97(34.06-44.58)	0	43.68(23.92-32.23)	1	61.23(51.7-72.57)	<0.001	0.4(0.33-0.48)	<0.001	11.39(9.26-14.01)	<0.001
Gender												
Male (Ref)	1		1		1		1		1		1	
female	0.96(0.93-0.99)	0.012	0.73(0.7-0.75)	<0.001	1.04(1.01-1.08)	0.022	0.76(0.73-0.79)	<0.001	0.68(0.65-0.71)	<0.001	0.76(0.73-0.8)	<0.001
Place of residence												
Rural (Ref)	1		1		1		1		1		1	
Urban	0.86(0.83-0.9)	<0.001	1.07(1.03-1.12)	0.001	0.83(0.8-0.86)	<0.001	1.08(1.04-1.13)	0.001	1(0.96-1.05)	0.894	1.18(1.11-1.24)	<0.001
Social groups												
Scheduled tribe (Ref)	1		1		1		1		1		1	
Scheduled caste	0.89(0.84-0.94)	<0.001	0.95(0.89-1.01)	0.084	0.99(0.93-1.06)	0.734	1.04(0.97-1.12)	0.228	1.2(1.1-1.3)	<0.001	1.24(1.13-1.36)	<0.001
Other backward class	0.9(0.86-0.95)	<0.001	1.02(0.96-1.08)	0.544	0.92(0.87-0.98)	0.005	1.03(0.97-1.1)	0.353	1.23(1.14-1.32)	<0.001	1.49(1.37-1.63)	<0.001
Others	0.92(0.87-0.97)	0.002	1.14(1.07-1.21)	<0.001	0.85(0.8-0.91)	<0.001	1.02(0.95-1.09)	0.576	1.26(1.17-1.37)	<0.001	1.91(1.74-2.09)	<0.001
Education level												
Illiterate (Ref)	1		1		1		1		1		1	
Primary	0.47(0.45-0.48)	<0.001	0.65(0.62-0.68)	<0.001	0.36(0.35-0.38)	<0.001	0.57(0.55-0.6)	<0.001	0.34(0.32-0.35)	<0.001	0.1(0.1-0.11)	<0.001
Secondary	0.31(0.29-0.32)	<0.001	0.44(0.42-0.46)	<0.001	0.26(0.24-0.27)	<0.001	0.43(0.4-0.45)	<0.001	0.13(0.12-0.14)	<0.001	0.03(0.03-0.04)	<0.001

and Higher Education	0.22(0.2-0.25)	<0.001	0.29(0.27-0.33)	<0.001	0.2(0.18-0.23)	<0.001	0.33(0.29-0.37)	<0.001	0.04(0.03-0.05)	<0.001	0.01(0.01-0.01)	<0.001
Religion												
Hindu (Ref)	1		1		1		1		1		1	
Muslim	0.8(0.76-0.84)	<0.001	0.88(0.84-0.93)	<0.001	0.85(0.8-0.89)	<0.001	1(0.94-1.06)	0.995	1.05(0.99-1.12)	0.089	0.71(0.67-0.76)	<0.001
Others	1.11(1.05-1.18)	<0.001	1.08(1.01-1.16)	0.024	0.99(0.92-1.06)	0.802	0.94(0.87-1.02)	0.112	1.05(0.97-1.14)	0.195	1.27(1.15-1.39)	<0.001
Marital status												
Un-married (Ref)	1		1		1		1		1		1	
Currently married	1.63(1.57-1.7)	<0.001	0.42(0.39-0.45)	<0.001	1.87(1.78-1.96)	<0.001	0.36(0.33-0.39)	<0.001	0.09(0.09-0.1)	<0.001	0.03(0.03-0.03)	<0.001
Widowed	7.49(7.16-7.84)	<0.001	0.77(0.72-0.84)	<0.001	9.8(9.31-10.31)	<0.001	0.73(0.67-0.8)	<0.001	0.17(0.15-0.19)	<0.001	0.04(0.03-0.05)	<0.001
Divorced/separated	4.27(3.68-4.97)	<0.001	1.15(0.98-1.35)	0.096	3.26(2.67-3.99)	<0.001	0.67(0.54-0.83)	<0.001	1.56(1.31-1.85)	<0.001	0.36(0.3-0.44)	<0.001
Wealth												
Poorest (Ref)	1		1		1		1		1		1	
Poor	0.6(0.57-0.63)	<0.001	0.74(0.71-0.78)	<0.001	0.62(0.59-0.65)	<0.001	0.8(0.76-0.84)	<0.001	0.87(0.82-0.93)	<0.001	0.93(0.87-1)	0.054
Middle	0.54(0.51-0.56)	<0.001	0.67(0.64-0.7)	<0.001	0.56(0.54-0.59)	<0.001	0.73(0.69-0.77)	<0.001	0.85(0.8-0.91)	<0.001	0.92(0.86-0.99)	0.025
Richer	0.49(0.47-0.52)	<0.001	0.62(0.59-0.65)	<0.001	0.47(0.44-0.49)	<0.001	0.61(0.57-0.64)	<0.001	0.79(0.74-0.85)	<0.001	0.92(0.85-0.99)	0.028
Richest	0.43(0.41-0.45)	<0.001	0.57(0.54-0.6)	<0.001	0.37(0.35-0.39)	<0.001	0.5(0.47-0.54)	<0.001	0.7(0.65-0.75)	<0.001	0.91(0.84-0.99)	0.02
Region												
Northern (Ref)	1		1		1		1		1		1	
Southern	1.94(1.83-2.05)	<0.001	1.52(1.43-1.61)	<0.001	1.54(1.45-1.64)	<0.001	1.1(1.03-1.18)	0.006	1.51(1.4-1.62)	<0.001	1.7(1.57-1.84)	<0.001
Western	1.19(1.12-1.28)	<0.001	1.07(1-1.15)	0.053	1.01(0.93-1.08)	0.883	0.88(0.82-0.96)	0.002	1.31(1.21-1.42)	<0.001	1.49(1.37-1.63)	<0.001
Eastern	1.34(1.26-1.42)	<0.001	1.18(1.11-1.26)	<0.001	1.2(1.13-1.28)	<0.001	1(0.93-1.07)	0.981	1.07(1-1.16)	0.062	0.92(0.84-0.99)	0.037
North-eastern	1.57(1.46-1.68)	<0.001	1.58(1.47-1.7)	<0.001	1.47(1.37-1.59)	<0.001	1.52(1.41-1.65)	<0.001	0.84(0.76-0.93)	0.001	0.82(0.74-0.92)	0.001
Central	1.08(1.02-1.15)	0.01	1(0.94-1.06)	0.96	1.05(0.98-1.12)	0.182	0.91(0.85-0.97)	0.006	0.87(0.81-0.94)	<0.001	0.63(0.58-0.69)	<0.001

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India (Cont..)

	Other types of disabilities			
	Un-adjusted OR (95% CI)	**p-value**	**Adjusted OR (95% CI)**	**p-value**
Age (Years)				
<18 (Ref)	1		1	
18-35	0.98(0.83-1.16)	0.8	1.46(1.21-1.77)	<0.001
35-49	1.23(1.04-1.46)	0.018	2.37(1.91-2.93)	<0.001
50-59	1.84(1.56-2.17)	<0.001	3.51(2.84-4.34)	<0.001
65+	3.3(2.78-3.9)	<0.001	6.01(4.81-7.5)	<0.001
Gender				
Male (Ref)	1		1	
female	0.81(0.75-0.87)	<0.001	0.8(0.74-0.86)	<0.001
Place of residence				
Rural (Ref)	1		1	
Urban	1.2(1.12-1.29)	<0.001	1.21(1.11-1.31)	<0.001
Social groups				
Scheduled tribe (Ref)	1		1	
Scheduled caste	0.78(0.69-0.88)	<0.001	0.82(0.72-0.94)	0.004
Other backward class	0.68(0.61-0.76)	<0.001	0.71(0.63-0.81)	<0.001
Others	0.91(0.81-1.02)	0.098	0.89(0.78-1.01)	0.066
Education level				
Illiterate (Ref)	1		1	
Primary	0.84(0.76-0.91)	<0.001	0.88(0.8-0.98)	0.018
Secondary	0.79(0.72-0.86)	<0.001	0.89(0.81-0.99)	0.034

and Higher Education	0.93(0.81-1.07)	0.334	0.97(0.83-1.14)	0.713
Religion				
Hindu (Ref)	1		1	
Muslim	0.83(0.74-0.92)	<0.001	0.88(0.79-0.98)	0.021
Others	1.18(1.04-1.34)	0.01	1.09(0.94-1.26)	0.239
Marital status				
Un-married (Ref)	1		1	
Currently married	0.97(0.9-1.04)	0.409	0.48(0.42-0.54)	<0.001
Widowed	1.89(1.68-2.12)	<0.001	0.55(0.46-0.66)	<0.001
Divorced/separated	2.57(1.86-3.54)	<0.001	1.29(0.92-1.81)	0.142
Wealth				
Poorest (Ref)	1		1	
Poor	0.63(0.57-0.71)	<0.001	0.72(0.64-0.8)	<0.001
Middle	0.66(0.59-0.73)	<0.001	0.76(0.68-0.85)	<0.001
Richer	0.72(0.65-0.8)	<0.001	0.84(0.75-0.94)	0.002
Richest	0.78(0.7-0.86)	<0.001	0.88(0.78-0.99)	0.038
Region				
Northern (Ref)	1		1	
Southern	2.66(2.28-3.1)	<0.001	2.62(2.25-3.07)	<0.001
Western	2.9(2.48-3.4)	<0.001	2.82(2.4-3.31)	<0.001
Eastern	3.09(2.67-3.59)	<0.001	3.23(2.77-3.77)	<0.001
North-eastern	2.12(1.77-2.53)	<0.001	1.98(1.64-2.38)	<0.001
Central	1.17(1-1.38)	0.056	1.26(1.07-1.49)	0.007

BMJ Open

Epidemiology of disability and access to disability support and rehabilitation services in India: A secondary data analysis a National Sample Survey (2018).

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2024-090220.R3
Article Type:	Original research
Date Submitted by the Author:	01-Apr-2025
Complete List of Authors:	Mirza, Moonis ; All India Institute of Medical Sciences - Bathinda, Department of Hospital Administration Esht, Vandana; Jazan University College of Applied Medical Sciences, Physical Therapy Department Verma, Madhur ; All India Institute of Medical Sciences Bathinda, Department of Community & Family Medicine Bahadur, Bajarang; International Institute for Population Sciences, Demography Jaiswal, Ajit; International Institute for Population Sciences, Demography Alagarajan, Manoj; International Institute for Population Sciences, Demography Kakkar, Rakesh; All India Institute of Medical Sciences - Bathinda, Department of Community & Family Medicine
Primary Subject Heading:	Public health
Secondary Subject Heading:	Epidemiology, General practice / Family practice, Global health, Health services research, Occupational and environmental medicine
Keywords:	Disabled Persons, PUBLIC HEALTH, Health Equity

I, the Submitting Author has the right to grant and does grant on behalf of all authors of the Work (as defined in the below author licence), an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the terms applicable for US Federal Government officers or employees acting as part of their official duties; on a worldwide, perpetual, irrevocable, royalty-free basis to BMJ Publishing Group Ltd ("BMJ") its licensees and where the relevant Journal is co-owned by BMJ to the co-owners of the Journal, to publish the Work in this journal and any other BMJ products and to exploit all rights, as set out in our licence.

The Submitting Author accepts and understands that any supply made under these terms is made by BMJ to the Submitting Author unless you are acting as an employee on behalf of your employer or a postgraduate student of an affiliated institution which is paying any applicable article publishing charge ("APC") for Open Access articles. Where the Submitting Author wishes to make the Work available on an Open Access basis (and intends to pay the relevant APC), the terms of reuse of such Open Access shall be governed by a Creative Commons licence – details of these licences and which Creative Commons licence will apply to this Work are set out in our licence referred to above.

Other than as permitted in any relevant BMJ Author's Self Archiving Policies, I confirm this Work has not been accepted for publication elsewhere, is not being considered for publication elsewhere and does not duplicate material already published. I confirm all authors consent to publication of this Work and authorise the granting of this licence.

Title Page

Epidemiology of disability and access to disability support and rehabilitation services in India: A secondary data analysis a National Sample Survey (2018).

Type: Original Article

Moonis Mirza*, Vandana Esht[1]*, Madhur Verma*#, Bajarang Bahadur*, Ajit Kumar Jaiswal[3], Manoj Alagarajan, Rakesh Kakkar

*Authors contributed equally
#corresponding author

Detailed Author Affiliations:

1. **Moonis Mirza (MD)**
   Associate Professor of Hospital Administration, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: moonismirza@gmail.com.
   Orcid id: 0000-0002-8844-7311

2. **Vandana Esht (Phd)**
   Associate Professor, Physical Therapy Department, College of Applied Medical Sciences, Jazan University, Jazan, Saudi Arabia
   Email: vandanaesht@jazanu.edu.sa.

3. **Madhur Verma (MD)**
   Associate Professor of Community and Family Medicine, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: drmadhurverma@gmail.com

4. **Bajarang Bahadur**
   Mphil, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: bajarang7894@gmail.com.

5. **Ajit Kumar Jaiswal**
   Mphil, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: ajitjaiswal20@gmail.com.

6. **Manoj Alagarajan**
   Assistant Professor, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: alagarajan@iipsindia.ac.in.

7. **Rakesh Kakkar (MD)**
   Professor of Community and Family Medicine, All India Institute of Medical Sciences Bathinda (Punjab), India-151001
   Email: drrakesh75@rediffmail.com.

Details of the corresponding author

Dr. Madhur Verma (MD)
Associate Professor of Community and Family Medicine,
All India Institute of Medical Sciences Bathinda (Punjab),
India-151001
Email: drmadhurverma@gmail.com
Phone: +91 9466445513
Orcid id: 0000-0002-1787-8392

Manuscript

Abstract

Objective: The primary aim of this study was to examine the epidemiology of disability in India and assess access to disability support and rehabilitation services by people with disability (PWD).

Design: This study is a secondary analysis of the data from the 76th round of the National Sample Survey (2018), focussing on disability in India.

Setting: The survey employed a stratified two-stage sampling design based on Census 2011, covering all states and union territories of India. Villages and urban blocks were selected in the first stage, while households were chosen in the second stage across rural and urban areas.

Participants: The survey included data from a population of 576,796 individuals residing in 1,18,152 households from 8,992 village/urban blocks (5,378 rural villages and 3,614 urban blocks). The analysis focussed on 1,07,125 individuals (61,707 males and 45,305 females) who reported at least one disability.

Outcome Measures: The primary outcome was "any disability". Secondary outcomes included access to disability support and rehabilitation services that assessed difficulties faced in accessing public buildings, transport, loss of employment after disability, availability of government support, enrolment in special schools, and possession of a disability certificate.

Results: The overall weighted disability prevalence was 2.2%, with significant disparities across socio-demographic characteristics. Among PWD, 45.9% of those who acquired disability after birth were aged between 15 and 59, and 20.8% received no government aid. About 40% of PWD struggled to use public transport, and 57.7% had difficulties accessing public buildings. Additionally, 60.7% reported job loss due to disability, and 69.6% lacked a disability certificate.

Conclusion: This study highlights disparities faced by PWD in accessing disability support and rehabilitation services. There is an urgent need for concerted efforts to minimise such experiences. This will help us enhance the well-being and participation of PWD and empower them to contribute to society with their true potential.

Keywords: *Disability, inequity, disparities, accessibility, health access.*

Strengths and limitations of this study

- One of the very first comprehensive assessments of accessibility issues of the people living with disability data from the 76th round of the National Sample Survey (2018).
- We estimated the proportion of people with disability who could access basic services through a weighted analysis that makes the results generalisable and highlights actionable points.
- The lack of a standardised definition of disability was the critical limitation of the study, which restricts sub-national and national comparisons over time and regions.
- The possibility of estimates being affected by recall bias and social desirability bias may not be ruled out.
- We were limited by the number of variables available in the primary data, which restricted us from making further conclusions about the social inclusion of people with disability.

Manuscript

Introduction

As per the United Nations Convention on the Rights of Persons with Disabilities (CRPD), people with disability (PWD) include those who have long-term physical, mental, intellectual, or sensory impairments which, in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others.[1] Disability is a global concern, impacting 1.3 billion people, or 16% of the population.[2] The World Health Organization (WHO) and the World Bank's World Report on Disability highlight that 80% of the global disabled population is of working age, with a substantial proportion residing in developing countries.[3] India is one of the most populous countries, with a concerning proportion of PWD.[4] With the increasing proportion of the geriatric population, the burden of disability has also proportionately increased (from 21.9 to 26.8 million) over the last two rounds of the national census (2001-2011).[5,6] The reports from the 2011 Census and the 76th round of the National Sample Survey (NSS) estimate disability prevalence to be around 2.2%.[7] However, the fifth round (2019-21) of the Indian National Family Health Survey (large-scale nationally representative survey with repeated cross-sectional design) estimates an overall disability prevalence of 4.52%.[8] The discrepancy in available estimates is due to methodological differences, poor quality and inconsistent data, and lack of standardised definition, which underscores the intricate nature of disability.[9,10]

The CRPD identifies disability as an evolving concept and highlights the constantly changing needs of PWD, which are largely unmet. [11–13] The different articles of CRPD (6, 7, 9, 24, and 27) focus on key aspects such as gender, age, accessibility, education, and employment to empower PWD by addressing specific needs. For instance, article 6 caters to gender-related needs, which may include protections against gender-based discrimination and access to reproductive healthcare, while Articles 7 and 24 focus on the needs of children with disability

and ensure inclusive education, and Article 9 ascertains that older adults with disability have access to necessary social and healthcare services. These measures aim to enable independent living and full participation in all aspects of life, ensuring that PWD are not deprioritised compared to the general population.[14–18] The limited priority given to the needs of PWD in society increases the existing disparities, leading to poorer health outcomes, lower educational attainment, and reduced economic opportunities, thereby exacerbating social inequities.[19] Addressing these disparities is a global priority as mandated by the second principle of the Sustainable Development Goals (SDGs), "Leave no one behind", which is the central, transformative promise of the Agenda 2030.[20] International human rights law, including the CRPD, Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), Convention on the Rights of the Child (CRC), International Covenant on Civil and Political Rights (ICCPR), International Covenant on Economic, Social and Cultural Rights (ICESCR), collectively uphold the principles of equality and non-discrimination, obligate each country to address the inequalities faced by PWD, ensuring that they have equitable access to services, full participation in society, and protection from exclusionary practices.[1,21] Between March 2007 and January 2025, 192 parties, including India, formally agreed to the CRPD. Despite progress, there remains a gap in fully recognising and upholding the rights and needs of PWD.[19] The needs of PWD can span from *personal functional assistance* (daily activities and extent of disability), *social integration* (living conditions, caregivers, and public accessibility), *economic rehabilitation* (impact on employment and finances) to *service access* (certification and receipt of government/Non-Government Organization (NGO) support) necessitating a comprehensive approach.[22] However, access to such services is less studied, so it is crucial to highlight disparities that affect the disability care continuum and limit the efforts to minimise social exclusion of PWD and foster a social environment that is inclusive and accessible to all. [22][23]

Previous literature from India has primarily focused on the epidemiology of disability.[10] The lack of disability-friendly infrastructure, affordable assistive technologies, support services, including personal assistance, therapy, aids and vocational rehabilitation, and comprehensive care perpetuates inequalities.[24] However, it remains underexplored by the scientific community. Within this context, the 76th NSS collects data regarding disability and access of people with disability to various disability support and rehabilitation services, thus providing an opportunity to study them. [7] Thus, the primary aim of the study was to explore the epidemiology of disability and the accessibility of PWD to various disability support and rehabilitation services to provide insights for specific interventions.

Methodology

Data sources: We conducted a secondary analysis of the cross-sectional data from the 76th National Sample Survey (NSS) conducted by the Ministry of Statistics, Planning, and Implementation (MoSPI) between July and December 2018. MoSPI has formulated a code of ethics and sets out certain standards of conduct for the members of the Survey Committees (group of people appointed to conduct and supervise the survey). The data for NSSO is collected in accordance with the Collection of Statistics Act, 2008, which ensures transparency in data collection by issuing public notifications outlining the subject, purpose, and methodology of the survey. Participation in these surveys is generally voluntary, with respondents providing implied consent by answering survey questions after being informed about the study's objectives. Additionally, the Act mandates confidentiality safeguards, ensuring that collected data is used solely for statistical purposes. While respondents are legally obligated to provide accurate information, the data remains anonymous and protected. Thus, the NSSO follows ethical guidelines to uphold privacy while maintaining the integrity of national statistics.[25] The NSS collects socio-economic data using interviews through scientific sampling methods and serves as a crucial tool to gauge various socio-economic

aspects across all states of India. Its primary objective is to identify unmet needs within the population, thereby aiding the government in formulating effective policies to address them.

The survey made its first attempt to collect information on the number of PWD during the 15th round (July 1959 - June 1960).[26] In the 76th round, the main objective of the survey was to estimate indicators of incidence and prevalence of disability, cause of disability, age at onset of disability, facilities available to the PWD, difficulties faced in accessing public building/public transport, arrangement of regular caregiver, out-of-pocket expense relating to disability, etc. using a structured questionnaire.[27] Further, estimates were obtained on various employment and unemployment particulars in usual status for the household members with at least one disability. For PWD aged 12 to 59 years, information was collected on whether or not they received vocational/technical training and details related to such training.

Sampling design and sample size: The 76th NSS employed a stratified two-stage sampling design, utilising Census 2011 as the sampling frame.[7] The survey commenced on 1st July 2018 for six months. In the first stage, villages/urban blocks were selected, followed by the selection of households in rural and urban areas in the second stage. This round of NSS encompassed all states and union territories of India except the villages in Andaman and Nicobar Islands, which are difficult to access, covering a total of 8,992 village/urban blocks (5,378 rural villages and 3,614 urban blocks) and including 118,152 households representing a population of 576,796 individuals (402,589 in rural areas and 173,980 in urban areas). Within this, the present study focuses on 1,07,125 individuals consisting of 61,707 males and 45,418 females) who reported at least one disability during the survey.

Study Variables

Dependent variable: The presence of "any disability" was our primary dependent variable. MoSPI defines a "Person with disability" as a person with a long-term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders full and effective

participation in society equally with others.[7] The variable is created by the presence of at least one condition among all seven disability types, elaborated subsequently

1. **Locomotor disability:** A person was categorised as living with locomotor disability based on a positive response to any of the following three conditions: *(i) whether having difficulty in using hands, fingers, toes, body movement (including cerebral palsy, muscular dystrophy); (ii)whether having loss of sensation in the body due to paralysis, leprosy, other reasons; or (iii)whether having deformity of the body part(s) like hunch back, dwarfism, deformity due to leprosy, caused by acid attack, etc."*

2. **Visual disability:** It was identified using a direct question: "*Whether having difficulty in seeing, counting fingers of hand from a distance of 10 feet (with spectacles, if using, and both eyes taken together*)."

3. **Hearing disability:** The categorisation was based on the question: *"Whether having difficulty in hearing day-to-day conversational speech (without hearing aid, if using, and both ears taken together)"*

4. **Speech and language disability:** It was assessed using a question: *"Whether having difficulty in speech (unable to speak like a normal person/ speech is not comprehensible, including laryngectomy, aphasia) which is base for speech disability."*

5. **Mental retardation/intellectual disability:** This disability variable has been prepared based on the following question "*Whether having difficulty in understanding/ comprehension or communicating in doing daily activities*"

6. **Mental illness:** This disability was identified when there was a positive response to any of the three conditions: "(i) *whether having unnecessary and excessive worry and anxiety, repetitive behaviour/ thoughts, changes of mood or mood swings, talking/laughing to self, staring in space; (ii) whether having unusual experiences of hearing voices, seeing visions,*

strange smell or sensation or strange taste; or (iii) whether having unusual behaviour or difficulty in social interactions and adaptability."

7. **Other disability:** To identify other types of disability of the persons, the following question was used: "*Whether having any of the following: Parkinson's disease, multiple sclerosis, other chronic neurological conditions, thalassemia, haemophilia, sickle cell disease*".

