'Inclusive education' in India largely exclusive of children with a disability

Nathan Grills^a, Jacob Devabhaktula^b, Nicole Butcher^a, Sarojitha Arokiaraj^b, Prottoy Kumar Das^b and Pam Anderson^{a*}

^aNossal Institute for Global Health, University of Melbourne; ^bWorld Vision India. Corresponding Author- Email: <u>pamwanderson@gmail.com</u>

Exclusion of children with a disability from education negatively affects national economic growth. Education is important for children with a disability to acquire skills that allow them to gain employment, and thus address a key driver of poverty. A cross-sectional study was conducted in 2015 to better understand the relationship between disability, education and health among children in India. Across 17 states in India, the study sample included 39,723 households with a child aged 0-59 months (163,400 individual cases in total), based on randomised cluster sampling methodology. Key outcomes of interest were school attendance, completion of early childhood education and highest level of education. The study found one percent prevalence of disability, nearly double among boys (1.38%) compared to girls (0.77%), and linked disability to lower level access to education and highest level of education. This study confirms the negative relationship between disability and educational exposure among children, and highlights that India's efforts to make education a fundamental right of every child have not yet translated to benefits for children with a disability. There remains a pressing need for well-designed longitudinal studies that capture the barriers and protective factors of school attendance at every transition between stages of schooling in children with a disability.

Keywords: Inclusive education; disability; disadvantage

Introduction

School access is a significant challenge for most children with a disability, a critical factor which affects school attendance (Mizunoya et al., 2016). The average marginal effect of disability on primary and secondary school attendance was found to be negative 30% according to Mizunoya and colleagues' multi-country study (ibid, 2016). The International Commission on financing global education opportunity estimated that globally, one-quarter to one-half of children with disability are not in school (Saebones et al., 2015).

According to the 2011 Census, India's disabled population stood at 2.21%, which equates to 26.8 million people, of which 7.8 million are children (Government of India, 2011). This is probably a gross underestimate, given that other surveys estimate eight to fifteen percent prevalence of disability in the total population, nine percent in children aged 0-6 years and a total of around 35 million children with a disability (Ramachandra et al., 2016; World Bank, 2009). The underestimate partly relates to the narrow definition of disability traditionally used in India. The broader WHO definition of disability as an umbrella term, covers impairments, activity limitations, and participation restrictions. It also acknowledges that it reflects the interaction between individual physical features and features of the society in which he or she lives. Therefore, interventions must remove environmental and social barriers (WHO, n.d.).

Exclusion of children with a disability from education is not just a moral and social issue, but it also negatively affects national economic growth (Banks and Polack, 2014). It has been estimated that the economic costs of disability worldwide, in large part due to the exclusion of people with a disability from the labour force, amount to three to seven percent of gross domestic product (Ramachandra et al., 2016, WHO and World Bank, 2011). When children with a disability are excluded from school, their opportunities to develop human capital are reduced (Filmer, 2008). Furthermore, when children with a disability attend school, they rarely progress beyond the primary level, which leads ultimately to lower prospects for employment and long-term income poverty (Filmer, 2008). Education is important for disabled children to acquire skills that allow them to gain employment, and thus address a key driver of poverty (UNESCAP, 2002). Inclusive education not only has economic benefits, but can also reduce discrimination against children with a disability (UNESCO, 1994).

Disability exacerbates disadvantage. A World Bank report reveals that children with a disability in India are five times more likely to be out of school than even children who belong to scheduled castes or scheduled tribes and who have low attendance (World Bank, 2009). Thirty-nine percent of children (5-19 years) with a disability have not attended school (4.6 million) (Government of India, 2016a) and illiteracy among people with a disability is 45% in the census (Government of India, 2011) and 52% according to the Singal (2010). Even with the Census' debatable definition of 'literacy' (allowing for a person who has not received formal education or to be classed as literate), these figures nevertheless illustrate the insufficiency of India's education system to support the learning needs of such children even when they do go to school.

