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Gaps in access and school attainments among people with and without disabilities: a case from Nepal

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ABSTRACT

Aim: Many children with disabilities in low- and middle-income countries do not attend school and one-third are out of school. In order to ensure that education is for all including children with disabilities, research is needed on barriers to schooling to identify targets for intervention. The study will examine the determinants of school achievement among persons with and without disabilities as well as among each type of impairment.

Methods: The study will utilize data from a recent national, representative household survey on living conditions among persons with and without disabilities. The individual level data used in this article comprise 2123 persons with and 2000 persons without disabilities.

Results: The results show that an alarmingly high proportion of persons in Nepal have not accessed formal education, with access being significantly lower among persons with disabilities. While the results may be influenced by the assumed relationship between disability and poverty, results from analyzing the cross-sectional data cannot be conclusive on the influence of disability vs. poverty in determining differences in access and school attainments. Increased environmental barriers, higher age, rural location, and increased levels of disability were found to be associated with lower educational achievement. Pronounced differences in access to education were found between impairment types, with individuals with physical impairments achieving the highest level and individuals with multiple impairments, hearing and mental impairments achieving lowest.

Conclusions: It is necessary both to strengthen the entire educational sector and at the same time allocate resources that will ensure that all children are on board and that particular efforts are implemented to cater for those who are easily side-lined.

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Disability; education; access; attainment; comparison; Nepal

➤ IMPLICATIONS FOR REHABILITATION

- An alarmingly high proportion of persons in Nepal have not attended school.
- Substantially more individuals with than without disabilities have never attended school.
- Increased environmental barriers, higher age, rural location, and increased levels of disability were found to be associated with lower educational achievement.
- Pronounced differences in access to education were found between impairment types, with individuals with physical impairments achieving the highest level and individuals with multiple impairments, hearing and mental impairments achieving lowest.
- It is necessary both to strengthen the entire educational sector in Nepal and at the same time ensure that particular efforts are implemented to cater for those who are easily sidelined.

Introduction

The importance of providing quality education to all children regardless of any differences is recognized in several international declarations including the Sustainable Development Goals for 2015–2030 [1]. The Convention on the Rights of Persons with Disabilities [2] requires signatory states to ensure equal access to quality education for children with disabilities (Article 24), and the Sustainable Development Goals have incorporated inclusion of disability in goal 4 on education. Year 2015 marked the end of both the Millennium Development Goals (http://www.un.org/millenniumgoals/) and Education for All (http://www.unesco.org/new/en/archives/education/themes/leading-the-international-agenda/education-for-all/), and the Education for All Global Monitoring Report 2013/14 [3] indicated which countries were expected to achieve each goal, and which were not. While most countries were assessed as having reached or being close to the goals, access to quality education by people with disabilities is yet to be achieved especially in low and middle-income countries. The 2010 Education for All Global Monitoring Report [4] finds the failure to address inequalities, stigma, and discrimination linked to poverty, gender, ethnicity, language, location, and disability as key barriers for school entry. Resulting from such barriers, many

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children with disabilities in low-income countries do not attend school and one-third are out of school children [5]. Utilizing a recent nationally representative dataset from Nepal, we intend to examine the factors associated with school participation of children with disabilities and compare it with those without disabilities.

Studies in general populations have shown level of family income, parental education, family size, and the gender of the child as some of the factors associated with educational attainment [6–15]. Some of the few studies looking at the effect of household determinants on the education of persons with disabilities, e.g., Lamichhane and Kawakatsu [16] in Bangladesh, found negative associations between disability and school participation for the total sample: and once the sample is restricted to children with disabilities, a positive association between household head's educational level, monthly expenditure, and number of working age members on the probability of school participation of persons with disabilities was observed. Similarly, a study by Takeda and Lamichhane [17] in India also found lower school participation and school completion and lower academic achievements among persons with disabilities compared to non-disabled. Their study further revealed important dynamics of the disability and income, both negative in educational attainment, completion, dropout, and academic achievements. The effect of father's education was small when it interacted with children's disability whereas mother's education had a positive association in secondary school completion as well as reading and writing skills. Furthermore, some studies in African countries, for example, Loeb and Eide [18] for Malawi, Eide et al. [19] for Namibia, Eide and Loeb [20] for Zambia, and Eide and Mmatli [21] for Botswana reported only smaller differences in school attainment between those with and without disabilities who were able to access education. Finally, a large study drawing on data from 30 low-income countries found children with disabilities to be less likely to attend formal education than non-disabled children in each of the countries included in the data base [22].