The access to disability support and rehabilitation services by the PWD were secondary dependent variables. For this study, we adopted the United Nations CRPD definition of 'disability support,' which is stated as 'the means to ensure that PWD can fully enjoy their rights and participate equally in society." The original survey assessed disability support by estimating the proportion of PWD ever receiving any aid/help (received aid/help from government, or received aid/help from organisations other than government, did not receive aid/help), living arrangement (living alone or with a spouse, living with others), arrangement of regular caregiver (care-giver required but not available, care-giver is not required, care-giver is available), access to public transport (yes, no), accesses to public building (yes, no), difficulty faced in accessing public building (difficulty faced due to stairs and non-availability of ramp, grooved tiles or lift, in opening doors, no seating arrangement: in the waiting area, at the point of receiving service, no special toilet seats, no sign for direction/ instruction/no public announcement system, no difficulty faced, and others), employed/working before onset of disability (yes, no), disability causing loss or change in job (loss of work, change of work , no loss or change of work), having disability certificate (yes, no), and percentage of disability as per certificate (40-60%, 60-80%, >80%, and none of these). Disability certificate is issued to PWD by the competent medical authorities notified by the State/UT Government and aims to encourage transparency, efficiency and ease of delivering the government benefits to the person with disabilities and to ensure uniformity.[28,29]

Predictor variables: In the present study, the predictor variables were chosen following a literature review and the scope of data collected in the original survey.[30–33] We included age group (completed years) categorised as; upto 5, 6-17, 18-35, 36-49, 50-65 and 65+ completed years, sex (male, female), marital status (never married, ever married, widowed, divorced/separated), area of residence (rural, urban), educational attainment (non-literate, literate but not formal, upto primary, upto secondary), preferred religion (Hindu, Islam, others), social group (scheduled tribe, scheduled caste, other backward classes, general), wealth index (poorer, poor, middle, richer, richest), regions of India (northern, southern, western, eastern, north-eastern and central). For readers outside India, the term 'backward class, schedule caste and schedule tribe' refers to socially and educationally disadvantaged groups legally recognised by the constitution of India, that have historically faced discrimination and marginalisation, and aim to promote social justice by reducing disparities, enhancing representation in education and employment, and fostering socio-economic inclusion. [34]

Specifically, PWD were characterised using variables like causes of disability (disease, other than disease due to burn, injuries other than burn, other causes), age at the onset of disability (0 to 4, 5 to 14, 15 to 59, and 60 years and above), the origin of disability from birth (yes, no, not known), disability commenced in last 365 days (yes, no), place of occurrence of disability (workplace, road, home, other places), treatment taken/undergoing treatment (yes: consulting doctor, otherwise, yes: consulting doctor, plus undergoing treatment, otherwise, attending special school/special therapy, cannot afford treatment, no treatment available for the disability, not required and not known).

Statistical methodology: The prevalence, along with the dispersion of all disability variables, were estimated as part of a univariate analysis by using already calculated sampling weights with clustering as provided with the datasets.[35] The details of sampling weight have been described in the NSS 76th round report. We used the SVY command while using sampling

weights.[36] Further, the prevalence of all disability types was estimated per socio-economic characteristics, and the associations were tested using bivariate analysis through a chi-squared test. The access to different services was depicted using weighted proportions. Missing data were handled using the Available Case Analysis (ACA) technique, where estimates were generated based on the available data. This resulted in varying sample sizes across variables but allowed for greater data retention compared to listwise deletion. Little's MCAR (Missing Completely at Random) test was performed to assess whether the missingness was related to observed variables. The test results indicated that the data were not missing completely at random but were likely dependent on observed variables, suggesting that the data were missing at random (MAR). Therefore, the use of ACA was considered appropriate for preserving more data while minimizing potential bias compared to listwise deletion Further, a sensitivity analysis was conducted to assess the robustness of the findings to different missing data handling techniques. Results obtained using ACA were compared with those from Complete Case Analysis (CCA), and the findings were consistent across the two methods. Lastly, multivariable binary logistic regression analysis was used to explore the independent variables affecting the likelihood of living with 'any disability', which was the dependent variable coded by 1 and otherwise 0. Additionally, binary logistic regressions are also employed on all seven types of disability. The analysis depicted the unadjusted and adjusted odds ratio (95% confidence interval). All p-values<0.05 were considered statistically significant. All the analysis was done using Stata (version 17.0). Graphical maps were created using MS Excel sheets to depict the regional disparities.

Patient and public involvement: None

Results

Table 1 provides a comprehensive overview of the weighted prevalence of different types of disability across various socio-demographic characteristics in India. Of the total participants,

107,125 (2.2%) of the participants had at least one form of disability. The majority of such participants had a locomotor disability 61,981 (1.36%), followed by hearing 15,294 (0.30%), visual 11,977 (0.23%), speech-related 12,661 (0.23), mental retardation 8,564 (0.16%), mental illness 6,751 (0.16%), and other types 3,121 (0.05%) of disability. The highest prevalence of any disability, locomotor, speech and 'other' disability was seen in 50-65 years. However, the proportion of participants with visual and hearing disability was highest in the eldest age group, while mental retardation and mental illness were highest in the 6-35 years age group. Disability prevalence was notably higher among older individuals, males, rural populations, and those from lower socioeconomic backgrounds with minimal or no educational attainment, and living in the southern part of India.

We further assessed the origin of disability as per the type (Table 2). The most common cause of locomotor and speech disability was disease 28,673 (46.3%), 1246 (61.9%), while 'other causes' were most commonly involved in visual 538 (46.5%) and hearing 637 (49.7%) disability. Around 11,488 (18.5%) of PWD had their disability from birth. Of the total participants, 2987 (6.1%) participants acquired their disability in the last year preceding the survey. The most common place of disability origin was road 5977 (41.9%), followed by home, 4693 (32.9%). Only 17,329 (28%) of PWD were consulting doctors and undergoing treatment.

Table 3 depicts the living conditions of PWD and access to crucial services, and Supplementary Table 1 provides results in more detail for each type of disability. Overall, nearly half of the PWD who did not have disability since birth were between 15 and 59 years old (45.9%), while nearly one-fifth (20.8%) had received aid or help from the government. 57% of PWD lived with their spouses, and 62.8% reported that caregivers were available. About 40% reported an inability to use public transport, while 54.4% reported inaccessibility to public buildings. Further, 57.7% of PWD reported facing difficulties while accessing public buildings. Around 60.7% of PWD reported a loss of work due to disability onset, and 69.6% did not have any

official document certifying their disability for administrative purposes. Figure 1 further depicts the geographic disparities in the PWD' access to basic services.

Table 4 demonstrates the multivariable binary logistic regression analysis results to present the socio-demographic variables affecting the likelihood of living with any type of disability. We found a significantly higher likelihood of living with disability with increasing age (Adjusted Odds ratio: 58.4; 95% Confidence Interval: 55.4-61.5 in >65 years vs up to 5 years), urban residence (1.3; 1.2-1.3) vs rural, social castes (1.3; 1.3-1.3 in general caste) vs scheduled tribes, and living in a Southern region of India (1.1; 1.1-1.2) compared to those from North India. However, female sex (0.6; 0.6-0.6), more years of education (0.3; 0.3-0.3), Islam followers (0.9; 0.9-0.9), currently married/widowed vs never married (0.3; 0.3-0.3), and higher socio-economic status (0.5; 0.5-0.5) depicted significantly lower likelihood of living with disability. Supplementary Table 2 provides results from the more detailed regression analysis for each type of disability.

Discussion

We report an investigation that assesses the epidemiology of PWD and their access to disability support and rehabilitation services in India using nationally representative data. Our key findings have profound policy implications. First, we identify concerning disparities in disability prevalence across socio-demographic groups. Second, one-fifth of PWD reported acquiring their disability at birth. Third, the most common place of disability origin was the road, followed by home. Fourth, approximately half of PWD reported challenges in using public transport and buildings. Lastly, the majority of PWD reported a loss of work due to disability onset and lacked official certification of their disability.

Disability prevalence was notably higher among older individuals, males, rural populations, and those from lower socio-economic backgrounds. Despite a modest 2.2% prevalence rate, this figure represents around 30 million people in India, and it is expected to rise, indicating an

urgent need for attention. While there was a preponderance of males with locomotor disability, speech and language disabilities were significantly higher in females. As per the estimates obtained from the previous 36th, 47th, and 58th rounds of NSS, there is a constant rise in disability prevalence in rural (1.8% in the 36th round to 2.3% in the 76th round) as well as urban (1.4% in the 36th round to 2.0% in the 76th round) areas, with the overall increase from 1.6% in the 36th round in year 1981 to 2.2% in the 76th round in the year 2018.[7] Secondary analysis of another national survey (NFHS-5) depicts an overall disability prevalence of 0.95%, with a higher proportion of locomotor disability (0.4%), followed by mental illness (0.2%).[37] We observed that a high proportion of survey participants had their disability from birth. However, the available data limits our further understanding of such disability, whether the onset was intrauterine or acquired during the birthing process. Such limited information still necessitates mitigation strategies targeting pregnant females by ensuring accessibility to screening for intra-uterine pathologies causing disability such as Down's syndrome and intellectual disability and later extending the access to screening for auditory and visual disability.[38] Further, adopting more rigorous screening toolkits and investigations for newborns at the primary healthcare level through the expansion of the Rashtriya Bal Swasthya Karyakram (Indian National program that involves screening of children from birth to 18 years of age for 4 Ds- Defects at birth, Diseases, Deficiencies and Development delays, spanning 32 common health conditions for early detection and free treatment and management, including surgeries at the tertiary level) would help in increasing the scope for early psychological or therapeutic interventions that would impact the quality of life of children with disability.[39] In addition, the Pradhan Mantri Jan Arogya Yojana (PM-JAY) offers free healthcare for children with disability who are not covered under the RBSK scheme.[40,41]

The most common place of disability origin was the road, followed by home. Trauma is an important cause of locomotor disability, and in India, it is the second most common cause of

locomotor disability.[42] Previous estimates suggest that road crashes maximally impact the poorest quintiles. A lack of appropriate safety gear while on the road is often a factor in road trauma. People who experience road trauma often have inadequate access to medical and social safety nets after injury.[43,44] Anecdotal evidence from Chandigarh, a Union Territory of India, suggests that strict compliance with traffic rules can mutually benefit the public and the administration. On one side, it reduces morbidity due to road traffic accidents, while on the other side, penalties due to non-compliance generate revenues and raise awareness. An increasing number of domestic accidents are equally concerning.[45] Domestic accidents may be underreported as most of the domestic injuries are considered minor, often neglected, and may be easily forgotten and subject to recall bias. This changing trend is similar to many developed nations where more accidents happen at home than anywhere else. We expect an increase in such incidents with increasing population and population density. Domestic accidents depend on the physical and social environment and also on the functional capacity of the individual. While road traffic accidents are unforeseen and unexpected, it is generally accepted that domestic accidents can be prevented and minimised by taking adequate safety measures well in time.[46]

We observed that there is scope for improving the accessibility of public buildings and transport for the PWD; these facilities must accommodate PWD's needs. Various schemes and initiatives demonstrate the Indian government's commitment to securing the rights and welfare of disabled populations in the country. India's commitment to the United Nations Convention on the Rights of PWD (UNCRPD) is embodied in the Rights of Persons with Disabilities Act of 2016 (RPWD Act, 2016). It emphasises dignity, autonomy, and non-discrimination for PWD.[47] The Act further mandates inclusive education, vocational training, and self-employment opportunities without discrimination. To increase the accessibility of public buildings, the RPWD Act 2016 and the National Building Code of India 2016 outline expanded

guidelines for building accessibility.[48] Compliance with these standards has been made compulsory, with responsibility falling on those involved in commissioning, designing, constructing, or managing built environments. The building design must adhere to relevant legislation, including equality and safety regulations. This focus on accessibility has fostered the adoption of universal design concepts, leading to numerous best practices for creating inclusive environments. These encompass accessible buildings, parking areas, parks, and recreational facilities, reflecting a concerted effort to ensure equal access and inclusion for PWD in the built environment.

Government schemes to improve inclusion and access

The government has a variety of healthcare schemes such as the Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances (ADIP), which cater to the specific needs of PWD and provide assistive devices, aids such as wheelchairs, hearing aids, and prosthetic limbs at subsidised rates.[49] The Deendayal Disabled Rehabilitation Scheme (DDRS) provides financial assistance to NGOs for various rehabilitation services for PWD.[50] However, the scheme faces inconsistencies in service availability across different states. The lack of standardisation in rehabilitation programs results in variable quality of care, while administrative delays in fund disbursement further hinder its effectiveness.[51] Moreover, rural and economically weaker sections often struggle to access these services, limiting the scheme's reach and equity. While DDRS aligns with the principle of equal opportunities under the RPWD Act of 2016, its impact is weakened by poor implementation and inadequate monitoring mechanisms. Apart from catering to the healthcare needs of PWD, we must address specific issues related to health and ethics as well as the need to shift societal attitudes toward PWD to improve social inclusion.[52]

In addition to health-related needs, the Government of India has taken several steps to secure the social rights of PWD. The Right to Education Act (RTE) aims to provide free and

compulsory education for children with disability up to 18 years.[53] The 'Samagra Shiksha Abhiyan' integrates children with disability into mainstream education.[54] The National Education Policy 2020 also prioritises "inclusion" by aiming to fully integrate children with disability into the mainstream education system, providing necessary accommodations and support to ensure their active participation in the learning process without segregation or discrimination; this includes accessible infrastructure, specialised teaching methods, and assistive technologies tailored to individual needs.[55] Training gaps among teachers working with PWD, lack of assistive technology, and poor enforcement of inclusive education policies hinder meaningful inclusion.[56] The government-funded higher education institutions in India reserve 5% of seats for PWD to foster diversity and enhance employment opportunities, but the effectiveness of such policies is hindered by challenges [57], such as infrastructural barriers, lack of accessible learning materials, and inadequate support services. Many PWD lack access to skill development programs, limiting their employability. The government also provides financial assistance and benefits to PWD through schemes like the National Handicapped Finance and Development Corporation (NHFDC), which offers loans and subsidies for education and training or self-employment ventures.[58]

Employment can enhance social sustainability and individual well-being.[59] However, we observed that a very high proportion of PWD had a change or loss of their jobs due to the onset of disability. Loss of jobs can be linked to the social stigma associated with impairment or disability and the perception of such people being less productive. Many employers have ill-founded views about the work-related abilities of PWD; these negative views are often a result of interrelated concerns that permeate the entire employment cycle.[60] It is to be emphasised that negative attitudes toward disability disempower PWD and lead to social exclusion. By contrast, a healthy society encourages positive attitudes toward PWD and promotes social

inclusion.[61] Various initiatives have been introduced to promote employment opportunities for PWD. However, a lack of awareness and red tape discourage many PWD from receiving employment benefits. While the RPWD Act mandates non-discrimination in employment, the absence of accountability measures continues to hinder its success. Many PWD also lack formal certification as seen in our study, restricting their access to essential services and benefits.[62][63]

Other prominent schemes introduced for PWD in India include the National Handicapped Finance and Development Corporation (NHFDC), which provides financial assistance to persons with disability for self-employment, education, and training; Scheme for Implementation of Persons with Disabilities Act (SIPDA) to create barrier-free environments and improve the quality of life for PWD; Accessible India Campaign (Sugamya Bharat Abhiyan) focuses on making public infrastructure and transportation accessible for people with disability and Inclusive Education for Disabled at Secondary Stage (IEDSS) supports the inclusive education of students with disability at the secondary level.[58][64][65] Despite multiple policy frameworks supporting disability inclusion, several gaps remain in implementation and enforcement. [66] The mere existence of legislation and policies does not guarantee their effectiveness. There is a pressing need for stronger monitoring mechanisms, improved financial transparency, and enhanced awareness campaigns to bridge the gap between policy intent and real-world impact. The government must prioritise accountability measures to ensure scheme implementation and greater investment in infrastructure and assistive technologies to create an inclusive environment for PWD. [67]

Strengths and limitations of the study

The study's major strength lies in its novelty by bringing social science and medicine to a common platform. The estimates generated using weighted analysis are nationally representative and depict strong external validity due to their national coverage, stratified

sampling approach, and standardised definitions. The emerging results can serve as robust evidence to help guide policy that improve accessibility. The present study takes a novel approach by initially delineating the proportions of various types of disability. Subsequently, it delves into the analysis concerning "any disability," thus unveiling unique characteristics within this broader category. By doing so, the study not only broadens the scope of understanding but also highlights the nuanced interplay between different types of disability and the socio-demographic backgrounds of PWD. This shift towards a more inclusive analysis holds promise for informing policy decisions and healthcare interventions tailored to address the complex needs of people with disabilities.

The major limitation lies in the study's cross-sectional nature, which limits the assessment of causality and temporal associations and is susceptible to recall bias, particularly when assessing disability from birth. We need more qualitative studies to better assess the impact of inaccessibility to basic support and rehabilitative services.[12] As a secondary analysis, we are limited by the number of variables that can further explain issues affecting accessibility to services. Due to the limited number of explanatory variables, the possibility of residual confounding cannot be negated. There was also non-uniformity in the sample size when assessing different questions related to the impact of disability, but it was handled using available case analysis techniques to generate estimates and retain more data compared to listwise deletion. Lastly, some terms used in the manuscript, like the categorisation of disability (e.g., using “mental retardation” instead of “intellectual disability”), the terminology used to describe social classes (“backward classes” instead of “disadvantaged classes”) are non-inclusive, outdated, perceived as offensive by PWD, and lack alignment with the global vision targeting inclusion and discrimination. However, these terms are retained so that the manuscript is coherent with the original survey report and would help prevent confusion in case some readers want to refer to the original report.

Policy implications and recommendations

A few policy implications and recommendations emerged from the study. Given the increasing prevalence of disability and the concurrent escalating proportion of the geriatric population, we need to work on improving accessibility for PWD. A large number of disability originating from birth calls for more robust antenatal and neonatal screening protocols supported by adequate counselling and rehabilitation services. Our results depict that a high proportion of PWD have a caretaker who is available. Previous studies have suggested that empowering the caretakers can help improve the quality of life of PWD.[68] We must simultaneously think of ways (like investing in developing more assistive devices and making them affordable) to help us share the added burden on caregivers.[68] Despite many schemes extended by the government to enhance the social inclusion of PWD that have been briefly described in the manuscript, there is a need for health advocacy drives to sensitise the population about the needs of PWD, improve social inclusion and minimise discrimination. The use of non-inclusive language in the original dataset used in the study necessitates using more appropriate language to promote inclusivity. It is recommended that future national surveys focus on more inclusive language, which is compliant with the CRPD and the globally ongoing disability rights movements.

Conclusions

While previous research has primarily emphasised individual heterogeneity among PWDs, our study indicated that a large proportion of PWD experience systemic disparities in accessing disability support and rehabilitation services. The high prevalence varies significantly as per the studied socio-demographic characteristics, reinforcing the urgent need for targeted interventions. We acknowledge that while individual differences exist, these do not negate the common challenges faced by PWDs in securing equitable access to essential services. Despite government initiatives, there remain gaps in accessibility, public awareness, and enforcement of disability rights. There is an urgent need for concerted efforts to minimise these disparities,

enhance the well-being and participation of PWD, and empower them to contribute meaningfully to society. Furthermore, our findings underscore that many disabilities originate from birth or early childhood, yet the availability of early screening, diagnostic services, and timely interventions remains inadequate. Strengthening antenatal and neonatal screening, particularly for intrauterine conditions and birth-related complications, could significantly improve early detection and management of disabilities. As a society, we must work toward reshaping societal and institutional perceptions of disability, shifting the focus from viewing disability as a personal deficit or burden to recognising it as a societal construct that can be addressed through inclusion, accessibility, and policy-driven structural changes. A more inclusive and disability-friendly society is essential not only for ensuring the dignity and rights of PWD but also for achieving socioeconomic development and social justice. These efforts align with India's commitment to the CRPD and contribute to the global vision set by the 2030 Agenda for Sustainable Development, which recognises the promotion of the rights, perspectives, and well-being of PWD as a fundamental prerequisite for a more sustainable and inclusive world.

Declarations

- **Acknowledgements:** This study used the National Sample Survey (NSS), 76th round Person with Disability in India Survey 2018. The authors gratefully acknowledge members of the study field team, including those who were involved in mapping/listing/segmentation and the main survey during data collection. The authors also acknowledge all the respondents for their active participation in this study.

- **Competing interests:** None
- **Ethics statement:** The ethical approvals were not deemed necessary since it was secondary data analysis. No patient-level data were used in this paper. However, the original survey was conducted by the Ministry of Statistics and Programme Implementation (MOSPI),

which is mandated to act as the nodal agency for the integrated development of the statistical systems in India. The Ministry, as part of its comprehensive decision-making process on various matters, has formulated a Code of Ethics for Members of the various Committees constituted by MOSPI or by the Organizations, Institutions, bodies, etc., funded by it that follow the principles of ethics and set out certain standards of conduct for the members of the Committees in order to protect the confidentiality of the data/information acquired by them by virtue of their membership in such Committees.

- **Patient and Public Involvement**: None
- **Funding:** No funding was involved at any stage of this study.
- **Data availability**: Data (Reference ID: DDI-IND-MOSPI-NSSO-76Rnd-Sch26.0-July2018 December 2018) is freely available on the website of the Ministry of Statistics and Programme Implementation (GOI) MOSPI's https://microdata.gov.in/nada43/index.php/catalog/154/overview, and can be accessed as per standard protocols.
- **Ethics approval**: Not applicable
- **Authors' contribution**: MM, BB, and MA conceptualised the study, MV and AKJ collected data, drafted the manuscript, and reviewed it. VE, MV, and AKJ did the analysis and drafted the final version; MA and RK critically reviewed the manuscript from policy and feasibility points of view. All the authors read and approved the final version of the manuscript. MM is responsible for the overall content as guarantor.

References

1. United Nations. Convention on the Rights of Persons with Disabilities [Internet]. Human Rights Instruments. 2008 [cited 2024 Dec 16]. Available from: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities

2. World Health Organization. Global report on health equity for persons with disabilities [Internet]. 2023 [cited 2024 Dec 10]. Available from: https://www.knowledge-action-portal.com/en/content/global-report-health-equity-persons-disabilities
3. World Health Organization. World Report on Disability [Internet]. 2011 [cited 2022 Feb 9]. p. 1–27. Available from: www.who.int/about/licensing/copyright_form/en/index.html
4. Pattnaik S, Murmu J, Agrawal R, Rehman T, Kanungo S, Pati S. Prevalence, pattern and determinants of disabilities in India: Insights from NFHS-5 (2019–21). Front Public Health. 2023;11:1036499.
5. Ministry of Statistics and Programme Implementation(GOI) - MOSPI. Elderly in India 2021 [Internet]. 2021 [cited 2024 Dec 16]. Available from: https://mospi.gov.in/sites/default/files/publication_reports/Elderly in India 2021.pdf
6. Paul K, Saha S. Burden of Disability in India (1881–2011). Journal of Multidisciplinary Research in Healthcare. 2015 Oct 5;2(1):31–54.
7. Ministry of Statistics and Program Implementation Government of India. Persons with Disabilities in India-NSS 76th report [Internet]. NSS Report No 583 (76/26/1). 2018 [cited 2024 Dec 12]. p. 209. Available from: https://www.mospi.gov.in/sites/default/files/publication_reports/Report_583_Final_0.pdf
8. International Institute for Population Sciences. National Family Health Survey (NFHS-5) 2019-21 [Internet]. India Report. 2022 [cited 2024 Dec 16]. Available from: https://dhsprogram.com/pubs/pdf/FR375/FR375.pdf
9. Rashmi R, Mohanty SK. Socioeconomic and geographic variations of disabilities in India: evidence from the National Family Health Survey, 2019–21. Int J Health Geogr. 2024 Dec 1;23(1):1–16.
10. Chanda S, Sekher T V. Identification of Disability for Inclusive Development: Lessons from Disability Census of Kerala, India. Sage Open. 2023;13(3).
11. Department of Economic and Social Affairs. Disability and Development Report 2018 [Internet]. United Nations. 2019 [cited 2024 Dec 16]. Available from: https://www.un.org/development/desa/disabilities/wp-content/uploads/sites/15/2019/07/disability-report-chapter2.pdf
12. Chavan BS. Relevance of qualitative research in disability. Journal of Disability Management and Rehabilitation. 2015;1(1):1–2.

13. United Nations. Convention on the Rights of Persons with Disabilities [Internet]. Human Rights Instruments. 2008 [cited 2024 Dec 16]. Available from: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities
14. United Nations- Division for Inclusive Social Development (DISD). Article 24 - Education [Internet]. Social Development Issues-Disability. [cited 2024 Dec 15]. Available from: https://social.desa.un.org/issues/disability/crpd/article-24-education
15. United Nations- Division for Inclusive Social Development (DISD). Article 27 – Work and employment [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-27-work-and-employment.html
16. United Nations- Division for Inclusive Social Development (DISD). Article 6 - Women with disabilities [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://social.desa.un.org/issues/disability/crpd/article-6-women-with-disabilities
17. United Nations- Division for Inclusive Social Development (DISD). Article 7 - Children with disabilities [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://social.desa.un.org/issues/disability/crpd/article-7-children-with-disabilities
18. United Nations- Division for Inclusive Social Development (DISD). Article 9 - Accessibility [Internet]. Disability. [cited 2024 Dec 10]. Available from: https://social.desa.un.org/issues/disability/crpd/article-9-accessibility
19. Sophie Mitra AP and BV. Disability and Poverty in Developing Countries: A Snapshot from the World Health Survey [Internet]. The World Bank - Social Protection and Lab. 2011 [cited 2024 Dec 17]. Available from: https://documents1.worldbank.org/curated/en/501871468326189306/pdf/625640NWP0110900PUBLIC00BOX361487B.pdf
20. United Nations. Transforming our world: the 2030 Agenda for Sustainable Development [Internet]. Department of Economic and Social Affairs Sustainable Development. 2015 [cited 2024 Dec 12]. Available from: https://sdgs.un.org/2030agenda
21. United Nations. International Human Rights Law [Internet]. Instruments & mechanisms. [cited 2024 Dec 10]. Available from: https://www.ohchr.org/en/instruments-and-mechanisms/international-human-rights-law

22. World Bank Group. Disability Inclusion [Internet]. Understanding Poverty. 2023 [cited 2024 Dec 12]. Available from: https://www.worldbank.org/en/topic/disability

23. Saran A, Hunt X, White H, Kuper H. Protocol: Effectiveness of interventions for improving social inclusion outcomes for people with disabilities in low- and middle-income countries: A systematic review. Campbell Systematic Reviews. 2021 Sep 29;17(3):e1191.