Illiteracy levels are high across all categories of disability, especially children with visual, multiple and mental disabilities (and for children with severe disabilities across all the categories). Even in states with good educational indicators and high overall enrolments, around one third of out-of-school children have a disability: 27% in Kerala, 33% in Tamil Nadu (Singal, 2010). Nationally, the proportions of children with multiple disabilities and

mental illness that do not attend an educational institution were recorded at 54% and 50% respectively (Government of India, 2016a). Furthermore, data indicate that across all levels of severity, children with a disability rarely progress beyond primary school (Singal, 2010); enrolment of children with a disability halves when they reach secondary education, and only around 8.5% of persons with a disability have completed school.

In India, a number of policies have been introduced to improve access to education for disabled children, including the Right to Education Act (2009) (Government of India, 2009), the Education for All campaign (Sarva Siksha Abhyan-SSA) (Government of India, 2018), and the recent Rights of Persons with Disabilities Act (2016) (Government of India, 2016b). However, implementation has been inconsistent, and barriers to education are still widespread.

Census statistics are insufficient and inadequate to determine disability prevalence, the accessibility of education to children with a disability in India, and in particular what factors may promote or inhibit their access to education. As such, it is difficult to respond to the problem of disability and education when it is poorly understood. Therefore, this study aims to better understand the relationship between disability, education and health among children living in low resource settings in rural India. The objectives are to assess prevalence, compare access to education between disabled and non-disabled children, and understand factors that may be associated with access to education amongst children with disability.

Methods

The following study was conceptualised by a partnership between World Vision India, an international non-government organisation working with over 6200 communities in India, and the University of Melbourne. World Vision's ethics protocol was closely adhered to, and included: obtaining informed consent, training the enumerators in confidentiality, anonymising of data, and storing it in a central secure database.

A cross-sectional study was conducted in 2015 among a sample of 39,723 households, comprising 165,724 individuals. The survey covered 64 of World Vision's Area Development Programs (ADP) across 17 states in India.

Study and sample design

The survey followed a descriptive cross-sectional design, using randomised cluster sampling to draw 30 clusters. The sample size was calculated based on the following formula, where $Z_{1-\alpha/2}$ is the statistical constant with a value of 1.96 for a confidence interval of 95%, using a

two-way alpha; p is the expected prevalence (0.5) of disability among children; d was the error margin (0.05); and, D denoted design effect (set at 1.5):

$$n = (\mathbf{Z}_{1-\alpha/2})^2 \times p(1-p)/d^2 \times \mathbf{D}_{\text{eff}}$$

Based on the above formula the sample size was 576, which was then rounded up to 600 households (the nearest multiple of 30, the total number of clusters).

The sample was drawn from the 30 randomly identified clusters. The first household in each cluster was randomly selected and thereafter using the right-hand-rule was used to select 20 consecutive households. Only households with at least one child were recruited into the study. All children in each of the selected households were included in the survey.

Data collection and analysis

World Vision project staff undertook rigorous training before collecting data on a purpose-specific Android-based mobile application. Signed informed consent was obtained, data was anonymised, and the World Vision's ethical guidelines followed. The data from the enumerators were downloaded into Excel files. Individual and household databases from all 64 sites were appended separately using XLS2DTA (Klein, 2016). After merging, this yielded a total of 165,724 individuals and 39,723 households. Individual cases with missing disability data (n=2,324) were excluded from all analyses. The total number of individual cases was 163,400.

Key outcomes of interest in the present study were school attendance, completion of early childhood education, and highest level of education. Two education outcomes were derived from the highest level of education for analysis: enrolment up to class 5 and enrolment up to class 10. Responses to 'Enrolment up to class 5' were dichotomised into 'Never enrolled' and 'Enrolled up to class 5', whereas 'Enrolment up to class 10' were categorised into 'Below class 6' and 'Between classes 6 and 10'. Each education outcome was initially rotated into a univariate logistic regression with disability as the explanatory factor, adjusted for the 64 clusters (Area Development Program sites). The association between disability and each education outcome was then tested while controlling for possible confounding effects of nutrition and poverty. Proxy variables for nutrition and poverty were taken from diet diversity (wherein children had at least four food groups) and parents' ability to manage children's treatment expenses. All outcomes were analysed in terms of odds ratio at a significance level of 0.05.

Results

Table 1 shows the demographic and anthropometric characteristics of all children in the

study. The prevalence of disability is roughly one percent. The prevalence of disability varies greatly between girls (0.77%) and boys (1.38%). The proportion of children with a disability was higher among those aged 5 to 18 (1.24%) than children younger than five years of age (0.71%). There were no major differences in height, weight and length between children with/without disability, although weight and length spread across a greater interquartile range for children with a disability.