While the aforementioned studies attempted to identify factors affecting the school achievement for children with disabilities, they have some limitations. While disability is shown to correlate negatively with school participation, they have, with one exception [22], not analyzed differences across types of disabilities (impairment types). We hypothesize that different impairments pose different types of challenges and that some impairment types are more prone to reduced access to education and lower school attainment than others. Thus, besides examining whether disability is associated with access to formal education when controlling for other relevant intervening variables, our study will examine access to education among different impairment groups for example, physical, hearing and visual impairment. Nepal is an ideal choice for this study due to the availability of a recent disability inclusive and nationally representative data set and its context as a developing country.

Two recent studies in Nepal by Lamichhane [23,24] are highly relevant for the current study. Lamichhane [23] described the barriers to education for persons with disabilities by obtaining information from adults within the 16–65 years age range. Limitations of this study were however that it was retrospective and limited in scope, yielding no opportunity for analyzing explanatory factors for school achievement other than disability status. Similarly, Lamichhane [24] compared the facilities in integrated education of children with visual impairments between rural and urban Nepal through the information gained from interviews with resource teachers. However, none of these studies analyzed factors associated with access and then continuation of education by disability status and compared it to those without disabilities. Thus, to the best of our knowledge, we are not aware of empirical studies analyzing schooling among impairment groups and between those with and without disabilities in Nepal. This is possibly due to first not having nationally representative disability inclusive dataset, covering information on children with disabilities, and second not having sufficient sample sizes for each impairment group.

Therefore, we aim to partially fill this knowledge gap by examining the determinants of schooling between persons with and without disabilities and then among each type of impairment. The research question posed in this paper is: what are the factors affecting school achievement of persons with disabilities in Nepal?

Dataset

We used a nationally representative disability inclusive survey collected in 2015 by SINTEF and Valley Research Group, in collaboration with the National Federation of Disabled in Nepal [25]. The survey represented all five development regions of Nepal (Eastern, Central, Western, Mid-western, and Far-Western regions) which these days represent seven provinces in the newly implemented federal republican setting of the country. The instruments used were all drawn from previous similar studies. The survey used the short set of questions to identify people's disability, recommended by Washington group on disability statistics [26]. The survey further applied a household questionnaire responded to by the head of the sampled households, an individual questionnaire to all identified persons with disabilities, and finally an individual control questionnaire to persons without disabilities who were matched by age and gender with the sampled persons with disabilities. The household and individual questionnaires were adapted to the context following input from a stakeholder workshop and the extensive enumerator training. All questionnaires were translated into Nepali.

In each region, 20 clusters were randomly drawn and subsequently subject to screening for disability. In each cluster, 20 households with and 20 households without member(s) with disabilities were included. This yielded a total gross sample of 100 clusters and 800 households in each region, and 4000 households in total for the national sample.

Weights were applied in the analyses to adjust for the equal sampling size within regions with substantial variations in population size. Accordingly, weight factors were derived and used for national level estimates. Weight for a particular region was calculated as an inverse of combined probability of sample selection at different stages normalized by its mean.