24. Centers for Disease Control and Prevention. Disability and Health Disability Barriers [Internet]. Disability Inclusion. [cited 2024 Dec 17]. Available from: https://www.cdc.gov/ncbddd/disabilityandhealth/disability-barriers.html

25. Ministry of state for statistics and Program implementation. Handbook on Collection of statistics act, 2008 [Internet]. Ministry of Law and Justice. 2008 [cited 2025 Mar 4]. Available from: https://www.mospi.gov.in/sites/default/files/main_menu/handbook_%20collection_of_statistic_act/hand_col_stat_act_2008.pdf

26. Ministry of Statistics and Programme Implementation G of I. Note on sample design and estimation procedure of NSS 76th round. Ministry of Statistics and Programme Implementation, Government of India.

27. National Sample Survey Office, Ministry of Statistics and Program Implementation Government of India. Schedule 26: Survey of persons with disabilities [Internet]. Seventy-Sixth round: July, 2018 - December, 2018, 2018. 2018 [cited 2024 Dec 12]. Available from: https://www.mospi.gov.in/sites/default/files/NSS7612dws/NSS_76_sch_26.0.pdf

28. Government of Assam H and FW. Disability Certificate | Health & Family Welfare | Government Of Assam, India [Internet]. Disability Certificate. [cited 2025 Feb 17]. Available from: https://hfw.assam.gov.in/information-services/disability-certificate

29. Disabilities. D of E of P with. Unique Disability ID [Internet]. Ministry of Social Justice and Empowerment, Governmenet of India of India. [cited 2025 Mar 3]. Available from: https://swavlambancard.gov.in/faqs

30. Okoro CA, Hollis ND, Cyrus AC, Griffin-Blake S. Prevalence of Disabilities and Health Care Access by Disability Status and Type Among Adults - United States, 2016. MMWR Morb Mortal Wkly Rep. 2018 Aug 17;67(32):882–7.

31. Ozawa MN, Hun Yeo Y. Race/ethnicity and socioeconomic class as correlates of disability in old age. J Gerontol Soc Work. 2008;51(3–4):337–65.

32. Kavanagh AM, Krnjacki L, Aitken Z, Lamontagne AD, Beer A, Baker E, et al. Intersections between disability, type of impairment, gender and socio-economic disadvantage in a nationally representative sample of 33,101 working-aged Australians. Disabil Health J. 2015 Apr 1;8(2):191–9.

33. Courtney-Long EA, Carroll DD, Zhang QC, Stevens AC, Griffin-Blake S, Armour BS, et al. Prevalence of Disability and Disability Type Among Adults--United States, 2013. MMWR Morb Mortal Wkly Rep. 2015 Jul 31;64(29):777–82.

34. Department of Social Justice and Empowerment M of SJ and EG of I. About the Division | Department of Social Justice and Empowerment - Government of India [Internet]. [cited 2025 Mar 3]. Available from: https://socialjustice.gov.in/common/31548

[dataset] 35. Ministry of Statistics and Programme Implementation(GOI) - MOSPI. India - Survey of Persons with Disabilities NSS 76th Round : July 2018 - December 2018 - Overview [Internet]. Central Data Catalog. 2018 [cited 2024 Dec 10]. Available from: https://microdata.gov.in/nada43/index.php/catalog/154/overview

36. Stata. SVY estimation — Estimation commands for survey data [Internet]. [SEM] sem — Structural equation model estimation command. [cited 2024 Dec 17]. Available from: https://www.stata.com/manuals13/svysvyestimation.pdf

37. Rashmi R, Mohanty SK. Socioeconomic and geographic variations of disabilities in India: evidence from the National Family Health Survey, 2019–21. Int J Health Geogr [Internet]. 2024 Dec 1 [cited 2025 Mar 3];23(1):1–16. Available from: https://ij-healthgeographics.biomedcentral.com/articles/10.1186/s12942-024-00363-w

38. Acharya K. Prenatal testing for intellectual disability: Misperceptions and reality with lessons from down syndrome. Dev Disabil Res Rev. 2011 Jan 1;17(1):27–31.

39. Bailey DB, Skinner D, Warren SF. Newborn Screening for Developmental Disabilities: Reframing Presumptive Benefit. Am J Public Health. 2005 Nov;95(11):1889.

40. National Health Authority, Government of India. Pradhan Mantri Jan Arogya Yojana (PM-JAY) [Internet]. About PM-JAY. 2019 [cited 2024 Dec 10]. Available from: https://nha.gov.in/PM-JAY

41. Ministry of Health and Family Welfare. Government of India. RBSK-Rashtriya Bal Swasthya Karyakram [Internet]. Schemes. 2024 [cited 2024 Dec 10]. Available from: https://rbsk.mohfw.gov.in/RBSK/

42. Dhole RS, Gaur KA, More NS, Popalwar H, Lokhande V. Study of locomotor disability due to various types of Trauma. National journal of medical research. 2015;5(3):194–8.

43. Musselwhite CBA, Avineri E, Susilo YO, Bhattachary D. Public attitudes towards motorcyclists' safety: A qualitative study from the United Kingdom. Accid Anal Prev. 2012 Nov;49:105–13.

44. World Bank Group. Traffic crash injuries and disabilities: The burden on Indian society [Internet]. Policy Document. 2021 [cited 2024 Dec 17]. Available from: https://www.worldbank.org/en/country/india/publication/traffic-crash-injuries-and-disabilities-the-burden-on-indian-society

45. Cole EOB, Christie SA, Oke R, Motwani G, Dickson D, Chendjou W, et al. Too serious to ignore: The epidemiologic and economic burden of home injuries in the Southwest Region of Cameroon—A community-based study. Bourgeois D, editor. PLoS One. 2022 Sep 22;17(9):e0274686.

46. Rehman T, Sulgante S, Sekhar S. Prevalence and pattern of domestic accidents in the field practice area of Jawaharlal Institute of Urban Health Centre, Puducherry: a cross-sectional analytical study. J Inj Violence Res. 2020;12(1).

47. Department of Empowerment of Persons with Disabilities. The Rights of persons with disabilities act 2016 [Internet]. Policy Document. 2016 [cited 2024 Dec 11]. Available from: https://legislative.gov.in/sites/default/files/A2016-49_1.pdf

48. Bureau of Indian Standards. National building code of India 2016 (NBC 2016) [Internet]. SP 7 : 2016. 2016 [cited 2024 Dec 21]. Available from: https://www.bis.gov.in/standards/technical-department/national-building-code/

49. Department of Empowerment of Persons with Disabilities (DEPwD). Assistance to Persons with Disabilities for Purchase/Fitting of Aids /Appliances (ADIP) [Internet]. Scheme. [cited 2024 Dec 17]. Available from: https://depwd.gov.in/adip/

50. Department of Empowerment of Persons with Disabilities (DEPwD), Government of India. Deendayal Divyangjan Rehabilitation Scheme (DDRS) [Internet]. Schemes. 2023 [cited 2024 Dec 10]. Available from: https://depwd.gov.in/ddrs/

51. Kumar SG, Roy G, Kar SS. Disability and Rehabilitation Services in India: Issues and Challenges. J Family Med Prim Care [Internet]. 2012 [cited 2025 Mar 3];1(1):69. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC3893941/

52. Hayes AM, Bulat J. Disabilities Inclusive Education Systems and Policies Guide for Low- and Middle-Income Countries. RTI Press Publication. Research Triangle Park, NC: RTI Press; 2017 Jul.

53. Centre for Civil Society. Right To Education [Internet]. [cited 2024 Dec 10]. Available from: https://righttoeducation.in/know-your-rte/about

54. Ministry of Education, Government of India. Samagra Shiksha [Internet]. 2021 [cited 2024 Dec 17]. Available from: https://samagra.education.gov.in/about.html

55. The Ministry of Human Resource Development; Government of India. National Education Policy, 2020 [Internet]. 2020 [cited 2024 Dec 17]. Available from: https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

56. Ahmed SK, Jeffries D, Chakraborty A, Carslake T, Lietz P, Rahayu B, et al. Teacher professional development for disability inclusion in low- and middle-income Asia-Pacific countries: An evidence and gap map. Campbell Systematic Reviews [Internet]. 2022 Dec 1 [cited 2025 Mar 3];18(4):e1287. Available from: https://onlinelibrary.wiley.com/doi/full/10.1002/cl2.1287

57. Bera M, Kartick Chandra Pramanik P. Access Challenges For Students With Disabilities In Higher Education. 2023 [cited 2025 Mar 3];11:2320–882. Available from: www.ijcrt.org

58. Department of Empowerment of Persons with Disabilities (DEPwD). National divyangjan finance and development corporation-India [Internet]. Organizations Under DEPwD. 2024 [cited 2024 Dec 10]. Available from: https://depwd.gov.in/national-handicapped-finance-and-development-corporation/

59. Qiu N, Jiang Y, Sun Z, Du M. The impact of disability-related deprivation on employment opportunity at the neighborhood level: does family socioeconomic status matter? Front Public Health. 2023 Aug 9;11:1232829.

60. Bonaccio S, Connelly CE, Gellatly IR, Jetha A, Martin Ginis KA. The Participation of People with Disabilities in the Workplace Across the Employment Cycle: Employer Concerns and Research Evidence. J Bus Psychol. 2020 Apr 1;35(2):135–58.

61. Babik I, Gardner ES. Factors Affecting the Perception of Disability: A Developmental Perspective. Front Psychol. 2021 Jun 21;12:702166.

62. Jameel S. Disability in the Context of Higher Education: Issues and Concerns in India. Electronic Journal for Inclusive Education. 2011 Jan 1;2(7).

63. Moumita Barman. Barriers to higher education for persons with disabilities block their meaningful growth. News article - The Siasat Daily. 2024 Jan 26;

64. Department of Empowerment of Persons with Disabilities (DEPwD), Government of India. Scheme for Implementation of the Rights of Persons with Disabilities Act, 2016 (SIPDA) [Internet]. Schemes. 2016 [cited 2024 Dec 12]. Available from: https://depwd.gov.in/sipda/

65. Ministry of Education, Government of India. Inclusive Education of the Disabled at Secondary Stage [Internet]. About MoE. 2016 [cited 2024 Dec 17]. Available from: https://www.education.gov.in/iedss

66. Disempowering the Empowered: The Systemic Failures of India's Disability Welfare Schemes [Internet]. [cited 2025 Mar 3]. Available from: https://www.salzburgglobal.org/news/fellows/article/disempowering-the-empowered-the-systemic-failures-of-indias-disability-welfare-schemes

67. Lawson A, Pineda VS, Walker J, Jain S, Jain M. Revisiting the Conceptual Terrains of the Right to Accessibility in India: The Role of Judicial Enforcement. Laws 2024, Vol 13, Page 54 [Internet]. 2024 Aug 16 [cited 2025 Mar 3];13(4):54. Available from: https://www.mdpi.com/2075-471X/13/4/54/htm

68. Arasu S, Shanbhag D. Quality of Life and Burden of Caregiving Among the Primary Caregivers of Children with Disability in Rural Karnataka. J Family Med Prim Care. 2021 Aug 27;10(8):2804–9.

Tables

Table 1: Prevalence of different types of disabilities across different socio-demographic characteristics, NSS, 76th round, India (n=576,796)

Background characteristics	Locomotor N (%)	Vision N (%)	Hearing N (%)	Speech N (%)	Mental Retardation N (%)	Mental Illness N (%)	Others N (%)	Any one disability N (%)
	61981 (1.36)	11977 (0.23)	15294 (0.30)	12661 (0.23)	8564 (0.16)	6751 (0.16)	221 (0.05)	107,125 (2.20)
Age Group (completed years)								
up to 5	1494 (2.2)	182 (1.5)	311 (2)	907 (7.3)	445 (5.3)	41 (0.5)	82 (5.5)	2839 (2.5)
`6-17	7290 (10.8)	1210 (9.2)	1977 (12.6)	4515 (35.8)	3492 (41.2)	1060 (15.4)	321 (21.5)	16695 (14.4)
18-35	11546 (18)	1386 (10.7)	2036 (13.3)	3273 (26.4)	2796 (33)	1915 (27.6)	301 (19.8)	20673 (18.8)
36-49	11434 (18.1)	1557 (12.3)	2118 (13)	1812 (13.8)	1113 (12.4)	1646 (25)	178 (14.8)	18665 (17.2)
50-65	16627 (27.9)	3609 (31.1)	3843 (25.1)	1495 (11.4)	561 (6.5)	1409 (21.3)	345 (21.9)	26420 (25.7)
65+	13590 (23)	4033 (35.2)	5009 (34)	659 (5.3)	157 (1.6)	680 (10.1)	324 (16.6)	21833 (21.4)
Sex								
Male	36862 (58.7)	6014 (50.2)	7993 (52)	7554 (60.4)	5202 (61.7)	3856 (56.8)	1264 (58.9)	61707 (57.3)
Female	25110 (41.3)	5958 (49.8)	7296 (48)	5106 (39.6)	3359 (38.3)	2893 (43.2)	1355 (41.1)	45396 (42.7)
Marital Status								
Never Married	16912 (24.7)	2719 (20.8)	3987 (24.2)	8708 (67.8)	7450 (86.9)	3281 (46.1)	1214 (40.4)	36813 (31.4)
Ever Married	33257 (55.3)	5541 (46.9)	7094 (47.5)	3086 (25.3)	791 (9.3)	2381 (35.8)	1502 (47.2)	50108 (48.8)
Widowed	11293 (19)	3616 (31.5)	4024 (27.1)	690 (5.4)	190 (2.1)	775 (12.5)	366 (11.1)	18933 (18.5)
divorced/separated	519 (1)	101 (0.8)	189 (1.1)	177 (1.4)	133 (1.8)	314 (5.5)	59 (1.2)	1271 (1.3)
Area of residence								
Rural	42222 (71.6)	8809 (76.3)	11121 (74.9)	9164 (72.9)	5974 (69.9)	4772 (73.1)	2055 (62.4)	75091 (72.8)
Urban	19759 (28.4)	3168 (23.7)	4173 (25.1)	3497 (27.1)	2590 (30.1)	1979 (26.9)	1166 (37.6)	32034 (27.2)
Educational attainment								
Non-literate	26376 (44.5)	7160 (62.6)	8365 (57.3)	7119 (56.9)	5846 (69.3)	3285 (49.6)	1408 (34.1)	50848 (48.9)

Literate but not formal	15002 (23.2)	2483 (19.4)	3700 (22.9)	3428 (26.7)	1858 (21)	1629 (23.3)	359 (29)	26145 (23.3)
Upto primary	16885 (26.5)	1987 (15.5)	2782 (16.9)	1908 (14.9)	808 (9.1)	1623 (24.1)	316 (28.7)	25210 (23.1)
Upto secondary	3718 (5.8)	347 (2.6)	447 (2.9)	206 (1.5)	52 (0.6)	214 (3.1)	38 (8.2)	4922 (4.6)
Preferred Religion								
Hindu	49548 (81.9)	9479 (82.9)	12090 (82.6)	9658 (78.7)	6540 (78.7)	5063 (74.7)	444 (80.8)	84742 (81.5)
Islam	8375 (12.5)	1601 (12.5)	1927 (11.7)	2021 (15.6)	1366 (15.9)	1167 (18.4)	92 (12.6)	14658 (12.9)
Others	4058 (5.6)	897 (4.6)	1277 (5.7)	982 (5.7)	658 (5.4)	521 (6.9)	75 (6.5)	7725 (5.5)
Social Group								
Scheduled Tribe	6049 (8.3)	1491 (9.1)	1923 (9.5)	1478 (9.4)	822 (7.2)	670 (7.8)	92 (12.3)	11729 (8.7)
Scheduled Caste	12240 (20.4)	2407 (21.3)	2805 (19.4)	2467 (20.5)	1602 (19.2)	1269 (19.9)	74 (17.8)	20925 (20.4)
Other Backward Classes	26861 (44.7)	5205 (46)	6583 (45.5)	5482 (44.7)	3806 (45.8)	2915 (45.7)	167 (40.2)	46223 (44.9)
General	16831 (26.6)	2874 (23.6)	3983 (25.6)	3234 (25.4)	2334 (27.8)	1897 (26.6)	88 (29.7)	28248 (26)
Wealth Index								
Poorer	17681 (30.2)	3919 (35.1)	4933 (34.7)	3552 (30.1)	2025 (25.3)	1932 (31)	223 (25.8)	31259 (31)
Poor	12553 (20.5)	2474 (20.8)	3005 (19.4)	2746 (21.4)	1773 (20.9)	1364 (20.5)	124 (16.2)	21959 (20.7)
Middle	11468 (18.2)	2271 (18.5)	2730 (17.4)	2434 (18.5)	1751 (20)	1302 (18.1)	100 (17.3)	20058 (18.3)
Richer	10440 (16)	1864 (14.4)	2480 (15.4)	2080 (15.8)	1611 (18.3)	1161 (16.8)	93 (19.9)	17946 (15.9)
Richest	9839 (15.1)	1449 (11.1)	2146 (13)	1849 (14.2)	1404 (15.5)	992 (13.6)	91 (20.7)	15903 (14.1)
Regions of India								
Northern	8787 (14.4)	1478 (13.1)	1692 (11.7)	1347 (11.1)	1144 (13.5)	931 (14.2)	116 (7.6)	14305 (13.8)
Southern	13448 (23)	2814 (24.7)	4013 (27.3)	2958 (24.8)	2141 (25.6)	1447 (21.3)	174 (25.5)	23699 (23.3)
Western	8387 (12.7)	1286 (10.1)	1740 (11.1)	1423 (11.3)	1293 (15.2)	706 (10.6)	140 (17.7)	13708 (12.3)
Eastern	12790 (20.3)	2538 (21.9)	3238 (22.5)	3248 (27.1)	1762 (21.3)	1672 (26.3)	254 (30.4)	23061 (21.8)
North-Eastern	3858 (2.1)	1335 (4.5)	1620 (3.7)	1308 (3.4)	594 (2)	582 (2.7)	82 (2.4)	8839 (2.8)
Central	14711 (27.4)	2526 (25.6)	2991 (23.8)	2377 (22.4)	1630 (22.6)	1413 (24.8)	175 (16.3)	23513 (26)

Table 2: Percentage distribution of different disability types and their associated information, NSS 76th round, India.

	Locomotor	Visual	Hearing	Speech and language	Mental retardation/	Mental Illness	Other types of disability	Any Disability
Total sample size	61980	1156	1281	2013	1217	768	768	61980
Causes of disability								
Disease	28673 (46.3)	454 (39.3)	484 (37.8)	1246 (61.9)	NA	NA	NA	NA
Other than disease due to burn	723 (1.2)	88 (0.7)	1 (0.1)	8 (0.4)	NA	NA	NA	NA
Injuries other than burn	13876 (22.4)	156 (13.5)	158 (12.4)	105 (5.2)	NA	NA	NA	NA
Other causes	18702 (30.2)	538 (46.5)	637 (49.7)	654 (32.5)	NA	NA	NA	NA
Disability from Birth								
Yes	11,488 (18.5)	91 (7.9)	198 (15.4)	1041 (51.7)	955 (78.5)	112 (21.4)	119 (15.5)	11,488 (18.5)
No	50,052 (80.8)	1062 (91.9)	1081 (84.4)	964 (47.9)	258 (21.2)	403 (78.6)	645 (84)	50,052 (80.8)
Not Known	440 (0.7)	3 (0.2)	2 (0.2)	8 (0.4)	4 (0.3)	8 (1.)	4 (0.4)	440 (0.7)
Disability commenced in last 365 days								
sample size	48741	1034.2	1052.4	938.7	251.6	494.2	628.6	48741
Yes	2987 (6.1)	72 (7)	65 (6.2)	100 (10.6)	11 (4.4)	40 (10.2)	48 (7.7)	2987 (6.1)
No	45754 (93.9)	961 (93)	987 (93.8)	839 (89.4)	240 (95.6)	354 (89.8)	580 (92.3)	45754 (93.9)
Place of occurrence of disability								
Sample size	14281	161	157	105	33	86	63	14281
Workplace	2308 (16.2)	13 (8.3)	30 (19.2)	11 (10.9)	2 (6.9)	9 (11.)	11 (18.1)	2308 (16.2)
Road	5977 (41.9)	46 (28.5)	43 (27.5)	41 (38.7)	9 (25.9)	35 (40.)	15 (23.8)	5977 (41.9)
Home	4693 (32.9)	93 (57.9)	73 (46.3)	45 (42.4)	19 (58.5)	33 (38.)	31 (49.5)	4693 (32.9)

Other places	1302 (9.1)	9 (5.3)	11 (7)	8 (8)	3 (8.7)	5 (9.8)	5 (8.6)	1302 (9.1)
Treatment taken/undergoing treatment								
Sample size	61980	1156	1281	2013	1217	768	768	61980
yes: consulting doctor	35,923 (58)	566.6 (49)	617 (48.2)	1,080 (53.7)	710 (58.4)	26[illegible] (43)	330 (43)	35923 (58)
Otherwise	1565 (2.5)	22 (1.9)	34 (2.7)	42 (2.1)	36 (2.9)	6	6 (0.7)	1564.5 (2.5)
Yes: consulting doctor, plus undergoing treatment	17329 (28)	375 (32.4)	418 (32.7)	719 (35.7)	355 (29.2)	19[illegible] (51.7)	397 (51.7)	17329 (28)
Otherwise	860 (1.4)	34 (2.9)	21 (1.7)	20 (1)	4 (0.3)	1[illegible]	8 (1)	860 (1.4)
Attending special school/special therapy	116 (0.2)	2.9 (0.3)	0 (0)	4 (0.2)	6 (0.5)	[illegible]	0 (0)	116 (0.2)
Cannot afford treatment	2040 (3.3)	75 (6.4)	73 (5.7)	72 (3.6)	55 (4.6)	1[illegible] (3.3)	8 (1)	2040 (3.3)
No treatment available for the disability	699 (1.1)	13 (1.1)	8 (0.6)	17 (0.8)	16 (1.3)	4 (0.8)	5 (0.7)	699 (1.1)
Not required	2717 (4.4)	60 (5.2)	97 (7.6)	47 (2.3)	26 (2.1)	21 (4)	14 (1.8)	2717 (4.4)
Not known	732 (1.2)	8 (0.7)	12 (0.9)	13 (0.7)	9 (0.7)	1 (0.2)	1 (0.1)	732 (1.2)

Note: *Causes of disability were recorded for individuals with disabilities like locomotor, visual, hearing, and speech.*
Disability Commenced in the last 365 days was recorded for those individuals who did not have a disability 'from birth' but disability commenced during the last 365 days before the survey.
Place of occurrence was recorded for individuals with disability who are experiencing disability post their birth and for whom the cause of disability was burn, injury or other than burn.

Table 3: Access to disability support and rehabilitation services by the person with disability as per the 76th round of the National Sample Survey (2018), India.

Living conditions of the person with disability *(n=sample included in the analysis)*	**Weighted percentage**
Age at the onset of disability* (n= 48,727)	
0 to 4 years	17.2
5 to 14 years	9.0
15 to 59 years	45.9
60 years and above	28.0
Receipt of aid/help (n=61,712)	
Received aid/help from Government	20.8
Received aid/help from organisations other than government	4.1
Did not receive aid/help	75.1
Living arrangement(n=61,962)	
Living alone or with a spouse	57.0
Living with others	43.0
Arrangement of regular caregiver(n=61,980)	
Care-giver required but not available	0.1
Care-giver is not required	37.1
Care-giver is available	62.8
Access to public Transport (n=61,980)	
Yes	59.6
No	40.4
Accesses to public building (n=61,980)	
Yes	45.6
No	54.4
Difficulty faced accessing public building (n= 27,756)	
difficulty faced: due to stairs and non-availability of ramp, grooved tiles or lift	57.7
in opening doors	4.4
no seating arrangement: in the waiting area	1.6
at the point of receiving service	0.8
no special toilet seats	0.7
no sign for direction/ instruction/no public announcement system	0.3
no difficulty faced	27.6
others	7.0
Employed/working before onset of disability (For person of age 15 years and above; n=55,819)	
Yes	40.3
No	59.7
Disability causing loss or change in job(n= 21,559**)**	
loss of work	60.7
change of work	18.3
no loss or change of work	21.3
Having Disability Certificate(n=61,980)	
Yes	30.4
No	69.6
Percentage of Disability as per Certificate (n=20,213)	
40- <60%	49.3
≥60-<80%	36.3
≥80%	12.8
none of these	1.6

*** For those who have not had a disability since birth.**

Table 4: Multivariable binary logistic regression analysis exploring the likelihood of living with any disability per the 76th round of the NSS, India.