Table 1: Demographic and anthropometric characteristics of subjects in the study

			No.of	
	Disability	No Disability	observations	
	Count (%)	Count (%)		
	1,746	161,654		
All children	(1.07%)	(98.93%)	163,400	
		83,113		
Female	648 (0.77%)	(99.23%)	83,761	
	1,098	78,539		
Male	(1.38%)	(98.62%)	79,637	
		48,631		
Children under 5 yrs	348 (0.71%)	(99.29%)	48,979	
		28,237		
Children aged 5 - ≤18 yrs	354 (1.24%)	(98.76%)	28,591	
		76,868		
All children	702 (0.90%)	(99.10%)	77,570	
Stunting* (children <24 mths)			18,072	
		6,825		
Yes	33 (0.48%)	(99.52%)		
		11,158		
No	56 (0.5%)	(99.5%)		
Stunting* (children ≥24 - 59				
mths)			25,221	
		10,025		
Yes	106 (1.05%)	(98.95%)		
		15,004		
No	86 (0.57%)	(99.43%)		
	Median			
	(IQR)			
Weight in kg (children under 5)	10 (4.5)	10 (4.1)	46,914	

Height in cm (≥24 - 59 mths)	88 (13)	89.2 (11.3)	26,383
Length in cm (0 - <24 mths)	69 (13.5)	70 (11.9)	19,470

^{*}Stunting is defined as ≤ 2 standard deviations from mean height for age based on CDC-US growth chart version 2000

Disability was linked to lower level access to education (Table 2). Fewer children with a disability had attended Early Childhood Care and Education (ECCD) or Integrated Child Development Services (ICDS) (65%) than their non-disabled counterparts (76.5%). The proportion of children aged 5-18 years currently attending school remained smaller among those with a disability (68.7%) than those without (86.6%). Children with a disability in the $12 - \le 18$ years age bracket had higher attendance than those under 12 years, whereas the younger children (aged under 12 years) without disability attended school in higher numbers than those age 12 and over.

Table 2: Exposure to education

Table 2. Exposure to educe	Disability		No disability		
Currently attending		No. of	Percentage	No. of	
school	(count)	Observations	(count)	Observations	
All Children (5 - ≤18 yrs)	68.71%	278	86.58%	21,706	
	(191)		(18,792)		
Male (5 - ≤18 yrs)	64.86%	148	85.39%	9,136	
• /	(96)		(7,801)		
Female (5 - ≤18 yrs)	73.08%	130	87.44%	12,570	
` • • •	(95)		(10,991)		
Children (5 - <12 yrs)	67.76%	214	88.7%	16,640	
	(145)		14,760		
Children (12 - ≤18 yrs)	71.88%	64	79.59%	5,066	
	(46)		(4,032)		
Completed					
ECCD/ICDS before					
joining Grade 1					
Children (6 - 8 yrs)	65.04%	123	76.52%	9,366	
, , ,	(80)		(7,167)		

ECCD: Early Childhood Care and Education | ICDS: Integrated Child Development Services

Table 3 shows that the odds of children with a disability aged 5-≤18 years currently attending school was approximately one-third that of children without disability (odds ratio: 0.33, p-value <0.001). Translated into adjusted predicted probability, children with a disability were

less likely (predicted probability 0.67; 95% CI: 0.62, 0.73) to be attending school when compared to non-disabled children (predicted probability 0.86; 95% CI: 0.83, 0.9) in the same age group.