In the case/control comparison (individuals), a total of 4123 individuals were included. Of these, 2123 were persons with disabilities while 2000 were controls. The higher number of persons with disabilities is due to some households having more than one member with a disability. The proportion of males was similar in both groups, 52.6% ($N = 1117$) among persons with disabilities and 52.9% ($N = 1059$) among non-disabled. Though the majority in the sample was male in the Eastern region, the gender variation was small and not statistically significant. Overall mean age was 39.5 years and with marginal difference between persons with and without disabilities. Also, age differences between males and females were small in both groups.

Ethics

The study was cleared by the Norwegian Social Science Data Services (no. 41390). Permission to carry out the study was given by the Ministry of Women, Children and Social Welfare. Following standardized information about the study, respondents gave their consent directly to the interviewers who marked this in the questionnaire. Data were anonymized.

Technique for analysis

The six Washington Group questions measure activity limitations within the domains of seeing, hearing, walking, self-care, remembering, and communication. For each domain, the respondent could choose "no difficulty", "some difficulty", "a lot of difficulty", and "unable to do". For the purpose of this study, all who had at least one "some difficulty" qualified as a person with disabilities. The six WG items were added together and formed the Activity Limitation scale (range 0–18), with mean value among persons with disabilities being 3.03 and standard deviations 2.55. According to the way disability was operationalized in this study, all non-disabled scored 0 on this scale.

In addition to the general disability measure, respondents were also asked to identify their type of impairment. Of the total *N* (2123), the distribution on types was: physical (32.3%), multiple (22.8%), hearing (20.8%), visual (13.8%), mental (5.3%), speech (3.4%), and visual and speech combined (1.3%).

Environmental barriers were measured by means of Craig Hospital Inventory of Environmental Factors [27]. The scale comprises 12 barrier items and the respondents are asked to assess the degree of problem each item poses in their daily life on a five-point scale from "no problem" (0) to "complete problem/unable to do" (http://www.unesco.org/new/en/archives/education/themes/leading-the-international-agenda/education-for-all/). Cronbach's alpha was 0.75 which indicates high reliability and is a support for adding the items into a scale. Exploratory factor analysis was carried out and scree plot inspection revealed one main factor. Du to relatively high number of missing on two items, missing were replaced with mean for further analyses. The scale ranged from 12 to 48, mean value was 18.57 and standard deviation 5.69. Mean values on the scale were 20.83 (95% CI = ±0.28) among persons with disabilities and 16.19 (95% CI = 17.61 ± 0.20) among persons without disabilities.

Analyses were performed among individuals of 15 years and higher.

Results

Table 1 shows that a significantly higher proportion of non-disabled above 15 years of age reported to have accessed formal primary education, 52.3% and 35.8%. The proportion having accessed education further varied significantly between impairment types: physical impairment was highest with 45.7%, followed by mental (44.2%), hearing (33.7%), speech (31.1%), visual (30.9%), multiple impairments (25.4%), and visual + hearing (visual/speech) (15.2%). While the variation in access to formal primary education between impairment types was statistically significant, it should be noted that *N* was particularly low for visual and hearing combined, and for speech.

There is some variation in access to formal primary education between development regions, but not sufficient to reach statistical significance. On the other hand, significantly higher access among non-disabled was found for four out of the five regions, the exception being the Far-Western region where the difference in percentage points was as low as 5.3.

As expected, access to formal primary education is significantly higher in urban than in rural areas for both persons with and without disabilities. Furthermore, access was significantly higher among males than females for both groups (persons with and without disabilities respectively: χ^2=124.02, $p < 0.001$ and χ^2=151.91, $p < 0.001$). The difference between persons with and without disabilities was found among both males and females. It was also found that persons with disabilities report less access to formal primary education across eight age categories.

Table 2 shows that regardless of disability status, most individuals who had accessed formal primary education reported that their highest grade achieved is in the Standard 5–9 bracket. Fewer, but still a substantial number, reported Standard 1–4. In fact, between males and females with disabilities, the two combined is reported by 74.3% and 73.9%, respectively. The corresponding figures for non-disabled males and females are 65.2%

Table 1. Accessed formal primary education[a].