	Unadjusted Odds ratio (95% C.I)	p-value	Adjusted Odds ratio (95% C.I)	p-value
Age Group (Completed years)				
Up to 5 years	**Reference value**		**Reference value**	
6 - 18 years	2.1(2-2.1)	<0.001	3.5(3.4-3.7)	<0.001
19-35 years	2.3(2.2-2.4)	<0.001	8.4(8-8.8)	<0.001
36-49 years	3.5(3.4-3.7)	<0.001	17.6(16.8-18.5)	<0.001
50-65 years	6.4(6.1-6.7)	<0.001	25.8(24.5-27.1)	<0.001
65+ years	17.5(16.7-18.2)	<0.001	58.4(55.4-61.5)	<0.001
Sex				
Male	**Reference value**		**Reference value**	
Female	0.7(0.7-0.7)	<0.001	0.6(0.6-0.6)	<0.001
Place of Residence				
Rural	**Reference value**		**Reference value**	
Urban	1.02(1.01-1.03)	0.03	1.3(1.2-1.3)	<0.001
Social Group				
Scheduled Tribe	**Reference value**		**Reference value**	
Scheduled Caste	1.1(1.1-1.1)	<0.001	1.1(1.1-1.2)	<0.001
Other Backward Classes	1.1(1-1.1)	<0.001	1.1(1.1-1.2)	<0.001
General	1.1(1.1-1.1)	<0.001	1.3(1.3-1.3)	<0.001
Educational attainment				
No education	**Reference value**		**Reference value**	
Upto Primary class	0.5(0.5-0.5)	<0.001	0.5(0.5-0.5)	<0.001
Upto Secondary Class	0.4(0.4-0.4)	<0.001	0.4(0.4-0.4)	<0.001
Graduate & Above	0.3(0.3-0.4)	<0.001	0.3(0.3-0.3)	<0.001
Preferred Religion				
Hindu	**Reference value**		**Reference value**	
Islam	0.8(0.8-0.9)	<0.001	0.9(0.9-0.9)	<0.001
Others	0.9(0.9-1)	<0.001	1(1-1.1)	0.019
Marital Status				
Never married	**Reference value**		**Reference value**	
Currently married	1.3(1.3-1.3)	<0.001	0.3(0.3-0.3)	<0.001
widowed	5.9(5.8-6.1)	<0.001	0.6(0.5-0.6)	<0.001
Divorced/separated	4.4(4.1-4.8)	<0.001	1.1(1-1.2)	0.011
Wealth Index				
Poorest	**Reference value**		**Reference value**	
Poor	0.6(0.6-0.6)	<0.001	0.7(0.7-0.7)	<0.001
Middle	0.6(0.5-0.6)	<0.001	0.6(0.6-0.6)	<0.001
Richer	0.5(0.5-0.5)	<0.001	0.5(0.5-0.6)	<0.001
Richest	0.4(0.4-0.4)	<0.001	0.5(0.5-0.5)	<0.001
Regions of India				
Northern	**Reference value**		**Reference value**	
Southern	1.42(1.39-1.46)	<0.001	1.1(1.1-1.2)	<0.001
Western	1.13(1.1-1.16)	<0.001	1(1-1.1)	0.065
Eastern	1.15(1.13-1.18)	<0.001	1(0.9-1)	0.001
North-eastern	1(0.97-1.03)	0.961	1(1-1)	0.361
Central	1.01(0.98-1.03)	0.653	0.9(0.8-0.9)	<0.001

Figure Legends

Figure 1: Geographical disparities in the difficulties faced by the people living with disability as per the 76th Round of the National Sample Survey, India

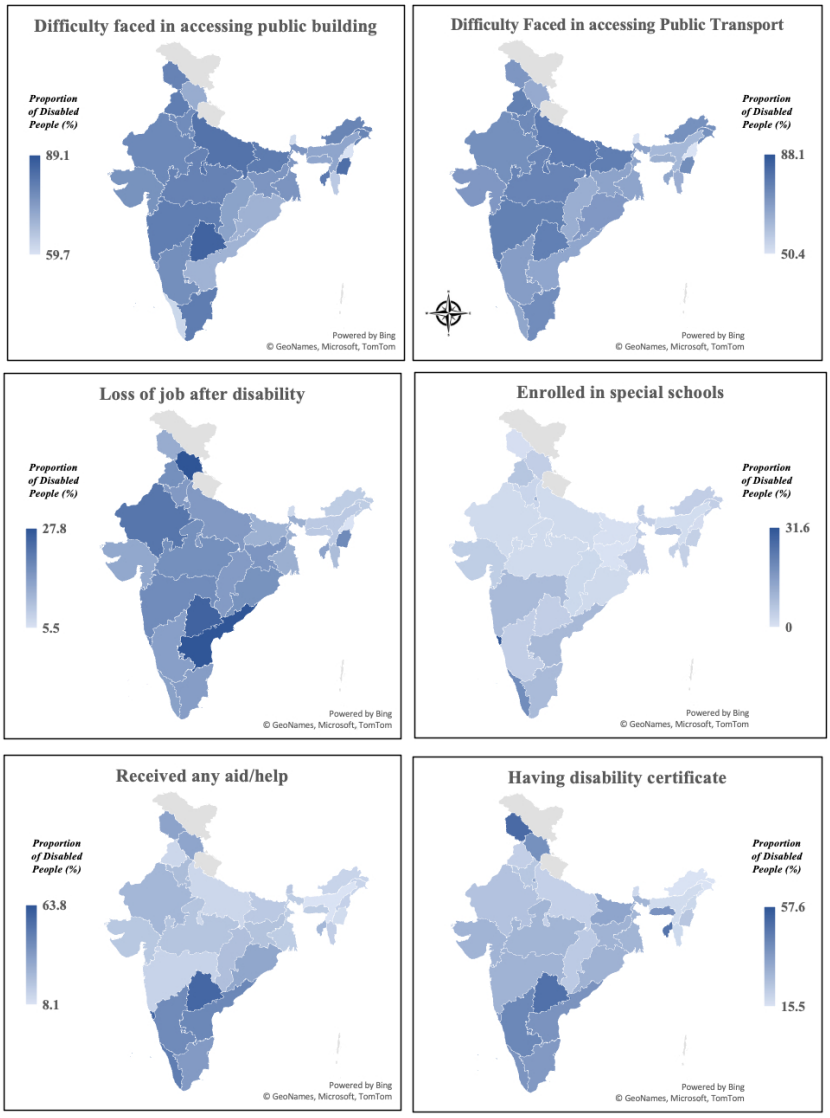

Figure 1: Geographical disparities in the difficulties faced by the people living with disabilities as per the 76th Round of the National Sample Survey, India

40x58mm (600 x 600 DPI)

Supplementary file

Supplementary Table 1: Living conditions of the people living with different types of disabilities, as per the 76th report of the National Sample Survey Organization India (2017-18)

Living conditions of the people *(n=sample included in the analysis)*	**Locomotor**	**Visual**	**Hearing**	**Speech**	**Mental retardness**	**Mental illness**	**Others**
	Weighted %	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*
Age at the onset of disability							
0 to 4 years	17.2	3.0	4.2	21.0	51.0	10.1	9.9
5 to 14 years	9.0	2.3	3.0	9.6	17.3	12.3	7.0
15 to 59 years	45.9	22.1	17.4	40.9	24.0	40.5	49.2
60 years and above	28.0	72.6	75.4	28.4	7.7	37.1	33.8
Total number of participants	48,737	1,035	1,056	946	259	395	632
Receipt of aid/help							
Received aid/help from Government	20.8	22.2	20.7	29.2	37.2	25.5	20.0
Received aid/help from organisations other than government	4.1	10.2	8.6	4.0	3.3	6.0	2.7
Did not receive aid/help	75.1	67.7	70.8	66.8	59.5	68.5	77.3
Total number of participants	61,712	1,145	1,272	2,010	1,215	521	766
Living arrangement							
Living alone or with a spouse	57.0	43.5	41.6	26.8	4.1	35.4	55.8
Living with others	43.0	56.5	58.4	73.2	95.9	64.6	44.2
Total number of participants	61,962	1,156	1,281	2,013	1,217	523	768
Arrangement of regular caregiver							
Care-giver required but not available	0.1	0.0	0.0	0.1	0.9	0.0	0.3
Care-giver is not required	37.1	11.5	15.7	8.8	5.6	10.8	13.4
Care-giver is available	62.8	88.6	84.2	91.1	93.6	89.2	86.3
Total number of participants	61,980	1,156	1,281	2,013	1,217	523	768
Accesses to public building							
Yes	45.6	25.4	29.4	27.2	26.0	26.0	29.9

No	54.4	74.6	70.6	72.8	74.0	74.0	70.1
Total number of participants	61,980	1156	1281	2013	523	523	768
Difficulty faced accessing public building							
difficulty faced: due to stairs and non-availability of ramp, grooved tiles or lift	57.7	63.2	60.7	55.4	49.7	46.7	52.2
in opening doors	4.4	1.6	1.3	2.8	1.0	7.6	2.8
no seating arrangement: in the waiting area	1.6	3.0	2.9	0.7	1.4	1.7	2.1
at the point of receiving service	0.8	5.7	2.1	0.9	0.8	1.3	0.3
no special toilet seats	0.7	0.4	0.0	0.7	0.0	0.8	0.9
no sign for direction/ instruction/no public announcement system	0.3	2.2	2.0	2.2	2.1	1.3	0.0
no difficulty faced	27.6	8.4	17.0	15.2	17.7	24.2	25.8
others	7.0	15.4	13.3	22.1	27.4	16.3	15.8
Total number of participants	27,756	330	433	537	330	134	226
Working before onset (For >15 years and above)							
Yes	40.3	44.4	35.9	32.7	5.6	38.5	53.6
No	59.7	55.6	64.1	67.3	94.4	61.5	46.4
Total number of participants	55,819	1093	1171	1353	690	448	667
Disability causing loss or change in job							
loss of work	60.7	75.3	72.8	86.5	80.9	84.2	82.8
change of work	18.3	11.0	5.7	5.2	2.7	8.7	5.9
no loss or change of work	21.3	13.7	21.5	8.3	16.4	7.1	11.4
Total number of participants	21,559	465	404	425	37	165	343
Having Disability Certificate							
Yes	30.4	14.0	16.1	41.7	59.8	29.9	24.9
No	69.6	86.0	83.9	58.3	40.2	70.1	75.1
Total number of participants	61,980	1156	1281	2013	1217	523	768
Percentage of Disability as per Certificate							
40% or more but less than 60%	49.3	23.2	22.5	16.9	14.6	27.7	29.7
60% or more but less than 80%	36.3	37.6	34.2	32.3	35.5	43.0	37.3
80% or more	12.8	38.7	42.2	50.3	49.1	29.0	31.7
none of these	1.6	0.5	1.1	0.5	0.8	0.4	1.3

Total number of participants	20,213.00	174	221	901	780	168	205

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India.

Covariates	Locomotor disability				Speech and language disability				Mental illness disability			
	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age (Years)												
<18 (Ref)	1		1		1		1		1		1	
18-35	2.39(2.27-2.53)	<0.001	4.08(3.84-4.33)	<0.001	1.07(0.99-1.15)	0.07	8.85(8.16-9.6)	<0.001	14(10.28-19.08)	<0.001	65.34(47.81-89.31)	<0.001
35-49	3.91(3.7-4.13)	<0.001	7.89(7.4-8.41)	<0.001	0.93(0.86-1.01)	0.089	9.87(8.98-10.84)	<0.001	19.06(13.98-25.99)	<0.001	156.16(113.91-214.1)	<0.001
50-59	6.83(6.47-7.21)	<0.001	12.36(11.6-13.17)	<0.001	0.85(0.78-0.92)	<0.001	7.21(6.52-7.97)	<0.001	18.05(13.23-24.62)	<0.001	135.71(98.75-186.49)	<0.001
65+	14.92(14.12-15.77)	<0.001	23.27(21.79-24.85)	<0.001	0.82(0.74-0.91)	<0.001	6.22(5.49-7.03)	<0.001	19.12(13.94-26.21)	<0.001	126.17(91.08-174.77)	<0.001
Gender												
Male (Ref)	1		1		1		1		1		1	
female	0.69(0.68-0.7)	<0.001	0.58(0.57-0.59)	<0.001	0.71(0.68-0.73)	<0.001	0.69(0.67-0.72)	<0.001	0.79(0.75-0.83)	<0.001	0.75(0.71-0.79)	<0.001
Place of residence												
Rural (Ref)	1		1		1		1		1		1	
Urban	1.09(1.07-1.11)	<0.001	1.27(1.24-1.3)	<0.001	0.88(0.85-0.92)	<0.001	1.14(1.09-1.19)	<0.001	0.96(0.91-1.01)	0.12	1.09(1.03-1.16)	0.003
Social groups												
Scheduled tribe (Ref)	1		1		1		1		1		1	
Scheduled caste	1.27(1.23-1.31)	<0.001	1.17(1.13-1.21)	<0.001	1.02(0.96-1.09)	0.493	1.12(1.04-1.2)	0.002	1.16(1.06-1.28)	0.002	1.22(1.11-1.35)	<0.001
Other backward class	1.19(1.16-1.23)	<0.001	1.14(1.1-1.17)	<0.001	0.98(0.92-1.04)	0.482	1.22(1.15-1.31)	<0.001	1.15(1.06-1.25)	0.001	1.31(1.2-1.44)	<0.001
Others	1.26(1.22-1.3)	<0.001	1.21(1.17-1.25)	<0.001	0.97(0.91-1.03)	0.32	1.48(1.38-1.59)	<0.001	1.26(1.15-1.37)	<0.001	1.55(1.4-1.71)	<0.001
Education level												
Illiterate (Ref)	1		1		1		1		1		1	

Primary	0.58(0.56-0.59)	<0.001	0.84(0.82-0.86)	<0.001	0.51(0.49-0.53)	<0.001	0.24(0.23-0.25)	<0.001	0.53(0.5-0.56)	<0.001	0.52(0.49-0.56)	<0.001
Secondary	0.57(0.56-0.58)	<0.001	0.76(0.74-0.78)	<0.001	0.25(0.24-0.26)	<0.001	0.11(0.11-0.12)	<0.001	0.47(0.44-0.49)	<0.001	0.34(0.32-0.36)	<0.001
and Higher Education	0.57(0.55-0.6)	<0.001	0.66(0.63-0.68)	<0.001	0.12(0.11-0.14)	<0.001	0.05(0.04-0.06)	<0.001	0.28(0.24-0.32)	<0.001	0.15(0.13-0.17)	<0.001
Religion												
Hindu (Ref)	1		1		1		1		1		1	
Muslim	0.84(0.82-0.86)	<0.001	0.96(0.94-0.99)	0.004	1.05(1-1.11)	0.031	0.83(0.79-[illegible])	0	1.16(1.09-1.24)	<0.001	1.08(1.01-1.16)	0.02
Others	0.84(0.82-0.87)	<0.001	0.99(0.95-1.03)	0.607	1.07(1-1.14)	0.057	1.13(1.05-[illegible])	0.001	1.08(0.99-1.18)	0.101	1.17(1.06-1.29)	0.003
Marital status												
Un-married (Ref)	1		1		1		1		1		1	
Currently married	1.89(1.86-1.93)	<0.001	0.52(0.51-0.54)	<0.001	0.31(0.3-0.33)	<0.001	0.15(0.14-[illegible])	0	0.66(0.62-0.69)	<0.001	0.13(0.12-0.14)	<0.001
Widowed	5.99(5.83-6.15)	<0.001	0.93(0.89-0.97)	0.001	0.53(0.49-0.57)	<0.001	0.16(0.15-[illegible])	0	1.6(1.48-1.74)	<0.001	0.22(0.19-0.24)	<0.001
Divorced/separated	2.98(2.7-3.28)	<0.001	0.92(0.83-1.01)	0.091	1.79(1.54-2.09)	<0.001	0.66(0.56-[illegible])	0	9.06(8.02-10.23)	<0.001	1.76(1.54-2.02)	<0.001
Wealth												
Poorest (Ref)	1		1		1		1		1		1	
Poor	0.67(0.66-0.69)	<0.001	0.78(0.76-0.8)	<0.001	0.77(0.73-0.81)	<0.001	0.81(0.77-[illegible])	0	0.7(0.65-0.75)	<0.001	0.83(0.77-0.89)	<0.001
Middle	0.6(0.59-0.62)	<0.001	0.67(0.66-0.69)	<0.001	0.67(0.64-0.71)	<0.001	0.74(0.7-0.78)	0	0.66(0.62-0.71)	<0.001	0.8(0.74-0.86)	<0.001
Richer	0.55(0.54-0.56)	<0.001	0.58(0.57-0.6)	<0.001	0.58(0.55-0.61)	<0.001	0.69(0.65-0.73)	0	0.6(0.55-0.64)	<0.001	0.75(0.69-0.81)	<0.001
Richest	0.52(0.51-0.54)	<0.001	0.52(0.5-0.53)	<0.001	0.52(0.49-0.55)	<0.001	0.71(0.66-0.75)	0	0.52(0.48-0.56)	<0.001	0.7(0.64-0.77)	<0.001
Region												
Northern (Ref)	1		1		1		1		1		1	
Southern	1.26(1.22-1.3)	<0.001	0.97(0.94-1)	0.073	1.78(1.67-1.9)	<0.001	1.84(1.72-1.97)	<0.001	1.25(1.15-1.36)	<0.001	1.05(0.96-1.15)	0.257
Western	1.12(1.08-1.15)	<0.001	0.99(0.95-1.02)	0.429	1.23(1.14-1.32)	<0.001	1.29(1.19-1.39)	<0.001	0.88(0.79-0.97)	0.008	0.84(0.76-0.93)	0.001
Eastern	1.02(0.99-1.05)	0.288	0.86(0.84-0.89)	<0.001	1.7(1.59-1.81)	<0.001	1.42(1.33-1.52)	<0.001	1.25(1.16-1.36)	<0.001	1.12(1.03-1.22)	0.008
North-eastern	0.69(0.66-0.71)	<0.001	0.66(0.63-0.69)	<0.001	1.59(1.47-1.71)	<0.001	1.64(1.51-1.78)	<0.001	1.01(0.91-1.12)	0.833	0.95(0.85-1.06)	0.388
Central	1.03(1-1.05)	0.075	0.94(0.91-0.97)	<0.001	1.08(1.01-1.15)	0.026	0.85(0.79-0.92)	<0.001	0.93(0.85-1.01)	0.073	0.85(0.78-0.93)	<0.001

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India (Cont..)

	Hearing disability				Visual disability				Mental retardness.			
	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age (Years)												
<18 (Ref)	1		1		1		1		1		1	
18-35	1.95(1.73-2.2)	<0.001	5.16(4.55-5.85)	0	10.37(1.94-2.65)	<0.001	6.57(5.59-7.72)	<0.001	1.88(1.7-2.08)	<0.001	33.33(30-37.04)	<0.001
35-49	3.23(2.87-3.64)	<0.001	9.31(8.14-10.65)	0	17.8(3.47-4.72)	<0.001	13.95(11.8-16.5)	<0.001	1.17(1.05-1.31)	0.005	34.13(30.24-38.51)	<0.001
50-59	6.63(5.91-7.45)	<0.001	15.34(13.43-17.52)	0	31.04(9.17-12.36)	<0.001	29.2(24.7-34.48)	<0.001	0.65(0.57-0.74)	<0.001	18.86(16.39-21.71)	<0.001
65+	20.67(18.42-23.2)	<0.001	38.97(34.06-44.58)	0	43.68(23.92-32.23)	1	61.23(51.7-72.57)	<0.001	0.4(0.33-0.48)	<0.001	11.39(9.26-14.01)	<0.001
Gender												
Male (Ref)	1		1		1		1		1		1	
female	0.96(0.93-0.99)	0.012	0.73(0.7-0.75)	<0.001	1.04(1.01-1.08)	0.022	0.76(0.73-0.79)	<0.001	0.68(0.65-0.71)	<0.001	0.76(0.73-0.8)	<0.001
Place of residence												
Rural (Ref)	1		1		1		1		1		1	
Urban	0.86(0.83-0.9)	<0.001	1.07(1.03-1.12)	0.001	0.83(0.8-0.86)	<0.001	1.08(1.04-1.13)	0.001	1(0.96-1.05)	0.894	1.18(1.11-1.24)	<0.001
Social groups												
Scheduled tribe (Ref)	1		1		1		1		1		1	
Scheduled caste	0.89(0.84-0.94)	<0.001	0.95(0.89-1.01)	0.084	0.99(0.93-1.06)	0.734	1.04(0.97-1.12)	0.228	1.2(1.1-1.3)	<0.001	1.24(1.13-1.36)	<0.001
Other backward class	0.9(0.86-0.95)	<0.001	1.02(0.96-1.08)	0.544	0.92(0.87-0.98)	0.005	1.03(0.97-1.1)	0.353	1.23(1.14-1.32)	<0.001	1.49(1.37-1.63)	<0.001
Others	0.92(0.87-0.97)	0.002	1.14(1.07-1.21)	<0.001	0.85(0.8-0.91)	<0.001	1.02(0.95-1.09)	0.576	1.26(1.17-1.37)	<0.001	1.91(1.74-2.09)	<0.001
Education level												
Illiterate (Ref)	1		1		1		1		1		1	
Primary	0.47(0.45-0.48)	<0.001	0.65(0.62-0.68)	<0.001	0.36(0.35-0.38)	<0.001	0.57(0.55-0.6)	<0.001	0.34(0.32-0.35)	<0.001	0.1(0.1-0.11)	<0.001
Secondary	0.31(0.29-0.32)	<0.001	0.44(0.42-0.46)	<0.001	0.26(0.24-0.27)	<0.001	0.43(0.4-0.45)	<0.001	0.13(0.12-0.14)	<0.001	0.03(0.03-0.04)	<0.001

and Higher Education	0.22(0.2-0.25)	<0.001	0.29(0.27-0.33)	<0.001	0.2(0.18-0.23)	<0.001	0.33(0.29-0.37)	<0.001	0.04(0.03-0.05)	<0.001	0.01(0.01-0.01)	<0.001
Religion												
Hindu (Ref)	1		1		1		1		1		1	
Muslim	0.8(0.76-0.84)	<0.001	0.88(0.84-0.93)	<0.001	0.85(0.8-0.89)	<0.001	1(0.94-1.06)	0.995	1.05(0.99-1.12)	0.089	0.71(0.67-0.76)	<0.001
Others	1.11(1.05-1.18)	<0.001	1.08(1.01-1.16)	0.024	0.99(0.92-1.06)	0.802	0.94(0.87-1.02)	0.112	1.05(0.97-1.14)	0.195	1.27(1.15-1.39)	<0.001
Marital status												
Un-married (Ref)	1		1		1		1		1		1	
Currently married	1.63(1.57-1.7)	<0.001	0.42(0.39-0.45)	<0.001	1.87(1.78-1.96)	<0.001	0.36(0.33-0.39)	<0.001	0.09(0.09-0.1)	<0.001	0.03(0.03-0.03)	<0.001
Widowed	7.49(7.16-7.84)	<0.001	0.77(0.72-0.84)	<0.001	9.8(9.31-10.31)	<0.001	0.73(0.67-0.8)	<0.001	0.17(0.15-0.19)	<0.001	0.04(0.03-0.05)	<0.001
Divorced/separated	4.27(3.68-4.97)	<0.001	1.15(0.98-1.35)	0.096	3.26(2.67-3.99)	<0.001	0.67(0.54-0.83)	<0.001	1.56(1.31-1.85)	<0.001	0.36(0.3-0.44)	<0.001
Wealth												
Poorest (Ref)	1		1		1		1		1		1	
Poor	0.6(0.57-0.63)	<0.001	0.74(0.71-0.78)	<0.001	0.62(0.59-0.65)	<0.001	0.8(0.76-0.84)	<0.001	0.87(0.82-0.93)	<0.001	0.93(0.87-1)	0.054
Middle	0.54(0.51-0.56)	<0.001	0.67(0.64-0.7)	<0.001	0.56(0.54-0.59)	<0.001	0.73(0.69-0.77)	<0.001	0.85(0.8-0.91)	<0.001	0.92(0.86-0.99)	0.025
Richer	0.49(0.47-0.52)	<0.001	0.62(0.59-0.65)	<0.001	0.47(0.44-0.49)	<0.001	0.61(0.57-0.64)	<0.001	0.79(0.74-0.85)	<0.001	0.92(0.85-0.99)	0.028
Richest	0.43(0.41-0.45)	<0.001	0.57(0.54-0.6)	<0.001	0.37(0.35-0.39)	<0.001	0.5(0.47-0.54)	<0.001	0.7(0.65-0.75)	<0.001	0.91(0.84-0.99)	0.02
Region												
Northern (Ref)	1		1		1		1		1		1	
Southern	1.94(1.83-2.05)	<0.001	1.52(1.43-1.61)	<0.001	1.54(1.45-1.64)	<0.001	1.1(1.03-1.18)	0.006	1.51(1.4-1.62)	<0.001	1.7(1.57-1.84)	<0.001
Western	1.19(1.12-1.28)	<0.001	1.07(1-1.15)	0.053	1.01(0.93-1.08)	0.883	0.88(0.82-0.96)	0.002	1.31(1.21-1.42)	<0.001	1.49(1.37-1.63)	<0.001
Eastern	1.34(1.26-1.42)	<0.001	1.18(1.11-1.26)	<0.001	1.2(1.13-1.28)	<0.001	1(0.93-1.07)	0.981	1.07(1-1.16)	0.062	0.92(0.84-0.99)	0.037
North-eastern	1.57(1.46-1.68)	<0.001	1.58(1.47-1.7)	<0.001	1.47(1.37-1.59)	<0.001	1.52(1.41-1.65)	<0.001	0.84(0.76-0.93)	0.001	0.82(0.74-0.92)	0.001
Central	1.08(1.02-1.15)	0.01	1(0.94-1.06)	0.96	1.05(0.98-1.12)	0.182	0.91(0.85-0.97)	0.006	0.87(0.81-0.94)	<0.001	0.63(0.58-0.69)	<0.001

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India (Cont..)