Table 3: Association between education and disability in children

	No.of	Odds ratio	p-value
	observations	(95%CI)	
School attendance	21,267	0.33 (0.24, 0.43)	<0.001*
(children aged 5 - ≤18yrs)			
Enrolled up to class 5	22,058	0.45 (0.35, 0.56)	<0.001*
(children aged 5 - <12 yrs)			
Enrolled in class 6-10	4,880	0.65 (0.39, 1.08)	0.1
(children aged 12 - ≤18 yrs)			
Completion of ECCD/ICDS	9,197	0.75 (0.53, 1.06)	0.002*
before joining Grade 1			
(children aged 6 - 8 yrs)			

Odds ratio adjusted for 64 Area Development Program (clusters)

ECCD: Early Childhood Care and Education ICDS: Integrated Child Development Services

There was also an association between disability and the highest level of education among children aged 5 to <12 years. Children with a disability were almost half as likely to have enrolled in classes 1-5 compared to non-disabled children in the same age bracket (odds ratio: 0.45, p- value <0.001). There was a lower adjusted-predicted probability (0.52, 95% CI: 0.46, 0.58) of having enrolled in classes 1-5 among children with a disability than non-disabled children (0.71, 95% CI: 0.69, 0.73). The odds of having completed either Early Childhood Care and Education (ECCD) or Integrated Child Development Services (ICDS), was also approximately half that of those without disability.

After controlling for diet diversity and parents' ability to manage treatment expenses, all attendance and enrolment were still significantly associated with disability, despite some minor changes in odds ratios (Table 4). Thus, these two factors were not significant confounders. Furthermore, the differences in access to education tended to even out as children progress in schooling. There was no statistically significant difference between the odds of having enrolled in classes 6-10 among children with a disability aged 12-18 years and non-disabled children in the same age group.

^{*}p-values significant at the 5 % level

Table 4: Association between disability and education access, adjusted for diet diversity and parents/primary carers' ability to manage treatment expenses

	Association with disability		Association with disability, adjusted for food diversity (≥4 food groups)			
				and ability	to manage t	reatment
				expenses		
Access to	No. of	Odds ratio		No. of	Odds ratio	
Education	observations	(95%CI)	p-value	observations	(95%CI)	p-value
		0.28 (0.20,			0.31 (0.21,	
School attendance	11,726	0.38)	< 0.001*	5,130	0.45)	<0.001*
Enrolled up to						
class 5		0.51 (0.40,			0.33 (0.24,	
(aged 5 - <12 yrs)	14,135	0.64)	< 0.001*	5,108	0.45)	<0.001*
Enrolled in class 6						
- 10						
(aged 12 - ≤18		0.67 (0.40,			0.82 (0.36,	
yrs)	1,865	1.12)	0.13	819	1.86)	0.64
Completion of						
ECCD/ICD						
before joining		0.47 (0.34,			0.36 (0.22,	
Grade 1	8,212	0.64)	<0.001*	3,540	0.57)	<0.001*

Odds ratio adjusted for 64 Area Development Program (clusters)

Only one participant from each household were used in analysis

Ability to manage treatment expenses was used as a proxy for income

Discussion

This study confirms findings elsewhere in demonstrating a negative relationship between disability and educational exposure among children (Filmer, 2008; Groce and Bakhshi, 2011; UNESCO, 2015). According to UNESCO (2015), disability hinders access to education even more than socio-economic status, rural location or gender. In this study, children with disabilities were significantly less likely to be attending school than those without disability across these World Vision study sites. The findings are even more stark given that World Vision specifically selects districts that are most in need, meaning there is already a high level of poverty and disadvantage in the general populations of these study sites. In effect, these findings indicate that in areas of generalised disadvantage, children with disability face an additional level of disadvantage compared to those who are not disabled.

^{*}p-values significant at the 5% level

This educational disadvantage through non-enrolment in elementary and secondary schools can be expected to have far reaching flow on effects on health outcomes, income levels and capacity for a person to participate fully in society (Hahn and Truman, 2015; UNESCO, 2011). Of course, this relationship is not simple, and the positive effect of education will also depend upon quality of education and other social, cultural, political and geographical factors. However, education in its own right is an important determinant of income, and in India every additional year of schooling has been estimated to increase one's income by up to ten percent (ibid, 2011), whereas the Census recorded only 0.05% of people with a disability as being employed (Government of India, 2011). The lack of education amongst those with disability, affects health both constitutively and instrumentally. That is education can be seen as a constitutive or fundamental part of a person's health and also an instrumental or contributing cause of other elements that result in ill-health (Hahn and Truman, 2015). As such, education is a fundamental social determinant of health (Marmot, 2005). In what is a vicious cycle, ill health and low income can also result in poor access to education.