⇒15 years	Disabled		Non-disabled			
	n	%	*n*	%	χ^2	*p*
Total	660	35.8	864	52.8	97.03	<0.001
Development region (≥15 years)						
Eastern	135	39.0	170	52.9	15.47	<0.001
Central	137	33.6	180	52.8	56.28	<0.001
Western	141	36.5	178	50.5	12.21	<0.001
Mid-Western	121	32.1	192	56.5	25.00	<0.001
Far-Western	126	40.6	144	45.9	.80	<0.001
Location (≥15 years)						
Urban	199	36.7	235	66.9	14.60	<0.001
Rural	461	43.7	629	48.0	68.99	<0.001
Sex (≥15 years)						
Males	458	47.9	574	66.3	63.08	<0.001
Females	202	22.6	290	36.3	36.81	<0.001
Age						
0–10	148	38.9	166	52.7	13.15	<0.001
11–20	145	37.2	186	50.7	14.01	<0.001
21–30	71	28.1	169	53.8	38.08	<0.001
31–40	97	41.6	116	54.7	7.62	<0.001
41–50	62	33.3	96	54.5	16.54	<0.001
51–60	46	32.2	61	47.7	6.78	<0.001
61–70	46	38.3	64	54.2	6.05	<0.001
71+	20	27.8	25	42.4	3.06	<0.001
Impairment type (≥15 years)					57.19	<0.001
Physical	287	45.7				
Visual	94	30.9				
Hearing	120	33.7				
Visual and hearing	5	15.2				
Speech	15	31.1				
Mental	40	44.2				
Multiple	99	25.4				

[a]*p* values age adjusted.

Table 2. Highest grade achieved by disability status and sex (=>15 years) ($N_{Females}$ = 488, N_{Males}=1025).

	Disabled				Non-disabled			
	Male		Female		Male		Female	
Grade	%	*N*	%	*N*	%	*N*	%	*N*
Standard 1–4	32.8	144	23.0	44	21.6	128	23.6	67
Standard 5–9	41.5	197	50.3	105	43.6	258	44.5	135
SLC	11.9	53	8.4	16	16.9	93	19.8	56
10 + 2/A or eq	9.2	37	14.7	29	11.1	55	8.1	20
BA or eq	3.2	16	2.6	5	4.9	28	4.6	10
MA or eq	1.4	6	0.5	1	1.8	10	0.0	0

Comparing disabled and non-disabled: males: χ^2=19.30, $p < 0.001$. Females: χ^2=17.77, $p < 0.001$.

Table 3. Highest grade achieved by disability status and location (=>15 years) ($N_{Urban} = 432$, $N_{Rural} = 1081$).

	Disabled				Non-disabled			
	Urban		Rural		Urban		Rural	
Grade	%	*N*	%	*N*	%	*N*	%	*N*
Standard 1–4	20.5	39	32.8	149	13.0	35	25.8	160
Standard 5–9	40.4	87	45.1	215	36.4	96	47.0	297
SLC	11.9	23	10.4	46	21.8	50	16.3	99
10 + 2/A or eq	15.9	29	9.4	37	16.5	28	7.6	47
BA or eq	7.9	14	1.7	7	8.8	19	2.9	19
MA or eq	3.3	5	0.6	2	3.4	7	0.3	3

Comparing disabled and non-disabled: urban: χ^2=14.60, $p = 0.11$. Rural: χ^2=14.83, $p = 0.01$.

Table 4. Bivariate regressions on highest grade achieved (=>15 years) ($N = 1512$).