	Other types of disabilities			
	Un-adjusted OR (95% CI)	**p-value**	**Adjusted OR (95% CI)**	**p-value**
Age (Years)				
<18 (Ref)	1		1	
18-35	0.98(0.83-1.16)	0.8	1.46(1.21-1.77)	<0.001
35-49	1.23(1.04-1.46)	0.018	2.37(1.91-2.93)	<0.001
50-59	1.84(1.56-2.17)	<0.001	3.51(2.84-4.34)	<0.001
65+	3.3(2.78-3.9)	<0.001	6.01(4.81-7.5)	<0.001
Gender				
Male (Ref)	1		1	
female	0.81(0.75-0.87)	<0.001	0.8(0.74-0.86)	<0.001
Place of residence				
Rural (Ref)	1		1	
Urban	1.2(1.12-1.29)	<0.001	1.21(1.11-1.31)	<0.001
Social groups				
Scheduled tribe (Ref)	1		1	
Scheduled caste	0.78(0.69-0.88)	<0.001	0.82(0.72-0.94)	0.004
Other backward class	0.68(0.61-0.76)	<0.001	0.71(0.63-0.81)	<0.001
Others	0.91(0.81-1.02)	0.098	0.89(0.78-1.01)	0.066
Education level				
Illiterate (Ref)	1		1	
Primary	0.84(0.76-0.91)	<0.001	0.88(0.8-0.98)	0.018
Secondary	0.79(0.72-0.86)	<0.001	0.89(0.81-0.99)	0.034

and Higher Education	0.93(0.81-1.07)	0.334	0.97(0.83-1.14)	0.713
Religion				
Hindu (Ref)	1		1	
Muslim	0.83(0.74-0.92)	<0.001	0.88(0.79-0.98)	0.021
Others	1.18(1.04-1.34)	0.01	1.09(0.94-1.26)	0.239
Marital status				
Un-married (Ref)	1		1	
Currently married	0.97(0.9-1.04)	0.409	0.48(0.42-0.54)	<0.001
Widowed	1.89(1.68-2.12)	<0.001	0.55(0.46-0.66)	<0.001
Divorced/separated	2.57(1.86-3.54)	<0.001	1.29(0.92-1.81)	0.142
Wealth				
Poorest (Ref)	1		1	
Poor	0.63(0.57-0.71)	<0.001	0.72(0.64-0.8)	<0.001
Middle	0.66(0.59-0.73)	<0.001	0.76(0.68-0.85)	<0.001
Richer	0.72(0.65-0.8)	<0.001	0.84(0.75-0.94)	0.002
Richest	0.78(0.7-0.86)	<0.001	0.88(0.78-0.99)	0.038
Region				
Northern (Ref)	1		1	
Southern	2.66(2.28-3.1)	<0.001	2.62(2.25-3.07)	<0.001
Western	2.9(2.48-3.4)	<0.001	2.82(2.4-3.31)	<0.001
Eastern	3.09(2.67-3.59)	<0.001	3.23(2.77-3.77)	<0.001
North-eastern	2.12(1.77-2.53)	<0.001	1.98(1.64-2.38)	<0.001
Central	1.17(1-1.38)	0.056	1.26(1.07-1.49)	0.007

BMJ Open

Epidemiology of disability and access to disability support and rehabilitation services in India: a secondary data analysis a National Sample Survey (2018)

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2024-090220.R4
Article Type:	Original research
Date Submitted by the Author:	26-Apr-2025
Complete List of Authors:	Mirza, Moonis ; All India Institute of Medical Sciences - Bathinda, Department of Hospital Administration Esht, Vandana; Jazan University College of Applied Medical Sciences, Physical Therapy Department Verma, Madhur ; All India Institute of Medical Sciences Bathinda, Department of Community & Family Medicine Bahadur, Bajarang; International Institute for Population Sciences, Demography Jaiswal, Ajit; International Institute for Population Sciences, Demography Alagarajan, Manoj; International Institute for Population Sciences, Demography Kakkar, Rakesh; All India Institute of Medical Sciences - Bathinda, Department of Community & Family Medicine
Primary Subject Heading:	Public health
Secondary Subject Heading:	Epidemiology, General practice / Family practice, Global health, Health services research, Occupational and environmental medicine
Keywords:	Disabled Persons, PUBLIC HEALTH, Health Equity

I, the Submitting Author has the right to grant and does grant on behalf of all authors of the Work (as defined in the below author licence), an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the terms applicable for US Federal Government officers or employees acting as part of their official duties; on a worldwide, perpetual, irrevocable, royalty-free basis to BMJ Publishing Group Ltd ("BMJ") its licensees and where the relevant Journal is co-owned by BMJ to the co-owners of the Journal, to publish the Work in this journal and any other BMJ products and to exploit all rights, as set out in our licence.

The Submitting Author accepts and understands that any supply made under these terms is made by BMJ to the Submitting Author unless you are acting as an employee on behalf of your employer or a postgraduate student of an affiliated institution which is paying any applicable article publishing charge ("APC") for Open Access articles. Where the Submitting Author wishes to make the Work available on an Open Access basis (and intends to pay the relevant APC), the terms of reuse of such Open Access shall be governed by a Creative Commons licence – details of these licences and which Creative Commons licence will apply to this Work are set out in our licence referred to above.

Other than as permitted in any relevant BMJ Author's Self Archiving Policies, I confirm this Work has not been accepted for publication elsewhere, is not being considered for publication elsewhere and does not duplicate material already published. I confirm all authors consent to publication of this Work and authorise the granting of this licence.

Epidemiology of disability and access to disability support and rehabilitation services in India: a secondary data analysis a National Sample Survey (2018)

Moonis Mirza*, Vandana Esht[1]*, Madhur Verma*#, Bajarang Bahadur*, Ajit Kumar Jaiswal[3], Manoj Alagarajan, Rakesh Kakkar

*Authors contributed equally
#Corresponding author

Author affiliations:

1. **Moonis Mirza (MD)**
   Associate Professor of Hospital Administration, All India Institute of Medical Sciences, Bathinda (Punjab), India- 151001
   Email: moonismirza@gmail.com.
   Orcid id: 0000-0002-8844-7311

2. **Vandana Esht (Phd)**
   Associate Professor, Physical Therapy Department, College of Applied Medical Sciences, Jazan University, Jazan, Saudi Arabia
   Email: vandanaesht@jazanu.edu.sa.

3. **Madhur Verma (MD)**
   Associate Professor of Community and Family Medicine, All India Institute of Medical Sciences, Bathinda (Punjab), India- 151001
   Email: drmadhurverma@gmail.com

4. **Bajarang Bahadur**
   MPhil, International Institute for Population Sciences, Mumbai (Maharashtra) India -400088
   Email: bajarang7894@gmail.com.

5. **Ajit Kumar Jaiswal**
   MPhil, International Institute for Population Sciences, Mumbai (Maharashtra), India -400088
   Email: ajitjaiswal20@gmail.com.

6. **Manoj Alagarajan**
   Assistant Professor, International Institute for Population Sciences, Mumbai (Maharashtra), India -400088
   Email: alagarajan@iipsindia.ac.in.

7. **Rakesh Kakkar (MD)**
   Professor of Community and Family Medicine, All India Institute of Medical Sciences, Bathinda (Punjab), India- 151001
   Email: drrakesh75@rediffmail.com.

Correspondence to:

Dr. Madhur Verma (MD)

Associate Professor of Community and Family Medicine,
All India Institute of Medical Sciences, Bathinda (Punjab),
India-151001
Email: drmadhurverma@gmail.com
Phone: +91 9466445513
Orcid id: 0000-0002-1787-8392

Abstract

Objective: The aim of this study was to examine the epidemiology of disability in India and assess access to disability support and rehabilitation services by people with disability (PWD).

Design: This study is a secondary analysis of data from the 76th round of the National Sample Survey (2018), focusing on disability in India.

Setting: The survey employed a stratified two-stage sampling design based on Census 2011, covering all states and union territories of India. Villages and urban blocks were selected in the first stage, while households were chosen in the second stage across rural and urban areas.

Participants: The survey included data from a population of 576,796 individuals residing in 1,18,152 households from 8,992 village/urban blocks (5,378 rural villages and 3,614 urban blocks). The analysis focused on 1,07,125 individuals (61,707 males and 45,305 females) who reported at least one disability.

Outcome measures: The primary outcome was "any disability". Secondary outcomes included access to disability support and rehabilitation services, which assessed difficulties in accessing public buildings and transport, loss of employment after disability, availability of government support, enrolment in special schools, and possession of a disability certificate.

Results: The overall weighted disability prevalence was 2.2%, with significant disparities across socio-demographic characteristics. Among PWD, 45.9% of those who acquired disability after birth were aged between 15 and 59, and 20.8% received no government aid. About 40% of PWD struggled to use public transport, and 57.7% had difficulties accessing public buildings. Additionally, 60.7% reported job loss due to disability, and 69.6% lacked a disability certificate.

Conclusion: This study highlights disparities faced by PWD in accessing disability support and rehabilitation services. There is an urgent need for concerted efforts to minimise such

experiences. This will help us enhance the well-being and participation of PWD and empower them to contribute to society with their true potential.

Keywords: *Disability, inequity, disparities, accessibility, health access.*

Strengths and limitations of this study

- One of the very first comprehensive assessments of accessibility issues of people living with disability, based on data from the 76th round of the National Sample Survey (2018).
- We estimated the proportion of people with disability who could access basic services through a weighted analysis that makes the results generalisable and highlights actionable points.
- The lack of a standardised definition of disability was the critical limitation of the study, which restricts sub-national and national comparisons over time and regions.
- The possibility of estimates being affected by recall bias and social desirability bias cannot be ruled out.
- We were limited by the number of variables available in the primary data, which restricted us from making further conclusions about the social inclusion of people with disability.

INTRODUCTION

As per the United Nations Convention on the Rights of Persons with Disabilities (CRPD), people with disability (PWD) include those who have long-term physical, mental, intellectual, or sensory impairments which, in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others.[1] Disability is a global concern, impacting 1.3 billion people, or 16% of the population.[2] The World Health Organisation (WHO) and the World Bank's World Report on Disability highlight that 80% of the global disabled population is of working age, with a substantial proportion residing in developing countries.[3] India is one of the most populous countries, with a concerning proportion of PWD.[4] With the increasing proportion of the geriatric population, the burden of disability has also proportionately increased (from 21.9 to 26.8 million) over the last two rounds of the national census (2001-2011).[5,6] The reports from the 2011 Census and the 76th round of the National Sample Survey (NSS) estimate disability prevalence to be around 2.2%.[7] However, the fifth round (2019-21) of the Indian National Family Health Survey (a large-scale nationally representative survey with repeated cross-sectional design) estimates an overall disability prevalence of 4.52%.[8] The discrepancy in available estimates is due to methodological differences, poor quality and inconsistent data, and lack of a standardised definition, which underscores the intricate nature of disability.[9,10]

The CRPD identifies disability as an evolving concept and highlights the constantly changing needs of PWD, which are largely unmet. [11–13] The different articles of CRPD (6, 7, 9, 24, and 27) focus on key aspects such as gender, age, accessibility, education, and employment to empower PWD by addressing specific needs. For instance, Article 6 caters to gender-related needs, which may include protections against gender-based discrimination and access to reproductive healthcare, while Articles 7 and 24 focus on the needs of children with disability and ensure inclusive education. Article 9 ascertains that older adults with disability have access

to necessary social and healthcare services. These measures aim to enable independent living and full participation in all aspects of life, ensuring that PWD are not deprioritised compared to the general population.[14–18] The limited priority given to the needs of PWD in society increases the existing disparities, leading to poorer health outcomes, lower educational attainment, and reduced economic opportunities, thereby exacerbating social inequities.[19] Addressing these disparities is a global priority as mandated by the second principle of the Sustainable Development Goals (SDGs), "Leave no one behind", which is the central, transformative promise of the Agenda 2030.[20] International human rights law, including the CRPD, Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), Convention on the Rights of the Child (CRC), International Covenant on Civil and Political Rights (ICCPR), International Covenant on Economic, Social and Cultural Rights (ICESCR), collectively uphold the principles of equality and non-discrimination, obligate each country to address the inequalities faced by PWD, ensuring that they have equitable access to services, full participation in society, and protection from exclusionary practices.[1,21] Between March 2007 and January 2025, 192 parties, including India, formally agreed to the CRPD. Despite progress, there remains a gap in fully recognising and upholding the rights and needs of PWD.[19] The needs of PWD can span from *personal functional assistance* (daily activities and extent of disability), *social integration* (living conditions, caregivers, and public accessibility), *economic rehabilitation* (impact on employment and finances) to *service access* (certification and receipt of government/Non-Government Organization (NGO) support) necessitating a comprehensive approach.[22] However, access to such services is less studied, so it is crucial to highlight disparities that affect the disability care continuum and limit the efforts to minimise social exclusion of PWD and foster a social environment that is inclusive and accessible to all. [22][23]

Previous literature from India has primarily focused on the epidemiology of disability.[10] The lack of disability-friendly infrastructure, affordable assistive technologies, support services, including personal assistance, therapy, aids and vocational rehabilitation, and comprehensive care perpetuates inequalities.[24] However, it remains underexplored by the scientific community. Within this context, the 76th NSS collects data regarding disability and access of people with disability to various disability support and rehabilitation services, thus providing an opportunity to study them. [7] Thus, the primary aim of the study was to explore the epidemiology of disability and the accessibility of PWD to various disability support and rehabilitation services to provide insights for specific interventions.

METHODS

Data sources

We conducted a secondary analysis of the cross-sectional data from the 76th National Sample Survey (NSS) conducted by the Ministry of Statistics, Planning, and Implementation (MoSPI) between July and December 2018. MoSPI has formulated a code of ethics and sets out certain standards of conduct for the members of the Survey Committees (group of people appointed to conduct and supervise the survey). The data for NSSO is collected per the Collection of Statistics Act, 2008, which ensures transparency in data collection by issuing public notifications outlining the subject, purpose, and methodology of the survey. Participation in these surveys is generally voluntary, with respondents providing implied consent by answering survey questions after being informed about the study's objectives. Additionally, the Act mandates confidentiality safeguards, ensuring that collected data is used solely for statistical purposes. While respondents are legally obligated to provide accurate information, the data remains anonymous and protected. Thus, the NSSO follows ethical guidelines to uphold privacy while maintaining the integrity of national statistics.[25] The NSS collects socio-economic data using interviews through scientific sampling methods and serves as a crucial

tool to gauge various socio-economic aspects across all states of India. Its primary objective is to identify unmet needs within the population, thereby aiding the government in formulating effective policies to address them.

The survey made its first attempt to collect information on the number of PWD during the 15th round (July 1959 - June 1960).[26] In the 76th round, the main objective of the survey was to estimate indicators of incidence and prevalence of disability, cause of disability, age at onset of disability, facilities available to the PWD, difficulties faced in accessing public building/public transport, arrangement of regular caregiver, out-of-pocket expense relating to disability, etc. using a structured questionnaire.[27] Further, estimates were obtained on various employment and unemployment particulars in usual status for the household members with at least one disability. For PWD aged 12 to 59 years, information was collected on whether or not they received vocational/technical training and details related to such training.

Sampling design and sample size

The 76th NSS employed a stratified two-stage sampling design, utilising Census 2011 as the sampling frame.[7] The survey commenced on 1st July 2018 for six months. In the first stage, villages/urban blocks were selected, followed by the selection of households in rural and urban areas in the second stage. This round of NSS encompassed all states and union territories of India except the villages in Andaman and Nicobar Islands, which are difficult to access, covering a total of 8,992 village/urban blocks (5,378 rural villages and 3,614 urban blocks) and including 118,152 households representing a population of 576,796 individuals (402,589 in rural areas and 173,980 in urban areas). Within this, the present study focuses on 1,07,125 individuals, consisting of 61,707 males and 45,418 females, who reported at least one disability during the survey.

Study variables

Dependent variable

The presence of "any disability" was our primary dependent variable. MoSPI defines a "Person with disability" as a person with a long-term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders full and effective participation in society equally with others.[7] The variable is created by the presence of at least one condition among all seven disability types, elaborated subsequently

1. **Locomotor disability:** A person was categorised as living with locomotor disability based on a positive response to any of the following three conditions: *(i) whether having difficulty in using hands, fingers, toes, body movement (including cerebral palsy, muscular dystrophy); (ii)whether having loss of sensation in the body due to paralysis, leprosy, other reasons; or (iii)whether having deformity of the body part(s) like hunch back, dwarfism, deformity due to leprosy, caused by acid attack, etc."*

2. **Visual disability:** It was identified using a direct question: "*Whether having difficulty in seeing, counting fingers of hand from a distance of 10 feet (with spectacles, if using, and both eyes taken together*)."

3. **Hearing disability:** The categorisation was based on the question: *"Whether having difficulty in hearing day-to-day conversational speech (without hearing aid, if using, and both ears taken together)"*

4. **Speech and language disability:** It was assessed using a question: *"Whether having difficulty in speech (unable to speak like a normal person/ speech is not comprehensible, including laryngectomy, aphasia) which is base for speech disability."*

5. **Intellectual disability:** The variable has been prepared based on the question: "*Whether having difficulty in understanding/ comprehension or communicating in doing daily activities*". The manuscript adopts the term 'intellectual disability' in place of the outdated and potentially stigmatising term 'mental retardation,' that was used in the original survey,

and better aligns with current international standards and person-first language conventions.

6. **Mental illness:** This disability was identified when there was a positive response to any of the three conditions: "(i) *whether having unnecessary and excessive worry and anxiety, repetitive behaviour/ thoughts, changes of mood or mood swings, talking/laughing to self, staring in space; (ii) whether having unusual experiences of hearing voices, seeing visions, strange smell or sensation or strange taste; or (iii) whether having unusual behaviour or difficulty in social interactions and adaptability."*

7. **Other disability:** To identify other types of disability of the persons, the following question was used: "*Whether having any of the following: Parkinson's disease, multiple sclerosis, other chronic neurological conditions, thalassemia, haemophilia, sickle cell disease*".

The access to disability support and rehabilitation services by the PWD were secondary dependent variables. For this study, we adopted the United Nations CRPD definition of 'disability support,' which is stated as 'the means to ensure that PWD can fully enjoy their rights and participate equally in society." The original survey assessed disability support by estimating the proportion of PWD ever receiving any aid/help (received aid/help from government, or received aid/help from organisations other than government, did not receive aid/help), living arrangement (living alone or with a spouse, living with others), arrangement of regular caregiver (care-giver required but not available, care-giver is not required, care-giver is available), access to public transport (yes, no), accesses to public building (yes, no), difficulty faced in accessing public building (difficulty faced due to stairs and non-availability of ramp, grooved tiles or lift, in opening doors, no seating arrangement: in the waiting area, at the point of receiving service, no special toilet seats, no sign for direction/ instruction/no public announcement system, no difficulty faced, and others), employed/working before onset of

disability (yes, no), disability causing loss or change in job (loss of work, change of work , no loss or change of work), having disability certificate (yes, no), and percentage of disability as per certificate (40-60%, 60-80%, >80%, and none of these). Disability certificate is issued to PWD by the competent medical authorities notified by the State/UT Government and aims to encourage transparency, efficiency and ease of delivering the government benefits to the person with disabilities and to ensure uniformity.[28,29]

Predictor variables

The predictor variables were chosen in the present study following a literature review and the scope of data collected in the original survey.[30–33] We included age group (completed years) categorised as; up to 5, 6-17, 18-35, 36-49, 50-65 and 65+ completed years, sex (male, female), marital status (never married, ever married, widowed, divorced/separated), area of residence (rural, urban), educational attainment (non-literate, literate but not formal, upto primary, upto secondary), preferred religion (Hindu, Islam, others), social group (scheduled tribe, scheduled caste, other disadvantaged classes (terminology used in the survey was "other backward classes"), general), wealth index (poorer, poor, middle, richer, richest), regions of India (northern, southern, western, eastern, north-eastern and central). For readers outside India, the term ‘backward class, schedule caste and schedule tribe’ refers to socially and educationally disadvantaged groups legally recognised by the constitution of India, that have historically faced discrimination and marginalisation, and aim to promote social justice by reducing disparities, enhancing representation in education and employment, and fostering socio-economic inclusion. [34]

Specifically, PWD were characterised using variables like causes of disability (disease, other than disease due to burn, injuries other than burn, other causes), age at the onset of disability (0 to 4, 5 to 14, 15 to 59, and 60 years and above), the origin of disability from birth (yes, no, not known), disability commenced in last 365 days (yes, no), place of occurrence of disability

(workplace, road, home, other places), treatment taken/undergoing treatment (yes: consulting doctor, otherwise, yes: consulting doctor, plus undergoing treatment, otherwise, attending special school/special therapy, cannot afford treatment, no treatment available for the disability, not required and not known).

Statistical methods

The prevalence, along with the dispersion of all disability variables, was estimated as part of a univariate analysis by using already calculated sampling weights with clustering as provided with the datasets.[35] The details of sampling weight have been described in the NSS 76th round report. We used the SVY command to sample weights.[36] Further, the prevalence of all disability types was estimated per socio-economic characteristics, and the associations were tested using bivariate analysis through a chi-squared test. The access to different services was depicted using weighted proportions. Missing data were handled using the Available Case Analysis (ACA) technique, where estimates were generated based on the available data. This resulted in varying sample sizes across variables but allowed for greater data retention than listwise deletion. Little's MCAR (Missing Completely at Random) test assessed whether the missingness was related to observed variables. The test results indicated that the data were not missing completely at random but were likely dependent on observed variables, suggesting that the data were missing at random (MAR). Therefore, the use of ACA was considered appropriate for preserving more data while minimising potential bias compared to listwise deletion. Further, a sensitivity analysis was conducted to assess the robustness of the findings to different missing data handling techniques. Results obtained using ACA were compared with those from Complete Case Analysis (CCA), and the findings were consistent across the two methods. Lastly, multivariable binary logistic regression analysis was used to explore the independent variables affecting the likelihood of living with 'any disability' coded as 1 and 0. Additionally, binary logistic regressions are employed on all seven types of disability. The

analysis depicted the unadjusted and adjusted odds ratios (95% confidence interval). All p-values<0.05 were considered statistically significant. All the analysis was done using Stata (version 17.0). Graphical maps were created using MS Excel sheets to depict the regional disparities.

Patient and public involvement

None.

RESULTS

Table 1 provides a comprehensive overview of the weighted prevalence of different types of disability across various socio-demographic characteristics in India. Of the participants, 107,125 (2.2%) had at least one form of disability. The majority of such participants had a locomotor disability 61,981 (1.36%), followed by hearing 15,294 (0.30%), visual 11,977 (0.23%), speech-related 12,661 (0.23), intellectual disability 8,564 (0.16%), mental illness 6,751 (0.16%), and other types 3,121 (0.05%) of disability. The highest prevalence of any disability, locomotor, speech and 'other' disability was seen in 50-65 years. However, the proportion of participants with visual and hearing disability was highest in the eldest age group, while intellectual disability and mental illness were highest in the 6-35 years age group. Disability prevalence was notably higher among older individuals, males, rural populations, and those from lower socioeconomic backgrounds with minimal or no educational attainment, and living in the southern part of India.

We further assessed the origin of disability as per the type (Table 2). The most common cause of locomotor and speech disability was disease 28,673 (46.3%), 1246 (61.9%), while 'other causes' were most commonly involved in visual 538 (46.5%) and hearing 637 (49.7%) disability. Around 11,488 (18.5%) of PWD had their disability from birth. Of the total participants, 2987 (6.1%) participants acquired their disability in the last year preceding the

survey. The most common place of disability origin was road 5977 (41.9%), followed by home, 4693 (32.9%). Only 17,329 (28%) of PWD were consulting doctors and undergoing treatment.