Inequalities at various phases of schooling

The results indicate that educational disadvantage starts early, with children with a disability more likely to miss out on early childhood education than children without a disability. Even after controlling for food diversity and ability to manage medical expenses, the magnitude of difference in odds between disabled and non-disabled children completing EECD/ICDS remained large and statistically significant. This is in contrast to high-income settings where having a disability typically leads to a high-intensity use of child early learning and development centres. Preschool non-attendance has been shown to produce lasting and often multi-dimensional effects on children with a disability and their families. For example, McClelland et al show how children who miss out on pre-schooling were more likely affected by social exclusion, perpetual poverty and poor academic performance throughout elementary years (McClelland et al., 2006). If children are to be included in mainstream schools in India, then early identification and intervention, preferably before formal schooling begins, is required (UNESCO, 2015). Such processes can ensure optimal, targeted assistance in the early years, and can potentially facilitate a smoother transition to school. (WHO and World Bank, 2011).

The educational divide between children with disabilities and those without, was also observed in elementary schooling in the present study. In children aged 5-12, those with disabilities were less likely to be enrolled in classes 1-5. This finding was comparable to other studies that demonstrated a similar association between disability and enrolment in elementary schools in India (Bakhshi et al., 2017)

A statistically significant difference in enrolments in classes 6 to 10 (aged 12-18) between

children with and without a disability, was not evident in the present study. This may be due to the small number of children with a disability overall (<70) and a relatively small sample size in this age group. Other more highly powered studies have shown lower odds of enrolment at this level for children with a disability. A recent study in New Delhi found that the odds of attending school among non-disabled children in this age group was 1.9 times (95% C.I. 1.2; 3.1, p≤0.01) that of those with a disability (Bakhshi et al., 2017) in the same age group.

Secondary education does not reveal a strong association with disability in the present study. This may be explained in terms of socio-economic factors insofar as the areas in which World Vision works have a low human development index, and school children without disability living in poorer areas also tend to drop out of school earlier than higher-income peers (WHO and World Bank, 2011). In this analysis, where a low-income status is assumed, the difference in education access between those with and those without disability decreases at these school levels, likely on account of this fact. Regardless of socio-economic factors, the percentage of children with a disability currently enrolled at school is concerningly low at 64%.

India joined 135 countries to make education a fundamental right of every child (UNESCO, 2010) when it passed the Right to Education Act 2009 (Government of India, 2009). Likewise, the 2016 Rights for Persons with Disabilities Act (Government of India, 2016b) aims to provide access to education for all children with disability. These acts support UNESCO's promotion of every child, including those with a disability, having access to free elementary education (UNESCO, 2015). UNESCO insists on the obligation of the government to require compulsory admission, attendance and completion of elementary education for every child aged six to fourteen years. Whilst Indian law enshrines these rights, this study highlights the incomplete nature of their rollout. It would seem that the government policy of Education for All (Government of India, 2018), which specifies assistance for children with a disability, has yet to succeed in including many children made vulnerable by disability. The multi-centric nature of this study indicates that many children with a disability in India are unable to access the basic level of education and training.

This study found the same level of children in school with a disability (1.01%) as the 2011 national census (1.0%, 2.13 million) (Government of India, 2011). However, both this study and the census are likely to have underestimated the real prevalence given the reliance on direct questioning. Asking about disability status—for example, World Vision asked 'Is he/she disabled?'—tends to underestimate prevalence (Madans et al., 2011; Mont, 2007). The census enumerators did also test for blindness and mobility, however. Notwithstanding, this underestimation is important because it may affect allocation of disability resources to schools and create difficulty to advocate for effective school-based interventions. Additionally, if disability is seen as a rare occurrence (e.g. one in 100), then it makes it

difficult to destigmatise and to change parental, teacher and student attitudes (Parnes et al., 2009).