Variable	Beta	*t*	*p*
Location (urban = 1)	−0.25	−9.91	<0.001
Gender (male = 1)	−0.01	−0.43	n.s.
Age	−0.14	−5.47	<0.001
Environmental barriers (12–48)	−0.06	−2.28	<0.05
WG6/activity limitations (0–18)	−0.10	−3.86	<0.001
Mental health (1–4)	0.05	1.85	0.06
Physical health (1–4)	0.03	1.09	n.s.
Impairment type			
Visual	−0.06	−1.51	n.s.
Hearing	−0.12	−2.83	<0.01
Visual and hearing	0.00	0.04	n.s.
Speech	−0.05	−1.33	n.s.
Mental	−0.11	−2.66	<0.01
Multiple	0.17	−3.98	<0.001

and 67.5%. The gender differences are sufficiently large to reach statistical significance for persons with disabilities (χ^2=12.33, $p = 0.031$) but not for non-disabled (χ^2=7.95, $p = 0.16$). Though the differences between males and females with and without disabilities were moderate, both were found to be statistically significant.

The expected urban–rural differences are demonstrated in Table 3. Among persons with disabilities, 60.9% of the urban and 77.9% of the rural subsamples state that their highest grade achieved is Standard 9 or lower (χ^2=31.77, $p < 0.001$). The corresponding figures for non-disabled are 49.4% and 72.8%. Further analyses revealed that there are significant urban/rural differences only among males. The difference between persons with and without disabilities is significant for both urban and rural respondents with urban respondents reporting higher school achievement than rural respondents.

Physical and mental health was measured by means of two questions asking respondents to assess their mental/physical health as either "poor", "not very good", good", or "very good". Individuals with disability scored lower on both measures. Among persons with disabilities, a total of 82.5% responded either "poor" or "not very good" on the physical health variable as compared to 21.9% among non-disabled. The corresponding figures for mental health were 65.2% and 21.9%.

Bivariate regressions were conducted for all selected predictors on Highest grade achieved in the education system (Table 4), including also impairment types transformed into dummy variables with physical impairment as root. Urban respondents achieve higher level of education, achievement reduces with age, increased environmental barriers, more severe disability and increases with better mental health. No gender differences in education achievement and no difference concerning physical health were found. Concerning the impairment types, lowest achievement was found for multiple impairments, followed by hearing, mental, and speech impairment. Individuals with physical impairments were the highest achievers, together with individuals with visual impairments and those with a combination of visual and hearing impairments.

Table 5. Stepwise multivariate regression of activity limitation, mental health, age, location, and environmental barriers on school achievement among children with and without disabilities who have accessed formal primary education (age=>15 years) ($N = 1508$).

Model	Variables	Beta	*t*	*p*
A	WG6/activity limitations	−0.10	−3.86	<0.001
B	WG6/activity limitations	−0.09	−3.41	<0.01
	Mental health	0.01	0.46	n.s.
C	WG6/activity limitations	−0.09	−3.22	<0.01
	Mental health	0.01	0.80	n.s.
	Age	−0.13	−5.27	<0.001
D	WG6/activity limitations	−0.08	−2.92	<0.01
	Mental health	0.02	0.72	n.s.
	Age	−0.14	−5.58	<0.001
	Location (urban/rural)	−0.25	−9.98	<0.001
E	WG6/activity limitations	−0.05	−1.83	0.07
	Mental health	0.01	0.34	n.s.
	Age	−0.14	−5.76	<0.001
	Location (urban/rural)	−0.24	−9.90	<0.05
	Environmental barriers	−0.06	−2.11	<0.05

The significant predictors in Table 4 were subsequently subject to a step-wise multiple regression analysis (Table 5). Increased environmental barriers, higher age, rural location (urban/rural), and increased activity limitations (disability) predict lower educational achievement among those who enter formal primary education. Location is the strongest predictor, followed by age, environmental barriers, and activity limitations. Suppression of the impact of mental health on school achievement (model B) indicates mediation through disability/activity limitations. The reduced strength in the association between activity limitations and school achievement as the regression model is expanded reflects that disability/activity limitation varies with and are thus mediated by socio-demographic variables.