Table 3 depicts the living conditions of PWD and access to crucial services, and Supplementary Table 1 provides results in more detail for each type of disability. Overall, nearly half of the PWD who did not have disability since birth were between 15 and 59 years old (45.9%), while nearly one-fifth (20.8%) had received aid or help from the government. 57% of PWD lived with their spouses, and 62.8% reported that caregivers were available. About 40% reported an inability to use public transport, while 54.4% reported inaccessibility to public buildings. Further, 57.7% of PWD reported facing difficulties while accessing public buildings. Around 60.7% of PWD reported a loss of work due to disability onset, and 69.6% did not have any official document certifying their disability for administrative purposes. Figure 1 further depicts the geographic disparities in the PWD's access to basic services.

Table 4 demonstrates the multivariable binary logistic regression analysis results to present the socio-demographic variables affecting the likelihood of living with any disability. We found a significantly higher likelihood of living with disability with increasing age (Adjusted Odds ratio: 58.4; 95% Confidence Interval: 55.4-61.5 in >65 years vs up to 5 years), urban residence (1.3; 1.2-1.3) vs rural, social castes (1.3; 1.3-1.3 in general caste) vs scheduled tribes, and living in a Southern region of India (1.1; 1.1-1.2) compared to those from North India. However, female sex (0.6; 0.6-0.6), more years of education (0.3; 0.3-0.3), Islam followers (0.9; 0.9-0.9), currently married/widowed vs never married (0.3; 0.3-0.3), and higher socio-economic status (0.5; 0.5-0.5) depicted significantly lower likelihood of living with disability. Supplementary Table 2 provides results from the more detailed regression analysis for each type of disability.

DISCUSSION

We report an investigation that assesses the epidemiology of PWD and their access to disability support and rehabilitation services in India using nationally representative data. Our key

findings have profound policy implications. First, we identify concerning disparities in disability prevalence across socio-demographic groups. Second, one-fifth of PWD reported acquiring their disability at birth. Third, the most common place of disability origin was the road, followed by home. Fourth, approximately half of PWD reported challenges in using public transport and buildings. Lastly, the majority of PWD reported a loss of work due to disability onset and lacked official certification of their disability.

Disability prevalence was notably higher among older individuals, males, rural populations, and those from lower socio-economic backgrounds. Despite a modest 2.2% prevalence rate, this figure represents around 30 million people in India, and it is expected to rise, indicating an urgent need for attention. While there was a preponderance of males with locomotor disability, speech and language disabilities were significantly higher in females. As per the estimates obtained from the previous 36th, 47th, and 58th rounds of NSS, there is a constant rise in disability prevalence in rural (1.8% in the 36th round to 2.3% in the 76th round) as well as urban (1.4% in the 36th round to 2.0% in the 76th round) areas, with the overall increase from 1.6% in the 36th round in year 1981 to 2.2% in the 76th round in the year 2018.[7] Secondary analysis of another national survey (NFHS-5) depicts an overall disability prevalence of 0.95%, with a higher proportion of locomotor disability (0.4%), followed by mental illness (0.2%).[37] We observed that a high proportion of survey participants had their disability from birth. However, the available data limits our further understanding of such disability, whether the onset was intrauterine or acquired during the birthing process. Such limited information still necessitates mitigation strategies targeting pregnant females by ensuring accessibility to screening for intra-uterine pathologies causing disability, such as Down's syndrome and intellectual disability, and later extending the access to screening for auditory and visual disability.[38] Further, adopting more rigorous screening toolkits and investigations for newborns at the primary healthcare level through the expansion of the Rashtriya Bal Swasthya

Karyakram (Indian National program that involves screening of children from birth to 18 years of age for 4 Ds- Defects at birth, Diseases, Deficiencies and Development delays, spanning 32 common health conditions for early detection and free treatment and management, including surgeries at the tertiary level) would help in increasing the scope for early psychological or therapeutic interventions that would impact the quality of life of children with disability.[39] In addition, the Pradhan Mantri Jan Arogya Yojana (PM-JAY) offers free healthcare for children with disability who are not covered under the RBSK scheme.[40,41]

The most common place of disability origin was the road, followed by home. Trauma is an important cause of locomotor disability, and in India, it is the second most common cause of locomotor disability.[42] Previous estimates suggest that road crashes maximally impact the poorest quintiles. A lack of appropriate safety gear while on the road is often a factor in road trauma. People who experience road trauma often have inadequate access to medical and social safety nets after injury.[43,44] Anecdotal evidence from Chandigarh, a Union Territory of India, suggests that strict compliance with traffic rules can mutually benefit the public and the administration. On one side, it reduces morbidity due to road traffic accidents, while on the other side, penalties due to non-compliance generate revenues and raise awareness. An increasing number of domestic accidents is equally concerning.[45] Domestic accidents may be underreported as most of the domestic injuries are considered minor, often neglected, and may be easily forgotten and subject to recall bias. This changing trend is similar to many developed nations where more accidents happen at home than anywhere else. We expect an increase in such incidents with increasing population and population density. Domestic accidents depend on the physical and social environment and also on the functional capacity of the individual. While road traffic accidents are unforeseen and unexpected, it is generally accepted that domestic accidents can be prevented and minimised by taking adequate safety measures well in time.[46]

We observed that there is scope for improving the accessibility of public buildings and transport for the PWD; these facilities must accommodate the PWD's needs. Various schemes and initiatives demonstrate the Indian government's commitment to securing the rights and welfare of disabled populations in the country. India's commitment to the United Nations Convention on the Rights of PWD (UNCRPD) is embodied in the Rights of Persons with Disabilities Act of 2016 (RPWD Act, 2016). It emphasises dignity, autonomy, and non-discrimination for PWD.[47] The Act further mandates inclusive education, vocational training, and self-employment opportunities without discrimination. To increase the accessibility of public buildings, the RPWD Act 2016 and the National Building Code of India 2016 outline expanded guidelines for building accessibility.[48] Compliance with these standards has been made compulsory, with responsibility falling on those involved in commissioning, designing, constructing, or managing built environments. The building design must adhere to relevant legislation, including equality and safety regulations. This focus on accessibility has fostered the adoption of universal design concepts, leading to numerous best practices for creating inclusive environments. These encompass accessible buildings, parking areas, parks, and recreational facilities, reflecting a concerted effort to ensure equal access and inclusion for PWD in the built environment.

Government schemes to improve inclusion and access

The government has a variety of healthcare schemes, such as the Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances (ADIP), which caters to the specific needs of PWD and provides assistive devices, aids such as wheelchairs, hearing aids, and prosthetic limbs at subsidised rates.[49] The Deendayal Disabled Rehabilitation Scheme (DDRS) provides financial assistance to NGOs for various rehabilitation services for PWD.[50] However, the scheme faces inconsistencies in service availability across different states. The lack of standardisation in rehabilitation programs results in variable quality of care, while

administrative delays in fund disbursement further hinder its effectiveness.[51] Moreover, rural and economically weaker sections often struggle to access these services, limiting the scheme's reach and equity. While DDRS aligns with the principle of equal opportunities under the RPWD Act of 2016, its impact is weakened by poor implementation and inadequate monitoring mechanisms. Apart from catering to the healthcare needs of PWD, we must address specific issues related to health and ethics and the need to shift societal attitudes toward PWD to improve social inclusion.[52]

In addition to health-related needs, the government of India has taken several steps to secure PWD's social rights. The Right to Education Act (RTE) aims to provide free and compulsory education for children with disability up to 18 years.[53] The 'Samagra Shiksha Abhiyan' integrates children with disability into mainstream education.[54] The National Education Policy 2020 also prioritises "inclusion" by aiming to fully integrate children with disability into the mainstream education system, providing necessary accommodations and support to ensure their active participation in the learning process without segregation or discrimination; this includes accessible infrastructure, specialised teaching methods, and assistive technologies tailored to individual needs.[55] Training gaps among teachers working with PWD, a lack of assistive technology, and poor enforcement of inclusive education policies hinder meaningful inclusion.[56] The government-funded higher education institutions in India reserve 5% of seats for PWD to foster diversity and enhance employment opportunities. However, the effectiveness of such policies is hindered by challenges [57], such as infrastructural barriers, lack of accessible learning materials, and inadequate support services. Many PWD lack access to skill development programs, limiting their employability. The government also provides financial assistance and benefits to PWD through schemes like the National Handicapped Finance and Development Corporation (NHFDC), which offers loans and subsidies for education and training or self-employment ventures.[58]

Employment can enhance social sustainability and individual well-being.[59] However, we observed that a very high proportion of PWD had a change or loss of their jobs due to the onset of disability. Loss of jobs can be linked to the social stigma associated with impairment or disability and the perception of such people being less productive. Many employers have ill-founded views about the work-related abilities of PWD; these negative views are often a result of interrelated concerns that permeate the entire employment cycle.[60] It is to be emphasised that negative attitudes toward disability disempower PWD and lead to social exclusion. By contrast, a healthy society encourages positive attitudes toward PWD and promotes social inclusion.[61] Various initiatives have been introduced to promote employment opportunities for PWD. However, a lack of awareness and red tape discourages many PWD from receiving employment benefits. While the RPWD Act mandates non-discrimination in employment, the absence of accountability measures continues to hinder its success. Many PWD also lack formal certification as seen in our study, restricting their access to essential services and benefits.[62][63]

Other prominent schemes introduced for PWD in India include the National Handicapped Finance and Development Corporation (NHFDC), which provides financial assistance to persons with disability for self-employment, education, and training; Scheme for Implementation of Persons with Disabilities Act (SIPDA) to create barrier-free environments and improve the quality of life for PWD; Accessible India Campaign (Sugamya Bharat Abhiyan) focuses on making public infrastructure and transportation accessible for people with disability and Inclusive Education for Disabled at Secondary Stage (IEDSS) supports the inclusive education of students with disability at the secondary level.[58][64][65] Despite multiple policy frameworks supporting disability inclusion, several gaps remain in implementation and enforcement. [66] The mere existence of legislation and policies does not

guarantee their effectiveness. There is a pressing need for stronger monitoring mechanisms, improved financial transparency, and enhanced awareness campaigns to bridge the gap between policy intent and real-world impact. The government must prioritise accountability measures to ensure scheme implementation, and greater investment in infrastructure and assistive technologies to create an inclusive environment for PWD. [67]

Strengths and limitations

The study's major strength lies in its novelty by bringing social science and medicine to a common platform. The estimates generated using weighted analysis are nationally representative and depict strong external validity due to their national coverage, stratified sampling approach, and standardised definitions. The emerging results can serve as robust evidence to help guide policy that improves accessibility. The present study takes a novel approach by initially delineating the proportions of various types of disability. Subsequently, it delves into the analysis concerning "any disability," thus unveiling unique characteristics within this broader category. By doing so, the study not only broadens the scope of understanding but also highlights the nuanced interplay between different types of disability and the socio-demographic backgrounds of PWD. This shift towards a more inclusive analysis holds promise for informing policy decisions and healthcare interventions tailored to address the complex needs of people with disabilities.

The major limitation lies in the study's cross-sectional nature, which limits the assessment of causality and temporal associations and is susceptible to recall bias, particularly when assessing disability from birth. We need more qualitative studies to better assess the impact of inaccessibility to basic support and rehabilitative services.[12] As a secondary analysis, we are limited by the number of variables that can further explain issues affecting accessibility to services. Due to the limited number of explanatory variables, the possibility of residual confounding cannot be negated. There was also non-uniformity in the sample size when

assessing different questions related to the impact of disability, but it was handled using available case analysis techniques to generate estimates and retain more data compared to listwise deletion. Lastly, some terms used in the manuscript, like the categorisation of disability (e.g., using "mental retardation" instead of "intellectual disability"), the terminology used to describe social classes ("backward classes" instead of "disadvantaged classes") are non-inclusive, outdated, perceived as offensive by PWD, and lack alignment with the global vision targeting inclusion and discrimination. However, these terms are retained so that the manuscript is coherent with the original survey report, which would help prevent confusion in case some readers want to refer to the original report.

Policy implications and recommendations

A few policy implications and recommendations emerged from the study. Given the increasing prevalence of disability and the concurrent escalating proportion of the geriatric population, we need to work on improving accessibility for PWD. A large number of disability originating from birth calls for more robust antenatal and neonatal screening protocols supported by adequate counselling and rehabilitation services. Our results depict that a high proportion of PWD have a caretaker. Previous studies have suggested that empowering the caretakers can help improve the quality of life of PWD.[68] We must simultaneously think of ways (like investing in developing more assistive devices and making them affordable) to help us share the added burden on caregivers.[68] Despite many schemes extended by the government to enhance the social inclusion of PWD that have been briefly described in the manuscript, there is a need for health advocacy drives to sensitise the population about the needs of PWD, improve social inclusion and minimise discrimination. The use of non-inclusive language in the original dataset used in the study necessitates using more appropriate language to promote inclusivity. It is recommended that future national surveys focus on more inclusive language, which is compliant with the CRPD and the globally ongoing disability rights movements.

CONCLUSIONS

While previous research has primarily emphasised individual heterogeneity among PWDs, our study indicated that a large proportion of PWD experience systemic disparities in accessing disability support and rehabilitation services. The high prevalence varies significantly as per the studied socio-demographic characteristics, reinforcing the urgent need for targeted interventions. We acknowledge that while individual differences exist, these do not negate the common challenges faced by PWDs in securing equitable access to essential services. Despite government initiatives, there remain gaps in accessibility, public awareness, and enforcement of disability rights. There is an urgent need for concerted efforts to minimise these disparities, enhance the well-being and participation of PWD, and empower them to contribute meaningfully to society. Furthermore, our findings underscore that many disabilities originate from birth or early childhood, yet the availability of early screening, diagnostic services, and timely interventions remains inadequate. Strengthening antenatal and neonatal screening, particularly for intrauterine conditions and birth-related complications, could significantly improve early detection and management of disabilities. As a society, we must work toward reshaping societal and institutional perceptions of disability, shifting the focus from viewing disability as a personal deficit or burden to recognising it as a societal construct that can be addressed through inclusion, accessibility, and policy-driven structural changes. A more inclusive and disability-friendly society is essential not only for ensuring the dignity and rights of PWD but also for achieving socioeconomic development and social justice. These efforts align with India's commitment to the CRPD and contribute to the global vision set by the 2030 Agenda for Sustainable Development, which recognises the promotion of PWD's rights, perspectives, and well-being as a fundamental prerequisite for a more sustainable and inclusive world.

Declarations

- **Acknowledgements:** This study used the National Sample Survey (NSS), 76th round Person with Disability in India Survey 2018. The authors gratefully acknowledge members of the study field team, including those who were involved in mapping/listing/segmentation and the primary survey during data collection. The authors also acknowledge all the respondents' active participation in this study.
- **Competing interests:** None.

- **Ethics statement:** The ethical approvals were not deemed necessary since it was a secondary data analysis. No patient-level data were used in this paper. However, the original survey was conducted by the Ministry of Statistics and Programme Implementation (MOSPI), which is mandated to act as the nodal agency for the integrated development of the statistical systems in India. The Ministry, as part of its comprehensive decision-making process on various matters, has formulated a Code of Ethics for Members of the various Committees constituted by MOSPI or by the Organizations, Institutions, bodies, etc., funded by it that follow the principles of ethics and set out certain standards of conduct for the members of the Committees to protect the confidentiality of the data/information acquired by them by virtue of their membership in such Committees.

- **Funding:** None.

- **Data availability statement:** Data (Reference ID: DDI-IND-MOSPI-NSSO-76Rnd-Sch26.0-July2018 December 2018) is freely available on the website of the Ministry of Statistics and Programme Implementation (GOI) MOSPI's https://microdata.gov.in/nada43/index.php/catalog/154/overview, and can be accessed as per standard protocols.
- **Contributors:** MM, BB, and MA conceptualised the study, MV and AKJ collected data, drafted the manuscript, and reviewed it. VE, MV, and AKJ did the analysis and drafted the

final version; MA and RK critically reviewed the manuscript from policy and feasibility points of view. All the authors read and approved the final version of the manuscript. MM is responsible for the overall content as guarantor.

References

1. United Nations. Convention on the Rights of Persons with Disabilities [Internet]. Human Rights Instruments. 2008 [cited 2024 Dec 16]. Available from: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities
2. World Health Organization. Global report on health equity for persons with disabilities [Internet]. 2023 [cited 2024 Dec 10]. Available from: https://www.knowledge-action-portal.com/en/content/global-report-health-equity-persons-disabilities
3. World Health Organization. World Report on Disability [Internet]. 2011 [cited 2022 Feb 9]. p. 1–27. Available from: www.who.int/about/licensing/copyright_form/en/index.html
4. Pattnaik S, Murmu J, Agrawal R, Rehman T, Kanungo S, Pati S. Prevalence, pattern and determinants of disabilities in India: Insights from NFHS-5 (2019–21). Front Public Health. 2023;11:1036499.
5. Ministry of Statistics and Programme Implementation(GOI) - MOSPI. Elderly in India 2021 [Internet]. 2021 [cited 2024 Dec 16]. Available from: https://mospi.gov.in/sites/default/files/publication_reports/Elderly in India 2021.pdf
6. Paul K, Saha S. Burden of Disability in India (1881–2011). Journal of Multidisciplinary Research in Healthcare. 2015 Oct 5;2(1):31–54.
7. Ministry of Statistics and Program Implementation Government of India. Persons with Disabilities in India-NSS 76th report [Internet]. NSS Report No 583 (76/26/1). 2018 [cited 2024 Dec 12]. p. 209. Available from: https://www.mospi.gov.in/sites/default/files/publication_reports/Report_583_Final_0.pdf
8. International Institute for Population Sciences. National Family Health Survey (NFHS-5) 2019-21 [Internet]. India Report. 2022 [cited 2024 Dec 16]. Available from: https://dhsprogram.com/pubs/pdf/FR375/FR375.pdf

9. Rashmi R, Mohanty SK. Socioeconomic and geographic variations of disabilities in India: evidence from the National Family Health Survey, 2019–21. Int J Health Geogr. 2024 Dec 1;23(1):1–16.
10. Chanda S, Sekher T V. Identification of Disability for Inclusive Development: Lessons from Disability Census of Kerala, India. Sage Open. 2023;13(3).
11. Department of Economic and Social Affairs. Disability and Development Report 2018 [Internet]. United Nations. 2019 [cited 2024 Dec 16]. Available from: https://www.un.org/development/desa/disabilities/wp-content/uploads/sites/15/2019/07/disability-report-chapter2.pdf
12. Chavan BS. Relevance of qualitative research in disability. Journal of Disability Management and Rehabilitation. 2015;1(1):1–2.
13. United Nations. Convention on the Rights of Persons with Disabilities [Internet]. Human Rights Instruments. 2008 [cited 2024 Dec 16]. Available from: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities
14. United Nations- Division for Inclusive Social Development (DISD). Article 24 - Education [Internet]. Social Development Issues-Disability. [cited 2024 Dec 15]. Available from: https://social.desa.un.org/issues/disability/crpd/article-24-education
15. United Nations- Division for Inclusive Social Development (DISD). Article 27 – Work and employment [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-27-work-and-employment.html
16. United Nations- Division for Inclusive Social Development (DISD). Article 6 - Women with disabilities [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://social.desa.un.org/issues/disability/crpd/article-6-women-with-disabilities
17. United Nations- Division for Inclusive Social Development (DISD). Article 7 - Children with disabilities [Internet]. Social Development Issues-Disability. [cited 2024 Dec 12]. Available from: https://social.desa.un.org/issues/disability/crpd/article-7-children-with-disabilities
18. United Nations- Division for Inclusive Social Development (DISD). Article 9 - Accessibility [Internet]. Disability. [cited 2024 Dec 10]. Available from: https://social.desa.un.org/issues/disability/crpd/article-9-accessibility

19. Sophie Mitra AP and BV. Disability and Poverty in Developing Countries: A Snapshot from the World Health Survey [Internet]. The World Bank - Social Protection and Lab. 2011 [cited 2024 Dec 17]. Available from: https://documents1.worldbank.org/curated/en/501871468326189306/pdf/625640NWP0110900PUBLIC00BOX361487B.pdf

20. United Nations. Transforming our world: the 2030 Agenda for Sustainable Development [Internet]. Department of Economic and Social Affairs Sustainable Development. 2015 [cited 2024 Dec 12]. Available from: https://sdgs.un.org/2030agenda

21. United Nations. International Human Rights Law [Internet]. Instruments & mechanisms. [cited 2024 Dec 10]. Available from: https://www.ohchr.org/en/instruments-and-mechanisms/international-human-rights-law

22. World Bank Group. Disability Inclusion [Internet]. Understanding Poverty. 2023 [cited 2024 Dec 12]. Available from: https://www.worldbank.org/en/topic/disability

23. Saran A, Hunt X, White H, Kuper H. Protocol: Effectiveness of interventions for improving social inclusion outcomes for people with disabilities in low- and middle-income countries: A systematic review. Campbell Systematic Reviews. 2021 Sep 29;17(3):e1191.

24. Centers for Disease Control and Prevention. Disability and Health Disability Barriers [Internet]. Disability Inclusion. [cited 2024 Dec 17]. Available from: https://www.cdc.gov/ncbddd/disabilityandhealth/disability-barriers.html

25. Ministry of state for statistics and Program implementation. Handbook on Collection of statistics act, 2008 [Internet]. Ministry of Law and Justice. 2008 [cited 2025 Mar 4]. Available from: https://www.mospi.gov.in/sites/default/files/main_menu/handbook_%20collection_of_statistic_act/hand_col_stat_act_2008.pdf

26. Ministry of Statistics and Programme Implementation G of I. Note on sample design and estimation procedure of NSS 76th round. Ministry of Statistics and Programme Implementation, Government of India.

27. National Sample Survey Office, Ministry of Statistics and Program Implementation Government of India. Schedule 26: Survey of persons with disabilities [Internet]. Seventy-Sixth round: July, 2018 - December, 2018, 2018. 2018 [cited 2024 Dec 12]. Available from: https://www.mospi.gov.in/sites/default/files/NSS7612dws/NSS_76_sch_26.0.pdf

28. Government of Assam H and FW. Disability Certificate | Health & Family Welfare | Government Of Assam, India [Internet]. Disability Certificate. [cited 2025 Feb 17]. Available from: https://hfw.assam.gov.in/information-services/disability-certificate

29. Disabilities. D of E of P with. Unique Disability ID [Internet]. Ministry of Social Justice and Empowerment, Governmenet of India of India. [cited 2025 Mar 3]. Available from: https://swavlambancard.gov.in/faqs

30. Okoro CA, Hollis ND, Cyrus AC, Griffin-Blake S. Prevalence of Disabilities and Health Care Access by Disability Status and Type Among Adults - United States, 2016. MMWR Morb Mortal Wkly Rep. 2018 Aug 17;67(32):882–7.

31. Ozawa MN, Hun Yeo Y. Race/ethnicity and socioeconomic class as correlates of disability in old age. J Gerontol Soc Work. 2008;51(3–4):337–65.

32. Kavanagh AM, Krnjacki L, Aitken Z, Lamontagne AD, Beer A, Baker E, et al. Intersections between disability, type of impairment, gender and socio-economic disadvantage in a nationally representative sample of 33,101 working-aged Australians. Disabil Health J. 2015 Apr 1;8(2):191–9.

33. Courtney-Long EA, Carroll DD, Zhang QC, Stevens AC, Griffin-Blake S, Armour BS, et al. Prevalence of Disability and Disability Type Among Adults--United States, 2013. MMWR Morb Mortal Wkly Rep. 2015 Jul 31;64(29):777–82.