Noting a large difference in the prevalence of disability amongst girls (0.77%) and boys (1.38%), this study corroborates disability prevalence elsewhere in India, which is reported as being higher in males (Grills et al., 2017; Government of India, 2011). Worldwide, disability prevalence is similar between male and female children, but amongst adults in low and middle income countries prevalence, is higher amongst women (Saebones et al., 2015; WHO and World Bank, 2011). In this Indian study, the double disadvantage of a being a girl child and having a disability may lead to a girl child with a disability being more likely to be neglected (Rousso, 2003) and therefore at increased risk of non-survival compared with a boy child with a disability (UNICEF, 2013; Saikia et al., 2016). This is reflected in studies that show an excess under five mortality amongst females in India due to discrimination in nutrition and health care (Bongaarts and Guilmoto, 2015). Interestingly, and in contrast to other studies (Parnes et al., 2009; Saebones et al., 2015; WHO and World Bank, 2011), girls with a disability in this study attended school eight percent more than boys with a disability. Given girls with more severe disabilities may be less likely to survive than boys, this may mean that girls with a disability have less severe disability and thus are more likely to attend school.

Responding to the problem

The profound educational disadvantages brought by disability, demonstrate a culture of exclusion in the school setting in this study in India. Zoller et al. (2010), demonstrate how a culture of inclusiveness at schools, often marked by the presence of inclusive leaders and a strong sense of community with shared language and values, is pivotal in improving educational outcomes for children with a disability. Praisner (2003), found that positive attitudes towards children with disability, a key component in an inclusive culture, were associated with school leaders who had exposure to special education and previous positive experiences with students with a disability. To promote positive experiences, teachers need to be involved in the intervention process as strategists. In Gujarat, for instance, teacher-driven strategies in some small communities had demonstrated success in improving retention rate and school attendance of children with a disability. The innovative strategies were recorded and shared among other communities in Gujarat in an effort to replicate similar outcomes (Kumar et al., 2013). However, in many states in India, school teachers are often ill equipped, under resourced and underprepared. In a survey of 223 primary school teachers and 130 secondary school teachers in New Delhi, about 70% of regular school teachers indicated the lack of training in special education or experience in teaching students with a disability (Das et al., 2013). Quality training for teachers in providing inclusive education is of paramount importance. As recently introduced in Victoria, Australia, compulsory modules on special education should be required as part of teacher training courses.

A cost-effective way to support teachers in including children with a disability in their school is to use local community-based volunteers. The Education for All Global Monitoring Report, states that trained community-based assistants can provide additional support targeted at those with learning difficulties (UNESCO, 2014). A number of models have been cited in the literature whereby community workers are trained to work alongside teachers as community-based assistants or teachers' aides to support learners with special needs. The EFA report describes an intervention in India where *Balakshi* (Hindi for 'children's friends') were used to support those who were falling behind by providing in-school daily assistance. This had a significant impact on children's test scores (ibid, 2014).

The barriers to equal access to mainstream education for children with a disability are also infrastructural. In many cases, for instance in rural Karnataka, the lack of basic facilities such as accessible toilets were found to be the main reason for children not attending schools (Singal, 2014). Although facilities are a concern when it comes to increasing school enrolments of children with a disability, this does not mean that inclusive education should be costly. In fact, it has been suggested that with strong peer support and well-trained teachers, most learners with a disability could be educated in mainstream schools with only minor additional support and minimal infrastructure investment (Myers et al., 2016).

At policy level, enforcing and funding the Education for All, must be a priority on the government agenda. Marginalised communities will continue to miss out on the benefits of the campaign unless the government is willing to inject funds into these communities to fully implement current policies, provide adequate staffing, up-skill current teachers, and improve the accessibility of school infrastructure (International Commission on Financing Global Education Opportunity, 2016). In India, children with disabilities in special schools fall under the responsibility of the Ministry of Social Justice and Empowerment, while children in mainstream schools come under the Department of Education in the Ministry of Human Resource Development (Naidu, 2008). This not only makes the transition between special education and mainstream more difficult, but can also shift the focus from social inclusion towards a charitable model of social isolation. While government initiatives and NGOs' advocacy for enrolling children with a disability and for delivering inclusive education programs are vital, grassroots' potential in generating effective changes for children with a disability should not be neglected. Approaches that involve the community, parents, and the children themselves, are more likely to provide sustainable, effective solutions to the shortage of trained teachers, and to foster inclusion (UNESCO, 2015). Often, close-knit rural communities offer a great leverage for driving social changes. People with a disability in India, now find themselves in a social context characterised by a 'surveillance society' (Jeffery and Singal, 2008) with increasing awareness of the benefits of education for children with a disability (De et al., 2011). Seizing this opportunity, NGOs and DPOs should focus on training and mobilising local communities in lobbying for resources needed for inclusive education.