34. Department of Social Justice and Empowerment M of SJ and EG of I. About the Division | Department of Social Justice and Empowerment - Government of India [Internet]. [cited 2025 Mar 3]. Available from: https://socialjustice.gov.in/common/31548

35. Ministry of Statistics and Programme Implementation(GOI) - MOSPI. India - Survey of Persons with Disabilities NSS 76th Round : July 2018 - December 2018 - Overview [Internet]. Central Data Catalog. 2018 [cited 2024 Dec 10]. Available from: https://microdata.gov.in/nada43/index.php/catalog/154/overview

36. Stata. SVY estimation — Estimation commands for survey data [Internet]. [SEM] sem — Structural equation model estimation command. [cited 2024 Dec 17]. Available from: https://www.stata.com/manuals13/svysvyestimation.pdf

37. Rashmi R, Mohanty SK. Socioeconomic and geographic variations of disabilities in India: evidence from the National Family Health Survey, 2019–21. Int J Health Geogr [Internet]. 2024 Dec 1 [cited 2025 Mar 3];23(1):1–16. Available from: https://ij-healthgeographics.biomedcentral.com/articles/10.1186/s12942-024-00363-w

38. Acharya K. Prenatal testing for intellectual disability: Misperceptions and reality with lessons from down syndrome. Dev Disabil Res Rev. 2011 Jan 1;17(1):27–31.
39. Bailey DB, Skinner D, Warren SF. Newborn Screening for Developmental Disabilities: Reframing Presumptive Benefit. Am J Public Health. 2005 Nov;95(11):1889.
40. National Health Authority, Government of India. Pradhan Mantri Jan Arogya Yojana (PM-JAY) [Internet]. About PM-JAY. 2019 [cited 2024 Dec 10]. Available from: https://nha.gov.in/PM-JAY
41. Ministry of Health and Family Welfare. Government of India. RBSK-Rashtriya Bal Swasthya Karyakram [Internet]. Schemes. 2024 [cited 2024 Dec 10]. Available from: https://rbsk.mohfw.gov.in/RBSK/
42. Dhole RS, Gaur KA, More NS, Popalwar H, Lokhande V. Study of locomotor disability due to various types of Trauma. National journal of medical research. 2015;5(3):194–8.
43. Musselwhite CBA, Avineri E, Susilo YO, Bhattachary D. Public attitudes towards motorcyclists' safety: A qualitative study from the United Kingdom. Accid Anal Prev. 2012 Nov;49:105–13.
44. World Bank Group. Traffic crash injuries and disabilities: The burden on Indian society [Internet]. Policy Document. 2021 [cited 2024 Dec 17]. Available from: https://www.worldbank.org/en/country/india/publication/traffic-crash-injuries-and-disabilities-the-burden-on-indian-society
45. Cole EOB, Christie SA, Oke R, Motwani G, Dickson D, Chendjou W, et al. Too serious to ignore: The epidemiologic and economic burden of home injuries in the Southwest Region of Cameroon—A community-based study. Bourgeois D, editor. PLoS One. 2022 Sep 22;17(9):e0274686.
46. Rehman T, Sulgante S, Sekhar S. Prevalence and pattern of domestic accidents in the field practice area of Jawaharlal Institute of Urban Health Centre, Puducherry: a cross-sectional analytical study. J Inj Violence Res. 2020;12(1).
47. Department of Empowerment of Persons with Disabilities. The Rights of persons with disabilities act 2016 [Internet]. Policy Document. 2016 [cited 2024 Dec 11]. Available from: https://legislative.gov.in/sites/default/files/A2016-49_1.pdf
48. Bureau of Indian Standards. National building code of India 2016 (NBC 2016) [Internet]. SP 7 : 2016. 2016 [cited 2024 Dec 21]. Available from: https://www.bis.gov.in/standards/technical-department/national-building-code/

49. Department of Empowerment of Persons with Disabilities (DEPwD). Assistance to Persons with Disabilities for Purchase/Fitting of Aids /Appliances (ADIP) [Internet]. Scheme. [cited 2024 Dec 17]. Available from: https://depwd.gov.in/adip/

50. Department of Empowerment of Persons with Disabilities (DEPwD), Government of India. Deendayal Divyangjan Rehabilitation Scheme (DDRS) [Internet]. Schemes. 2023 [cited 2024 Dec 10]. Available from: https://depwd.gov.in/ddrs/

51. Kumar SG, Roy G, Kar SS. Disability and Rehabilitation Services in India: Issues and Challenges. J Family Med Prim Care [Internet]. 2012 [cited 2025 Mar 3];1(1):69. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC3893941/

52. Hayes AM, Bulat J. Disabilities Inclusive Education Systems and Policies Guide for Low- and Middle-Income Countries. RTI Press Publication. Research Triangle Park, NC: RTI Press; 2017 Jul.

53. Centre for Civil Society. Right To Education [Internet]. [cited 2024 Dec 10]. Available from: https://righttoeducation.in/know-your-rte/about

54. Ministry of Education, Government of India. Samagra Shiksha [Internet]. 2021 [cited 2024 Dec 17]. Available from: https://samagra.education.gov.in/about.html

55. The Ministry of Human Resource Development; Government of India. National Education Policy, 2020 [Internet]. 2020 [cited 2024 Dec 17]. Available from: https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

56. Ahmed SK, Jeffries D, Chakraborty A, Carslake T, Lietz P, Rahayu B, et al. Teacher professional development for disability inclusion in low- and middle-income Asia-Pacific countries: An evidence and gap map. Campbell Systematic Reviews [Internet]. 2022 Dec 1 [cited 2025 Mar 3];18(4):e1287. Available from: https://onlinelibrary.wiley.com/doi/full/10.1002/cl2.1287

57. Bera M, Kartick Chandra Pramanik P. Access Challenges For Students With Disabilities In Higher Education. 2023 [cited 2025 Mar 3];11:2320–882. Available from: www.ijcrt.org

58. Department of Empowerment of Persons with Disabilities (DEPwD). National divyangjan finance and development corporation-India [Internet]. Organizations Under DEPwD. 2024 [cited 2024 Dec 10]. Available from: https://depwd.gov.in/national-handicapped-finance-and-development-corporation/

59. Qiu N, Jiang Y, Sun Z, Du M. The impact of disability-related deprivation on employment opportunity at the neighborhood level: does family socioeconomic status matter? Front Public Health. 2023 Aug 9;11:1232829.

60. Bonaccio S, Connelly CE, Gellatly IR, Jetha A, Martin Ginis KA. The Participation of People with Disabilities in the Workplace Across the Employment Cycle: Employer Concerns and Research Evidence. J Bus Psychol. 2020 Apr 1;35(2):135–58.

61. Babik I, Gardner ES. Factors Affecting the Perception of Disability: A Developmental Perspective. Front Psychol. 2021 Jun 21;12:702166.

62. Jameel S. Disability in the Context of Higher Education: Issues and Concerns in India. Electronic Journal for Inclusive Education. 2011 Jan 1;2(7).

63. Moumita Barman. Barriers to higher education for persons with disabilities block their meaningful growth. News article - The Siasat Daily. 2024 Jan 26;

64. Department of Empowerment of Persons with Disabilities (DEPwD), Government of India. Scheme for Implementation of the Rights of Persons with Disabilities Act, 2016 (SIPDA) [Internet]. Schemes. 2016 [cited 2024 Dec 12]. Available from: https://depwd.gov.in/sipda/

65. Ministry of Education, Government of India. Inclusive Education of the Disabled at Secondary Stage [Internet]. About MoE. 2016 [cited 2024 Dec 17]. Available from: https://www.education.gov.in/iedss

66. Disempowering the Empowered: The Systemic Failures of India's Disability Welfare Schemes [Internet]. [cited 2025 Mar 3]. Available from: https://www.salzburgglobal.org/news/fellows/article/disempowering-the-empowered-the-systemic-failures-of-indias-disability-welfare-schemes

67. Lawson A, Pineda VS, Walker J, Jain S, Jain M. Revisiting the Conceptual Terrains of the Right to Accessibility in India: The Role of Judicial Enforcement. Laws 2024, Vol 13, Page 54 [Internet]. 2024 Aug 16 [cited 2025 Mar 3];13(4):54. Available from: https://www.mdpi.com/2075-471X/13/4/54/htm

68. Arasu S, Shanbhag D. Quality of Life and Burden of Caregiving Among the Primary Caregivers of Children with Disability in Rural Karnataka. J Family Med Prim Care. 2021 Aug 27;10(8):2804–9.

Table 1. Prevalence of different types of disabilities across different socio-demographic characteristics, NSS, 76th round, India (n=576,796)

Background characteristics	Locomotor N (%)	Vision N (%)	Hearing N (%)	Speech N (%)	Intellectual disability^ N (%)	Mental Illness N (%)	Others N (%)	Any one disability N (%)
	61981 (1.36)	11977 (0.23)	15294 (0.30)	12661 (0.23)	8564 (0.16)	6751 (0.16)	21 (0.05)	107,125 (2.20)
Age Group (completed years)								
up to 5	1494 (2.2)	182 (1.5)	311 (2)	907 (7.3)	445 (5.3)	41 (0.5)	82 (5.5)	2839 (2.5)
`6-17	7290 (10.8)	1210 (9.2)	1977 (12.6)	4515 (35.8)	3492 (41.2)	1060 (15.4)	31 (21.5)	16695 (14.4)
18-35	11546 (18)	1386 (10.7)	2036 (13.3)	3273 (26.4)	2796 (33)	1915 (27.6)	31 (19.8)	20673 (18.8)
36-49	11434 (18.1)	1557 (12.3)	2118 (13)	1812 (13.8)	1113 (12.4)	1646 (25)	28 (14.8)	18665 (17.2)
50-65	16627 (27.9)	3609 (31.1)	3843 (25.1)	1495 (11.4)	561 (6.5)	1409 (21.3)	35 (21.9)	26420 (25.7)
65+	13590 (23)	4033 (35.2)	5009 (34)	659 (5.3)	157 (1.6)	680 (10.1)	24 (16.6)	21833 (21.4)
Sex								
Male	36862 (58.7)	6014 (50.2)	7993 (52)	7554 (60.4)	5202 (61.7)	3856 (56.8)	64 (58.9)	61707 (57.3)
Female	25110 (41.3)	5958 (49.8)	7296 (48)	5106 (39.6)	3359 (38.3)	2893 (43.2)	55 (41.1)	45396 (42.7)
Marital Status								
Never Married	16912 (24.7)	2719 (20.8)	3987 (24.2)	8708 (67.8)	7450 (86.9)	3281 (46.1)	14 (40.4)	36813 (31.4)
Ever Married	33257 (55.3)	5541 (46.9)	7094 (47.5)	3086 (25.3)	791 (9.3)	2381 (35.8)	02 (47.2)	50108 (48.8)
Widowed	11293 (19)	3616 (31.5)	4024 (27.1)	690 (5.4)	190 (2.1)	775 (12.5)	6 (11.1)	18933 (18.5)
divorced/separated	519 (1)	101 (0.8)	189 (1.1)	177 (1.4)	133 (1.8)	314 (5.5)	9 (1.2)	1271 (1.3)
Area of residence								
Rural	42222 (71.6)	8809 (76.3)	11121 (74.9)	9164 (72.9)	5974 (69.9)	4772 (73.1)	55 (62.4)	75091 (72.8)
Urban	19759 (28.4)	3168 (23.7)	4173 (25.1)	3497 (27.1)	2590 (30.1)	1979 (26.9)	66 (37.6)	32034 (27.2)
Educational attainment								
Non-literate	26376 (44.5)	7160 (62.6)	8365 (57.3)	7119 (56.9)	5846 (69.3)	3285 (49.6)	08 (34.1)	50848 (48.9)
Literate but not formal	15002 (23.2)	2483 (19.4)	3700 (22.9)	3428 (26.7)	1858 (21)	1629 (23.3)	59 (29)	26145 (23.3)

Upto primary	16885 (26.5)	1987 (15.5)	2782 (16.9)	1908 (14.9)	808 (9.1)	1623 (24.1)	996 (28.7)	25210 (23.1)
Upto secondary	3718 (5.8)	347 (2.6)	447 (2.9)	206 (1.5)	52 (0.6)	214 (3.1)	38 (8.2)	4922 (4.6)
Preferred Religion								
Hindu	49548 (81.9)	9479 (82.9)	12090 (82.6)	9658 (78.7)	6540 (78.7)	5063 (74.7)	344 (80.8)	84742 (81.5)
Islam	8375 (12.5)	1601 (12.5)	1927 (11.7)	2021 (15.6)	1366 (15.9)	1167 (18.4)	22 (12.6)	14658 (12.9)
Others	4058 (5.6)	897 (4.6)	1277 (5.7)	982 (5.7)	658 (5.4)	521 (6.9)	75 (6.5)	7725 (5.5)
Social Group								
Scheduled Tribe	6049 (8.3)	1491 (9.1)	1923 (9.5)	1478 (9.4)	822 (7.2)	670 (7.8)	92 (12.3)	11729 (8.7)
Scheduled Caste	12240 (20.4)	2407 (21.3)	2805 (19.4)	2467 (20.5)	1602 (19.2)	1269 (19.9)	44 (17.8)	20925 (20.4)
Other disadvantaged classes*	26861 (44.7)	5205 (46)	6583 (45.5)	5482 (44.7)	3806 (45.8)	2915 (45.7)	67 (40.2)	46223 (44.9)
General	16831 (26.6)	2874 (23.6)	3983 (25.6)	3234 (25.4)	2334 (27.8)	1897 (26.6)	38 (29.7)	28248 (26)
Wealth Index								
Poorer	17681 (30.2)	3919 (35.1)	4933 (34.7)	3552 (30.1)	2025 (25.3)	1932 (31)	23 (25.8)	31259 (31)
Poor	12553 (20.5)	2474 (20.8)	3005 (19.4)	2746 (21.4)	1773 (20.9)	1364 (20.5)	24 (16.2)	21959 (20.7)
Middle	11468 (18.2)	2271 (18.5)	2730 (17.4)	2434 (18.5)	1751 (20)	1302 (18.1)	80 (17.3)	20058 (18.3)
Richer	10440 (16)	1864 (14.4)	2480 (15.4)	2080 (15.8)	1611 (18.3)	1161 (16.8)	93 (19.9)	17946 (15.9)
Richest	9839 (15.1)	1449 (11.1)	2146 (13)	1849 (14.2)	1404 (15.5)	992 (13.6)	01 (20.7)	15903 (14.1)
Regions of India								
Northern	8787 (14.4)	1478 (13.1)	1692 (11.7)	1347 (11.1)	1144 (13.5)	931 (14.2)	16 (7.6)	14305 (13.8)
Southern	13448 (23)	2814 (24.7)	4013 (27.3)	2958 (24.8)	2141 (25.6)	1447 (21.3)	24 (25.5)	23699 (23.3)
Western	8387 (12.7)	1286 (10.1)	1740 (11.1)	1423 (11.3)	1293 (15.2)	706 (10.6)	50 (17.7)	13708 (12.3)
Eastern	12790 (20.3)	2538 (21.9)	3238 (22.5)	3248 (27.1)	1762 (21.3)	1672 (26.3)	94 (30.4)	23061 (21.8)
North-Eastern	3858 (2.1)	1335 (4.5)	1620 (3.7)	1308 (3.4)	594 (2)	582 (2.7)	82 (2.4)	8839 (2.8)
Central	14711 (27.4)	2526 (25.6)	2991 (23.8)	2377 (22.4)	1630 (22.6)	1413 (24.8)	45 (16.3)	23513 (26)

*Terminology used in the survey was *"other backward classes" and ^"mental retardation".*

Table 2. Percentage distribution of different disability types and their associated information, NSS 76th round, India

	Locomotor	Visual	Hearing	Speech and language	Intellectual disability*	Mental Illness	Other types of disability	Any Disability
Total sample size	61980	1156	1281	2013	1217	768	768	61980
Causes of disability								
Disease	28673 (46.3)	454 (39.3)	484 (37.8)	1246 (61.9)	NA	NA	NA	NA
Other than disease due to burn	723 (1.2)	88 (0.7)	1 (0.1)	8 (0.4)	NA	NA	NA	NA
Injuries other than burn	13876 (22.4)	156 (13.5)	158 (12.4)	105 (5.2)	NA	NA	NA	NA
Other causes	18702 (30.2)	538 (46.5)	637 (49.7)	654 (32.5)	NA	NA	NA	NA
Disability from Birth								
Yes	11,488 (18.5)	91 (7.9)	198 (15.4)	1041 (51.7)	955 (78.5)	119 (15.4)	119 (15.5)	11,488 (18.5)
No	50,052 (80.8)	1062 (91.9)	1081 (84.4)	964 (47.9)	258 (21.2)	401 (78.6)	645 (84)	50,052 (80.8)
Not Known	440 (0.7)	3 (0.2)	2 (0.2)	8 (0.4)	4 (0.3)	1 (0.1)	4 (0.4)	440 (0.7)
Disability commenced in last 365 days								
sample size	48741	1034.2	1052.4	938.7	251.6	394.2	628.6	48741
Yes	2987 (6.1)	72 (7)	65 (6.2)	100 (10.6)	11 (4.4)	40 (10.2)	48 (7.7)	2987 (6.1)
No	45754 (93.9)	961 (93)	987 (93.8)	839 (89.4)	240 (95.6)	354 (89.8)	580 (92.3)	45754 (93.9)
Place of occurrence of disability								
Sample size	14281	161	157	105	33	86	63	14281
Workplace	2308 (16.2)	13 (8.3)	30 (19.2)	11 (10.9)	2 (6.9)	9 (11)	11 (18.1)	2308 (16.2)
Road	5977 (41.9)	46 (28.5)	43 (27.5)	41 (38.7)	9 (25.9)	35 (40.2)	15 (23.8)	5977 (41.9)
Home	4693 (32.9)	93 (57.9)	73 (46.3)	45 (42.4)	19 (58.5)	33 (38.8)	31 (49.5)	4693 (32.9)

Other places	1302 (9.1)	9 (5.3)	11 (7)	8 (8)	3 (8.7)	5 (9.8)	5 (8.6)	1302 (9.1)
Treatment taken/undergoing treatment								
Sample size	61980	1156	1281	2013	1217	768	768	61980
yes: consulting doctor	35,923 (58)	566.6 (49)	617 (48.2)	1,080 (53.7)	710 (58.4)	266 (35)	330 (43)	35923 (58)
Otherwise	1565 (2.5)	22 (1.9)	34 (2.7)	42 (2.1)	36 (2.9)	6 (0.8)	6 (0.7)	1564.5 (2.5)
Yes: consulting doctor, plus undergoing treatment	17329 (28)	375 (32.4)	418 (32.7)	719 (35.7)	355 (29.2)	197 (25.7)	397 (51.7)	17329 (28)
Otherwise	860 (1.4)	34 (2.9)	21 (1.7)	20 (1)	4 (0.3)	12 (1.6)	8 (1)	860 (1.4)
Attending special school/special therapy	116 (0.2)	2.9 (0.3)	0 (0)	4 (0.2)	6 (0.5)	1 (0.1)	0 (0)	116 (0.2)
Cannot afford treatment	2040 (3.3)	75 (6.4)	73 (5.7)	72 (3.6)	55 (4.6)	17 (2.3)	8 (1)	2040 (3.3)
No treatment available for the disability	699 (1.1)	13 (1.1)	8 (0.6)	17 (0.8)	16 (1.3)	4 (0.5)	5 (0.7)	699 (1.1)
Not required	2717 (4.4)	60 (5.2)	97 (7.6)	47 (2.3)	26 (2.1)	31 (4)	14 (1.8)	2717 (4.4)
Not known	732 (1.2)	8 (0.7)	12 (0.9)	13 (0.7)	9 (0.7)	1 (0.2)	1 (0.1)	732 (1.2)

Note: *Causes of disability were recorded for individuals with disabilities like locomotor, visual, hearing, and speech.*
Disability commenced in the last 365 days was recorded for those individuals who did not have a disability 'from birth' but disability commenced during the last 365 days before the survey.
The place of occurrence was recorded for individuals with disability who are experiencing disability post their birth and for whom the cause of disability was burn, injury or other than burn.
*Original survey used the term mental retardation.

Table 3. Access to disability support and rehabilitation services by the person with disability as per the 76th round of the National Sample Survey (2018), India

Living conditions of the person with disability *(n=sample included in the analysis)*	**Weighted percentage**
Age at the onset of disability* (n= 48,727)	
0 to 4 years	17.2
5 to 14 years	9.0
15 to 59 years	45.9
60 years and above	28.0
Receipt of aid/help (n=61,712)	
Received aid/help from Government	20.8
Received aid/help from organisations other than government	4.1
Did not receive aid/help	75.1
Living arrangement(n=61,962)	
Living alone or with a spouse	57.0
Living with others	43.0
Arrangement of regular caregiver(n=61,980)	
Care-giver required but not available	0.1
Care-giver is not required	37.1
Care-giver is available	62.8
Access to public Transport (n=61,980)	
Yes	59.6
No	40.4
Accesses to public building (n=61,980)	
Yes	45.6
No	54.4
Difficulty faced accessing public building (n= 27,756)	
difficulty faced: due to stairs and non-availability of ramp, grooved tiles or lift	57.7
in opening doors	4.4
no seating arrangement: in the waiting area	1.6
at the point of receiving service	0.8
no special toilet seats	0.7
no sign for direction/ instruction/no public announcement system	0.3
no difficulty faced	27.6
others	7.0
Employed/working before onset of disability (For person of age 15 years and above; n=55,819)	
Yes	40.3
No	59.7
Disability causing loss or change in job(n= 21,559**)**	
loss of work	60.7
change of work	18.3
no loss or change of work	21.3
Having Disability Certificate(n=61,980)	
Yes	30.4
No	69.6
Percentage of Disability as per Certificate (n=20,213)	
40- <60%	49.3
≥60-<80%	36.3
≥80%	12.8
none of these	1.6

*For those who have not had a disability since birth.

Table 4. Multivariable binary logistic regression analysis exploring the likelihood of living with any disability per the 76th round of the NSS, India

	Unadjusted Odds ratio (95% C.I)	p-value	Adjusted Odds ratio (95% C.I)	p-value
Age Group (Completed years)				
Up to 5 years	**Reference value**		**Reference value**	
6 - 18 years	2.1(2-2.1)	<0.001	3.5(3.4-3.7)	<0.001
19-35 years	2.3(2.2-2.4)	<0.001	8.4(8-8.8)	<0.001
36-49 years	3.5(3.4-3.7)	<0.001	17.6(16.8-18.5)	<0.001
50-65 years	6.4(6.1-6.7)	<0.001	25.8(24.5-27.1)	<0.001
65+ years	17.5(16.7-18.2)	<0.001	58.4(55.4-61.5)	<0.001
Sex				
Male	**Reference value**		**Reference value**	
Female	0.7(0.7-0.7)	<0.001	0.6(0.6-0.6)	<0.001
Place of Residence				
Rural	**Reference value**		**Reference value**	
Urban	1.02(1.01-1.03)	0.03	1.3(1.2-1.3)	<0.001
Social Group				
Scheduled Tribe	**Reference value**		**Reference value**	
Scheduled Caste	1.1(1.1-1.1)	<0.001	1.1(1.1-1.2)	<0.001
Other disadvantaged classes*	1.1(1-1.1)	<0.001	1.1(1.1-1.2)	<0.001
General	1.1(1.1-1.1)	<0.001	1.3(1.3-1.3)	<0.001
Educational attainment				
No education	**Reference value**		**Reference value**	
Upto Primary class	0.5(0.5-0.5)	<0.001	0.5(0.5-0.5)	<0.001
Upto Secondary Class	0.4(0.4-0.4)	<0.001	0.4(0.4-0.4)	<0.001
Graduate & above	0.3(0.3-0.4)	<0.001	0.3(0.3-0.3)	<0.001
Preferred Religion				
Hindu	**Reference value**		**Reference value**	
Islam	0.8(0.8-0.9)	<0.001	0.9(0.9-0.9)	<0.001
Others	0.9(0.9-1)	<0.001	1(1-1.1)	0.019
Marital Status				
Never married	**Reference value**		**Reference value**	
Currently married	1.3(1.3-1.3)	<0.001	0.3(0.3-0.3)	<0.001
widowed	5.9(5.8-6.1)	<0.001	0.6(0.5-0.6)	<0.001
Divorced/separated	4.4(4.1-4.8)	<0.001	1.1(1-1.2)	0.011
Wealth Index				
Poorest	**Reference value**		**Reference value**	
Poor	0.6(0.6-0.6)	<0.001	0.7(0.7-0.7)	<0.001
Middle	0.6(0.5-0.6)	<0.001	0.6(0.6-0.6)	<0.001
Richer	0.5(0.5-0.5)	<0.001	0.5(0.5-0.6)	<0.001
Richest	0.4(0.4-0.4)	<0.001	0.5(0.5-0.5)	<0.001
Regions of India				
Northern	**Reference value**		**Reference value**	
Southern	1.42(1.39-1.46)	<0.001	1.1(1.1-1.2)	<0.001
Western	1.13(1.1-1.16)	<0.001	1(1-1.1)	0.065
Eastern	1.15(1.13-1.18)	<0.001	1(0.9-1)	0.001
North-eastern	1(0.97-1.03)	0.961	1(1-1)	0.361
Central	1.01(0.98-1.03)	0.653	0.9(0.8-0.9)	<0.001

Terminology used in the survey was "other backward classes".

FIGURE LEGEND

Figure 1. Geographical disparities in the difficulties faced by people living with disability as per the 76th Round of the National Sample Survey, India

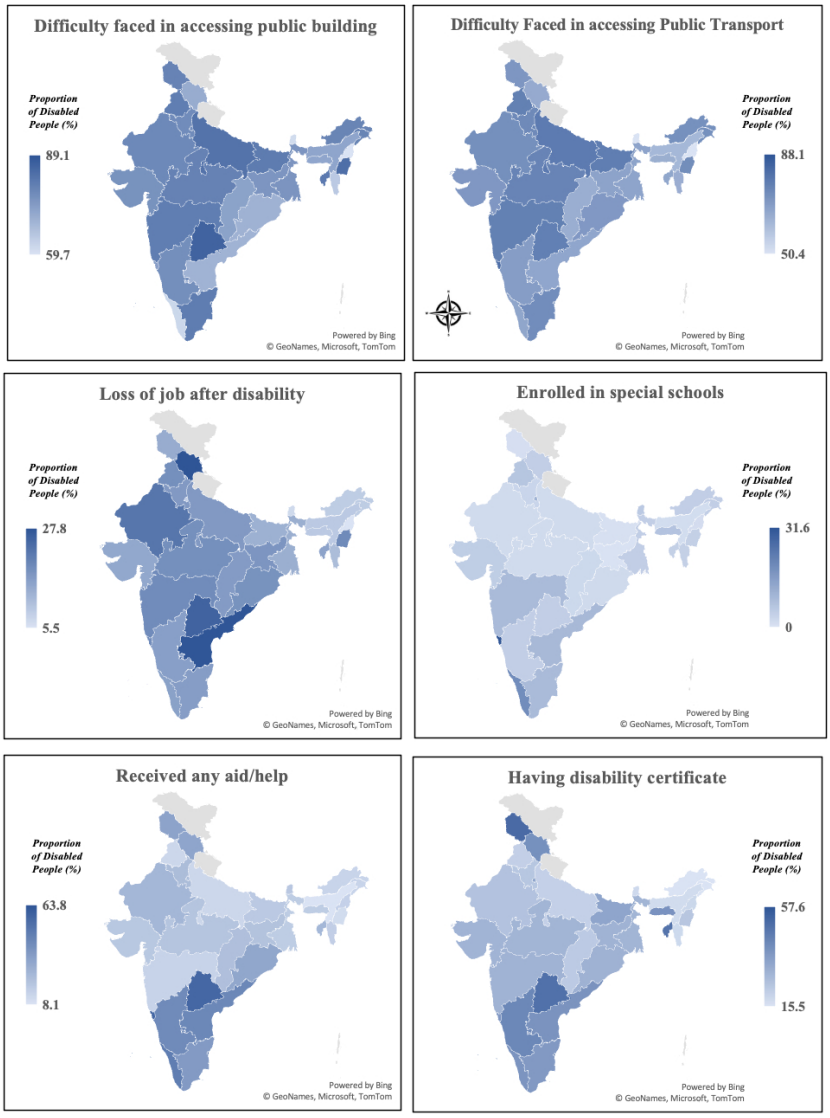

Figure 1: Geographical disparities in the difficulties faced by the people living with disabilities as per the 76th Round of the National Sample Survey, India

40x58mm (600 x 600 DPI)

Supplementary file

Supplementary Table 1: Living conditions of the people living with different types of disabilities, as per the 76th report of the National Sample Survey Organization India (2017-18)

Living conditions of the people *(n=sample included in the analysis)*	**Locomotor**	**Visual**	**Hearing**	**Speech**	**Intellectual disability^**	**Mental illness**	**Others**
	Weighted %	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*	*Weighted %*
Age at the onset of disability							
0 to 4 years	17.2	3.0	4.2	21.0	51.0	10.1	9.9
5 to 14 years	9.0	2.3	3.0	9.6	17.3	12.3	7.0
15 to 59 years	45.9	22.1	17.4	40.9	24.0	40.5	49.2
60 years and above	28.0	72.6	75.4	28.4	7.7	37.1	33.8
Total number of participants	48,737	1,035	1,056	946	259	395	632
Receipt of aid/help							
Received aid/help from Government	20.8	22.2	20.7	29.2	37.2	25.5	20.0
Received aid/help from organisations other than government	4.1	10.2	8.6	4.0	3.3	6.0	2.7
Did not receive aid/help	75.1	67.7	70.8	66.8	59.5	68.5	77.3
Total number of participants	61,712	1,145	1,272	2,010	1,215	521	766
Living arrangement							
Living alone or with a spouse	57.0	43.5	41.6	26.8	4.1	35.4	55.8
Living with others	43.0	56.5	58.4	73.2	95.9	64.6	44.2
Total number of participants	61,962	1,156	1,281	2,013	1,217	523	768
Arrangement of regular caregiver							
Care-giver required but not available	0.1	0.0	0.0	0.1	0.9	0.0	0.3
Care-giver is not required	37.1	11.5	15.7	8.8	5.6	10.8	13.4
Care-giver is available	62.8	88.6	84.2	91.1	93.6	89.2	86.3
Total number of participants	61,980	1,156	1,281	2,013	1,217	523	768
Accesses to public building							
Yes	45.6	25.4	29.4	27.2	26.0	26.0	29.9

No	54.4	74.6	70.6	72.8	74.0	74.0	70.1
Total number of participants	61,980	1156	1281	2013	523	523	768
Difficulty faced accessing public building							
difficulty faced: due to stairs and non-availability of ramp, grooved tiles or lift	57.7	63.2	60.7	55.4	49.7	46.7	52.2
in opening doors	4.4	1.6	1.3	2.8	1.0	7.6	2.8
no seating arrangement: in the waiting area	1.6	3.0	2.9	0.7	1.4	1.7	2.1
at the point of receiving service	0.8	5.7	2.1	0.9	0.8	1.3	0.3
no special toilet seats	0.7	0.4	0.0	0.7	0.0	0.8	0.9
no sign for direction/ instruction/no public announcement system	0.3	2.2	2.0	2.2	2.1	1.3	0.0
no difficulty faced	27.6	8.4	17.0	15.2	17.7	24.2	25.8
others	7.0	15.4	13.3	22.1	27.4	16.3	15.8
Total number of participants	27,756	330	433	537	330	134	226
Working before onset (For >15 years and above)							
Yes	40.3	44.4	35.9	32.7	5.6	38.5	53.6
No	59.7	55.6	64.1	67.3	94.4	61.5	46.4
Total number of participants	55,819	1093	1171	1353	690	448	667
Disability causing loss or change in job							
loss of work	60.7	75.3	72.8	86.5	80.9	84.2	82.8
change of work	18.3	11.0	5.7	5.2	2.7	8.7	5.9
no loss or change of work	21.3	13.7	21.5	8.3	16.4	7.1	11.4
Total number of participants	21,559	465	404	425	37	165	343
Having Disability Certificate							
Yes	30.4	14.0	16.1	41.7	59.8	29.9	24.9
No	69.6	86.0	83.9	58.3	40.2	70.1	75.1
Total number of participants	61,980	1156	1281	2013	1217	523	768
Percentage of Disability as per Certificate							
40% or more but less than 60%	49.3	23.2	22.5	16.9	14.6	27.7	29.7
60% or more but less than 80%	36.3	37.6	34.2	32.3	35.5	43.0	37.3
80% or more	12.8	38.7	42.2	50.3	49.1	29.0	31.7
none of these	1.6	0.5	1.1	0.5	0.8	0.4	1.3

Total number of participants	20,213.00	174	221	901	780	168	205

Terminology used in the survey was ^mental retardation.

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India.

Covariates	Locomotor disability				Speech and language disability				Intellectual disability			
	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age (Years)												
<18 (Ref)	1		1		1		1		1		1	
18-35	2.39(2.27-2.53)	<0.001	4.08(3.84-4.33)	<0.001	1.07(0.99-1.15)	0.07	8.85(8.16-9.6)	<0.001	14(10.28-19.08)	<0.001	65.34(47.81-89.31)	<0.001
35-49	3.91(3.7-4.13)	<0.001	7.89(7.4-8.41)	<0.001	0.93(0.86-1.01)	0.089	9.87(8.98-10.84)	<0.001	19.06(13.98-25.99)	<0.001	156.16(113.91-214.1)	<0.001
50-59	6.83(6.47-7.21)	<0.001	12.36(11.6-13.17)	<0.001	0.85(0.78-0.92)	<0.001	7.21(6.52-7.96)	<0.001	18.05(13.23-24.62)	<0.001	135.71(98.75-186.49)	<0.001
65+	14.92(14.12-15.77)	<0.001	23.27(21.79-24.85)	<0.001	0.82(0.74-0.91)	<0.001	6.22(5.49-7.05)	<0.001	19.12(13.94-26.21)	<0.001	126.17(91.08-174.77)	<0.001
Gender												
Male (Ref)	1		1		1		1		1		1	
female	0.69(0.68-0.7)	<0.001	0.58(0.57-0.59)	<0.001	0.71(0.68-0.73)	<0.001	0.69(0.67-0.72)	<0.001	0.79(0.75-0.83)	<0.001	0.75(0.71-0.79)	<0.001
Place of residence												
Rural (Ref)	1		1		1		1		1		1	
Urban	1.09(1.07-1.11)	<0.001	1.27(1.24-1.3)	<0.001	0.88(0.85-0.92)	<0.001	1.14(1.09-1.19)	<0.001	0.96(0.91-1.01)	0.12	1.09(1.03-1.16)	0.003
Social groups												
Scheduled tribe (Ref)	1		1		1		1		1		1	
Scheduled caste	1.27(1.23-1.31)	<0.001	1.17(1.13-1.21)	<0.001	1.02(0.96-1.09)	0.493	1.12(1.04-1.2)	0.002	1.16(1.06-1.28)	0.002	1.22(1.11-1.35)	<0.001
Other disadvantaged classes*	1.19(1.16-1.23)	<0.001	1.14(1.1-1.17)	<0.001	0.98(0.92-1.04)	0.482	1.22(1.15-1.31)	<0.001	1.15(1.06-1.25)	0.001	1.31(1.2-1.44)	<0.001
Others	1.26(1.22-1.3)	<0.001	1.21(1.17-1.25)	<0.001	0.97(0.91-1.03)	0.32	1.48(1.38-1.59)	<0.001	1.26(1.15-1.37)	<0.001	1.55(1.4-1.71)	<0.001
Education level												
Illiterate (Ref)	1		1		1		1		1		1	
Primary	0.58(0.56-0.59)	<0.001	0.84(0.82-0.86)	<0.001	0.51(0.49-0.53)	<0.001	0.24(0.23-0.25)	<0.001	0.53(0.5-0.56)	<0.001	0.52(0.49-0.56)	<0.001
Secondary	0.57(0.56-0.58)	<0.001	0.76(0.74-0.78)	<0.001	0.25(0.24-0.26)	<0.001	0.11(0.11-0.12)	<0.001	0.47(0.44-0.49)	<0.001	0.34(0.32-0.36)	<0.001

and Higher Education	0.57(0.55-0.6)	<0.001	0.66(0.63-0.68)	<0.001	0.12(0.11-0.14)	<0.001	0.05(0.04-0.06)	<0.001	0.28(0.24-0.32)	<0.001	0.15(0.13-0.17)	<0.001
Religion												
Hindu (Ref)	1		1		1		1		1		1	
Muslim	0.84(0.82-0.86)	<0.001	0.96(0.94-0.99)	0.004	1.05(1-1.11)	0.031	0.83(0.79-0.88)	0	1.16(1.09-1.24)	<0.001	1.08(1.01-1.16)	0.02
Others	0.84(0.82-0.87)	<0.001	0.99(0.95-1.03)	0.607	1.07(1-1.14)	0.057	1.13(1.05-1.22)	0.001	1.08(0.99-1.18)	0.101	1.17(1.06-1.29)	0.003
Marital status												
Un-married (Ref)	1		1		1		1		1		1	
Currently married	1.89(1.86-1.93)	<0.001	0.52(0.51-0.54)	<0.001	0.31(0.3-0.33)	<0.001	0.15(0.14-0.16)	0	0.66(0.62-0.69)	<0.001	0.13(0.12-0.14)	<0.001
Widowed	5.99(5.83-6.15)	<0.001	0.93(0.89-0.97)	0.001	0.53(0.49-0.57)	<0.001	0.16(0.15-0.17)	0	1.6(1.48-1.74)	<0.001	0.22(0.19-0.24)	<0.001
Divorced/separated	2.98(2.7-3.28)	<0.001	0.92(0.83-1.01)	0.091	1.79(1.54-2.09)	<0.001	0.66(0.56-0.78)	0	9.06(8.02-10.23)	<0.001	1.76(1.54-2.02)	<0.001
Wealth												
Poorest (Ref)	1		1		1		1		1		1	
Poor	0.67(0.66-0.69)	<0.001	0.78(0.76-0.8)	<0.001	0.77(0.73-0.81)	<0.001	0.81(0.77-0.85)	0	0.7(0.65-0.75)	<0.001	0.83(0.77-0.89)	<0.001
Middle	0.6(0.59-0.62)	<0.001	0.67(0.66-0.69)	<0.001	0.67(0.64-0.71)	<0.001	0.74(0.7-0.78)	0	0.66(0.62-0.71)	<0.001	0.8(0.74-0.86)	<0.001
Richer	0.55(0.54-0.56)	<0.001	0.58(0.57-0.6)	<0.001	0.58(0.55-0.61)	<0.001	0.69(0.65-0.73)	0	0.6(0.55-0.64)	<0.001	0.75(0.69-0.81)	<0.001
Richest	0.52(0.51-0.54)	<0.001	0.52(0.5-0.53)	<0.001	0.52(0.49-0.55)	<0.001	0.71(0.66-0.75)	0	0.52(0.48-0.56)	<0.001	0.7(0.64-0.77)	<0.001
Region												
Northern (Ref)	1		1		1		1		1		1	
Southern	1.26(1.22-1.3)	<0.001	0.97(0.94-1)	0.073	1.78(1.67-1.9)	<0.001	1.84(1.72-1.97)	<0.001	1.25(1.15-1.36)	<0.001	1.05(0.96-1.15)	0.257
Western	1.12(1.08-1.15)	<0.001	0.99(0.95-1.02)	0.429	1.23(1.14-1.32)	<0.001	1.29(1.19-1.39)	<0.001	0.88(0.79-0.97)	0.008	0.84(0.76-0.93)	0.001
Eastern	1.02(0.99-1.05)	0.288	0.86(0.84-0.89)	<0.001	1.7(1.59-1.81)	<0.001	1.42(1.33-1.52)	<0.001	1.25(1.16-1.36)	<0.001	1.12(1.03-1.22)	0.008
North-eastern	0.69(0.66-0.71)	<0.001	0.66(0.63-0.69)	<0.001	1.59(1.47-1.71)	<0.001	1.64(1.51-1.78)	<0.001	1.01(0.91-1.12)	0.833	0.95(0.85-1.06)	0.388
Central	1.03(1-1.05)	0.075	0.94(0.91-0.97)	<0.001	1.08(1.01-1.15)	0.026	0.85(0.79-0.92)	<0.001	0.93(0.85-1.01)	0.073	0.85(0.78-0.93)	<0.001

*Terminology used in the survey was *other backward classes and ^mental retardation.*

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India (Cont..)

	Hearing disability				Visual disability				Intellectual disability^			
	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Un-adjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age (Years)												
<18 (Ref)	1		1		1		1		1		1	
18-35	1.95(1.73-2.2)	<0.001	5.16(4.55-5.85)	0	10.37(1.94-2.65)	<0.001	6.57(5.59-7.72)	<0.001	1.88(1.7-2.08)	<0.001	33.33(30-37.04)	<0.001
35-49	3.23(2.87-3.64)	<0.001	9.31(8.14-10.65)	0	17.8(3.47-4.72)	<0.001	13.95(11.8-16.5)	<0.001	1.17(1.05-1.31)	0.005	34.13(30.24-38.51)	<0.001
50-59	6.63(5.91-7.45)	<0.001	15.34(13.43-17.52)	0	31.04(9.17-12.36)	<0.001	29.2(24.7-34.48)	<0.001	0.65(0.57-0.74)	<0.001	18.86(16.39-21.71)	<0.001
65+	20.67(18.42-23.2)	<0.001	38.97(34.06-44.58)	0	43.68(23.92-32.23)	1	61.23(51.7-72.57)	<0.001	0.4(0.33-0.48)	<0.001	11.39(9.26-14.01)	<0.001
Gender												
Male (Ref)	1		1		1		1		1		1	
female	0.96(0.93-0.99)	0.012	0.73(0.7-0.75)	<0.001	1.04(1.01-1.08)	0.022	0.76(0.73-0.79)	<0.001	0.68(0.65-0.71)	<0.001	0.76(0.73-0.8)	<0.001
Place of residence												
Rural (Ref)	1		1		1		1		1		1	
Urban	0.86(0.83-0.9)	<0.001	1.07(1.03-1.12)	0.001	0.83(0.8-0.86)	<0.001	1.08(1.04-1.13)	0.001	1(0.96-1.05)	0.894	1.18(1.11-1.24)	<0.001
Social groups												
Scheduled tribe (Ref)	1		1		1		1		1		1	
Scheduled caste	0.89(0.84-0.94)	<0.001	0.95(0.89-1.01)	0.084	0.99(0.93-1.06)	0.734	1.04(0.97-1.12)	0.228	1.2(1.1-1.3)	<0.001	1.24(1.13-1.36)	<0.001
Other disadvantaged classes*	0.9(0.86-0.95)	<0.001	1.02(0.96-1.08)	0.544	0.92(0.87-0.98)	0.005	1.03(0.97-1.1)	0.353	1.23(1.14-1.32)	<0.001	1.49(1.37-1.63)	<0.001
Others	0.92(0.87-0.97)	0.002	1.14(1.07-1.21)	<0.001	0.85(0.8-0.91)	<0.001	1.02(0.95-1.09)	0.576	1.26(1.17-1.37)	<0.001	1.91(1.74-2.09)	<0.001
Education level												
Illiterate (Ref)	1		1		1		1		1		1	
Primary	0.47(0.45-0.48)	<0.001	0.65(0.62-0.68)	<0.001	0.36(0.35-0.38)	<0.001	0.57(0.55-0.6)	<0.001	0.34(0.32-0.35)	<0.001	0.1(0.1-0.11)	<0.001
Secondary	0.31(0.29-0.32)	<0.001	0.44(0.42-0.46)	<0.001	0.26(0.24-0.27)	<0.001	0.43(0.4-0.45)	<0.001	0.13(0.12-0.14)	<0.001	0.03(0.03-0.04)	<0.001

and Higher Education	0.22(0.2-0.25)	<0.001	0.29(0.27-0.33)	<0.001	0.2(0.18-0.23)	<0.001	0.33(0.29-0.37)	<0.001	0.04(0.03-0.05)	<0.001	0.01(0.01-0.01)	<0.001
Religion												
Hindu (Ref)	1		1		1		1		1		1	
Muslim	0.8(0.76-0.84)	<0.001	0.88(0.84-0.93)	<0.001	0.85(0.8-0.89)	<0.001	1(0.94-1.07)	0.995	1.05(0.99-1.12)	0.089	0.71(0.67-0.76)	<0.001
Others	1.11(1.05-1.18)	<0.001	1.08(1.01-1.16)	0.024	0.99(0.92-1.06)	0.802	0.94(0.87-1.02)	0.112	1.05(0.97-1.14)	0.195	1.27(1.15-1.39)	<0.001
Marital status												
Un-married (Ref)	1		1		1		1		1		1	
Currently married	1.63(1.57-1.7)	<0.001	0.42(0.39-0.45)	<0.001	1.87(1.78-1.96)	<0.001	0.36(0.33-0.39)	<0.001	0.09(0.09-0.1)	<0.001	0.03(0.03-0.03)	<0.001
Widowed	7.49(7.16-7.84)	<0.001	0.77(0.72-0.84)	<0.001	9.8(9.31-10.31)	<0.001	0.73(0.67-0.8)	<0.001	0.17(0.15-0.19)	<0.001	0.04(0.03-0.05)	<0.001
Divorced/separated	4.27(3.68-4.97)	<0.001	1.15(0.98-1.35)	0.096	3.26(2.67-3.99)	<0.001	0.67(0.54-0.83)	<0.001	1.56(1.31-1.85)	<0.001	0.36(0.3-0.44)	<0.001
Wealth												
Poorest (Ref)	1		1		1		1		1		1	
Poor	0.6(0.57-0.63)	<0.001	0.74(0.71-0.78)	<0.001	0.62(0.59-0.65)	<0.001	0.8(0.76-0.84)	<0.001	0.87(0.82-0.93)	<0.001	0.93(0.87-1)	0.054
Middle	0.54(0.51-0.56)	<0.001	0.67(0.64-0.7)	<0.001	0.56(0.54-0.59)	<0.001	0.73(0.69-0.77)	<0.001	0.85(0.8-0.91)	<0.001	0.92(0.86-0.99)	0.025
Richer	0.49(0.47-0.52)	<0.001	0.62(0.59-0.65)	<0.001	0.47(0.44-0.49)	<0.001	0.61(0.57-0.64)	<0.001	0.79(0.74-0.85)	<0.001	0.92(0.85-0.99)	0.028
Richest	0.43(0.41-0.45)	<0.001	0.57(0.54-0.6)	<0.001	0.37(0.35-0.39)	<0.001	0.5(0.47-0.54)	<0.001	0.7(0.65-0.75)	<0.001	0.91(0.84-0.99)	0.02
Region												
Northern (Ref)	1		1		1		1		1		1	
Southern	1.94(1.83-2.05)	<0.001	1.52(1.43-1.61)	<0.001	1.54(1.45-1.64)	<0.001	1.1(1.03-1.18)	0.006	1.51(1.4-1.62)	<0.001	1.7(1.57-1.84)	<0.001
Western	1.19(1.12-1.28)	<0.001	1.07(1-1.15)	0.053	1.01(0.93-1.08)	0.883	0.88(0.82-0.96)	0.002	1.31(1.21-1.42)	<0.001	1.49(1.37-1.63)	<0.001
Eastern	1.34(1.26-1.42)	<0.001	1.18(1.11-1.26)	<0.001	1.2(1.13-1.28)	<0.001	1(0.93-1.07)	0.981	1.07(1-1.16)	0.062	0.92(0.84-0.99)	0.037
North-eastern	1.57(1.46-1.68)	<0.001	1.58(1.47-1.7)	<0.001	1.47(1.37-1.59)	<0.001	1.52(1.41-1.65)	<0.001	0.84(0.76-0.93)	0.001	0.82(0.74-0.92)	0.001
Central	1.08(1.02-1.15)	0.01	1(0.94-1.06)	0.96	1.05(0.98-1.12)	0.182	0.91(0.85-0.97)	0.006	0.87(0.81-0.94)	<0.001	0.63(0.58-0.69)	<0.001

*Terminology used in the survey was *other backward classes and ^mental retardation.*

Supplementary Table 2: Results from Multivariate binary logistic regression analysis exploring the likelihood of living with different types of disabilities per the 76th round of the NSS, India (Cont..)

	Other types of disabilities			
	Un-adjusted OR (95% CI)	**p-value**	**Adjusted OR (95% CI)**	**p-value**
Age (Years)				
<18 (Ref)	1		1	
18-35	0.98(0.83-1.16)	0.8	1.46(1.21-1.77)	<0.001
35-49	1.23(1.04-1.46)	0.018	2.37(1.91-2.93)	<0.001
50-59	1.84(1.56-2.17)	<0.001	3.51(2.84-4.34)	<0.001
65+	3.3(2.78-3.9)	<0.001	6.01(4.81-7.5)	<0.001
Gender				
Male (Ref)	1		1	
female	0.81(0.75-0.87)	<0.001	0.8(0.74-0.86)	<0.001
Place of residence				
Rural (Ref)	1		1	
Urban	1.2(1.12-1.29)	<0.001	1.21(1.11-1.31)	<0.001
Social groups				
Scheduled tribe (Ref)	1		1	
Scheduled caste	0.78(0.69-0.88)	<0.001	0.82(0.72-0.94)	0.004
Other disadvantaged classes*	0.68(0.61-0.76)	<0.001	0.71(0.63-0.81)	<0.001
Others	0.91(0.81-1.02)	0.098	0.89(0.78-1.01)	0.066
Education level				
Illiterate (Ref)	1		1	
Primary	0.84(0.76-0.91)	<0.001	0.88(0.8-0.98)	0.018
Secondary	0.79(0.72-0.86)	<0.001	0.89(0.81-0.99)	0.034

and Higher Education	0.93(0.81-1.07)	0.334	0.97(0.83-1.14)	0.713
Religion				
Hindu (Ref)	1		1	
Muslim	0.83(0.74-0.92)	<0.001	0.88(0.79-0.98)	0.021
Others	1.18(1.04-1.34)	0.01	1.09(0.94-1.26)	0.239
Marital status				
Un-married (Ref)	1		1	
Currently married	0.97(0.9-1.04)	0.409	0.48(0.42-0.54)	<0.001
Widowed	1.89(1.68-2.12)	<0.001	0.55(0.46-0.66)	<0.001
Divorced/separated	2.57(1.86-3.54)	<0.001	1.29(0.92-1.81)	0.142
Wealth				
Poorest (Ref)	1		1	
Poor	0.63(0.57-0.71)	<0.001	0.72(0.64-0.8)	<0.001
Middle	0.66(0.59-0.73)	<0.001	0.76(0.68-0.85)	<0.001
Richer	0.72(0.65-0.8)	<0.001	0.84(0.75-0.94)	0.002
Richest	0.78(0.7-0.86)	<0.001	0.88(0.78-0.99)	0.038
Region				
Northern (Ref)	1		1	
Southern	2.66(2.28-3.1)	<0.001	2.62(2.25-3.07)	<0.001
Western	2.9(2.48-3.4)	<0.001	2.82(2.4-3.31)	<0.001
Eastern	3.09(2.67-3.59)	<0.001	3.23(2.77-3.77)	<0.001
North-eastern	2.12(1.77-2.53)	<0.001	1.98(1.64-2.38)	<0.001
Central	1.17(1-1.38)	0.056	1.26(1.07-1.49)	0.007

*Terminology used in the survey was *other backward classes and ^mental retardation.*