Limitations

The research findings are applicable to the areas/regions that were studied only, and therefore the findings cannot be generalised to the broader Indian population. To better understand these findings, qualitative methods would be required to explore cultural, social, economic and other dimensions.

Evidence was not collected on the type and severity of disability. Growth data (weight, height, stunting, etc.) were only measured in children under five, and therefore cannot be tested against education outcomes at older ages.

It is likely that there was under-reporting of disability due to participants being asked to self-report disability status amongst their family members. In India, disability is commonly understood, as in the census, as being only severe, visible impairment. Additionally, the stigma associated with disability likely compounds a tendency to under-report.

There is a pressing need for well-designed longitudinal studies that capture the barriers and protective factors of school attendance at every transition between stages of schooling in children with a disability. Paucity of data on effective policies and implementation of inclusive education in low-resource settings means there is also a need for systematic reviews of relevant initiatives worldwide to inform policy decisions.

Conclusion

India has the world's highest number of people with a disability in the 10-18 years age bracket. In this age range, education is critical to (a) prevent further disadvantage through unemployment, poverty, discrimination and social exclusion; and (b) promote economic and social independence, without which the individual's and family's vulnerability to poverty is perpetuated inter-generationally (UNESCAP, 2002). This paper underscores that action is urgently required to increase enrolments of children with disability if India is to reach Sustainable Development Goal 4, to 'Ensure inclusive and equitable quality education and promote lifelong learning'. Inequality in education will otherwise continue to contribute to inequality in all other important dimensions of well-being.

Declaration of Interest

The authors certify that they have no affiliations with or involvement in any organisation or entity with any financial interest (such as honoraria; educational grants; participation in

speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

References

- Bakhshi, P., Babulal, M. et al. (2017). Education of children with disabilities in New Delhi: When does exclusion occur? *PloS one*, 12(9). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0183885
- Banks, M. and Polack, S. (2014). The economic costs of exclusion and gains of inclusion of people with disabilities. London: CBM, International Centre for Evidence in Disability and London School of Hygiene & Tropical Medicine.
- Bongaarts, J. and Guilmoto, C.Z. (2015). How many more missing women? Excess female mortality and prenatal sex selection, 1970–2050. *Population and Development Review*, 41(2), 241-269.
- Filmer, D. (2008). Disability, poverty, and schooling in developing countries: Results from 14 household surveys. *World Bank Economic Review*, 22(1), 141-163.
- Government of India. (2009). Right of Children to Free and Compulsory Education Act, 2009. Available at: http://mhrd.gov.in/rte.
- Government of India. (2011). Census of India 2011. Available at: http://censusindia.gov.in/2011census/censusinfodashboard/index.html.
- Government of India. (2016a). Disabled Persons in India: A statistical profile 2016. *Ministry of statistics and programme implementation*. Available at: http://mospi.nic.in/sites/default/files/publication-reports/Disabled_persons-in-India_2016.pdf.
- Government of India. (2016b). The Rights of Persons with Disabilities Act. Available at: http://www.disabilityaffairs.gov.in/upload/uploadfiles/files/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/upload/uploadfiles/files/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/upload/uploadfiles/files/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/upload/uploadfiles/files/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/upload/uploadfiles/files/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/upload/uploadfiles/files/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/uploadfiles/files/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/uploadfiles/files/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/uploadfiles/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/uploadfiles/files/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/uploadfiles/RPWD%20ACT%202016
 http://www.disabilityaffairs.gov.in/uploadfiles/RPWD%20ACT%202016
 <
- Government of India. (2018). Sarva Shiksha Abhiyan. Available at: http://www.ssa.nic.in.
- Grills, N., Singh, L. et al. (2017). Access to services and barriers faced by people with disabilities: a quantitative survey. *Disability, CBR and Inclusive Development Journal*, 28(2).
- Groce, N. and Bakhshi, P. (2011). Illiteracy among adults with disabilities in the developing world: a review of the literature and a call for action. *International Journal of Inclusive Education*, 15(10), 1153-1168.
- Hahn, A. and Truman, I. (2015). Education improves public health and promotes health equity. *International Journal of Health Services*, 45(4), 657-678.

- International Commission on Financing Global Education Opportunity. (2016). The learning generation: Investing in education for a changing world. Available at:http://hdl.voced.edu.au/10707/495736.
- Klein, D. (2016). XLS2DTA: Stata module to save Excel files as Stata datasets. Statistical Software Components S457516. *Boston College Department of Economics*. Available at: https://econpapers.repec.org/software/bocbocode/s457516.htm
- Madans, J., Loeb, M. et al. (2011). Measuring disability and monitoring the UN Convention on the Rights of Persons with Disabilities: the work of the Washington Group on Disability Statistics. *BMC Public Health*, 11(4).
- Marmot, M. (2005). Social determinants of health inequalities. *The lancet*, 365(9464), 1099-1104.
- McClelland, M., Acock, C. et al. (2006). The impact of kindergarten learning-related skills on academic trajectories at the end of elementary school. *Early Childhood Research Quarterly*, 21(4), 471-490.
- Mizunoya, S., Mitra, S. et al. (2016). Towards inclusive education: The impact of disability on school attendance in developing countries. Innocenti Working Paper No. 2016-03. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2782430
- Mont, D. (2007). Measuring health and disability. *The lancet*, 369(9573), 1658–1663.
- Myers, J., Pinnock, H. et al. (2016). Costing Equity. The case for disability-responsive education financing. Brussels, Belgium: IDDC.
- Naidu, A. (2008). Collaboration in the era of inclusion. In C. Forlin & M.-G. J. Lian (Eds.), *Reform, inclusion and teacher education: Towards a new era of special education in the Asia-Pacific region* (pp. 30-41). London: Routledge.
- Parnes, P., Cameron, D. et al. (2009). Disability in low-income countries: issues and implications. *Disability Rehabilitation*, 31(14), 1170-1180.
- Ramachandra, S., Allagh, P. et al. (2016). Prevalence of disability among adults using rapid assessment of disability tool in a rural district of South India. *Disability and Health Journal*, 9(4), 624-631.
- Rousso, H. (2003). Education for All: a gender and disability perspective. EFA Global Monitoring Report. Paris: UNESCO. Available at: http://www.ntp-internet/uploads/2013/12/Roussoedu1.pdf
- Saebones, A., Bieler, B. et al. (2015). Towards a disability inclusive education. Background paper for the Oslo Summit on Education for Development. Available at: https://www.usaid.gov/sites/default/files/documents/1865/Oslo Ed Summit DisabilityInclusive Ed.pdf
- Saikia, N. and Bora, K. (2016). Disability divides in India: evidence from the 2011 census. *PloS one*, 11(8).
- Singal, N. (2010). Education of children with disabilities in India. Background paper prepared for the Education for All Global Monitoring Report. UNESCO. Available at: https://pdfs.semanticscholar.org/5127/51d04347690203b647da0c036461077d2d14.pdf

- UNESCAP (2002). Biwako Millennium Framework for Action: Towards an Inclusive, Barrier-Free and Rights-Based Society for Persons with Disabilities in Asia and the Pacific. Bangkok, Thailand: UNESCAP.
- UNESCO (2010). Education for All Global Monitoring Report 2010: Reaching the Marginalized. Paris: UNESCO.
- UNESCO (1994). The Salamanca statement and framework for action on special needs education. Paris: UNESCO.
- UNESCO (2011). Education Counts: Towards the Millennium Development Goals. Available at: http://unesdoc.unesco.org/images/0019/001902/190214e.pdf.
- UNESCO (2015). Education for All 2000-2015: Achievements and Challenges. Paris: UNESCO.
- UNICEF (2013). The State of the World's Children 2013. Children with disabilities. New York: UNICEF.
- World Bank. (n.d.). Disability Inclusion. Available at: www.worldbank.org/en/topic/disability.
- World Bank (2009). People with Disabilities in India: From Commitments to Outcomes. Washington: World Bank.
- WHO (n.d.). Disabilities. Available at: https://www.who.int/topics/disabilities/en/
- WHO and World Bank. (2011). World Report on Disability. Geneva: WHO.
- Zollers, J., Ramanathan, K. et al. (1999). The relationship between school culture and inclusion: How an inclusive culture supports inclusive education. *International Journal of Qualitative Studies in Education*, 12(2), 157-174.