Multiple regression analyses were also performed separately for the seven different impairment types. While *N* was too low for those with combined visual and hearing impairments ($N = 28$), it was also critically low for speech ($N = 72$) and mental impairments ($N = 112$) considering the complexity of the regression model. For physical, visual and hearing impairments, rural residency was associated with lower educational achievement. For visual impairment, there was also a negative association with degree of activity limitations. Among persons with hearing impairments and multiple impairments, there was a positive association between increased age and school achievement.

Discussion

We find that an alarmingly high proportion of persons in Nepal do not access formal education and that the situation is particularly serious for persons with disabilities especially for girls and persons living in rural areas. Among those who accessed education, persons with disabilities tend to achieve lower grades than non-disabled. Limitations in access and achievement in school restrict persons with disabilities in their strive for a level of living similar to persons without disabilities. Lamichhane and Sawada [28] analyzed data from the Nepal Living Standard Survey 2003/2004 and found high rates of returns to education among persons with disabilities in Nepal. This indicates that equitable access to

education may be a key factor for improving level of living among persons with disabilities.

The results reveal that reduced access among persons with disabilities, females and rural respondents as compared with non-disabled, males and urban respondents is a major problem that is assumed to contribute to other important differences in Nepal such as level of living and inclusion in society. Similar to the current study, both Lamichhane [23] and the World Disability Report [29] found persons with physical disabilities to achieve more in school compared to other impairment groups. This was however not found by Kuper et al. [22]. The variation between impairment types indicates that equal access requires measures at sub-group level. This may be both a matter of influencing attitudes and practices within the school system as well as among families.

The negative association between age and school achievement is interpreted to reflect an improvement and development/expansion of the school system and/or the perceived importance of education over time. In spite of a rather problematic situation regarding access to education, this is at least an indication of a positive development from one generation to the next. The role of the urban/rural dimension is as expected in that schools and particularly at higher levels are more available in urban areas. The difference here also reflects a socio-economic difference in that families that are better off in material terms to a higher degree can afford the education of their children. This argumentation brings in the aspect of poverty and the assumed relationship between poverty and disability which may have influenced the results on school access and attainment.

The broad measure on environmental barriers is also understandable; the more barriers individuals meet, the proportion that does not access for instance education will increase. While the association between disability/activity limitations and school achievement appears to be mediated by environmental barriers, it is suggested to imply that while barriers is a problem for everyone regardless of disability or not, they create more difficulties for persons with disabilities.

Nepal is a poor country with weak infra-structure, a particularly demanding topography, especially in rural areas, and challenges concerning physical accessibility to schools, lack of skilled manpower in schools and unavailability of teaching materials and tools for children with different types of impairments [22,23]. Even in poor contexts, persons with disabilities tend to be among the poorest and thus have an additional barrier for participation in society and access to basic services. Clearly, this situation contributes both to explain the general bleak situation concerning education in Nepal, and the particularly problematic situation for children with disabilities. Evidently, these particularly problematic circumstances need to be taken into consideration when interpreting results from this study as key determinants for persons with disabilities receiving and continuing formal education.

The study is cross-sectional and a combination of self-reported information and the household head responding on behalf of other household members. This means first that the study is only able to present associations and not cause–effect relationships. Second, both self-reports and by proxy may be affected by recall-bias and other types of response bias. It is also necessary to bear in mind that disability and poverty are known from many studies to be positively associated and that low access and attainment in school may be a result of both poverty and disability. Poverty may both influence negatively access/attainment and cause disability and the study is not able to distinguish between the two. Another concern is the influence on the results of the situation back in time due to the sample comprising persons of all ages, which may contribute to blur knowledge about the current situation. It may further be a limitation that we have not controlled for the influence of school proximity on attendance. The strength of the study lies in the use of an established albeit adapted design, the representativity and scope of the study and quality of the data collection.

Bearing in mind the above limitations, the current study provides unique data on access to education and school achievement among persons with disabilities in Nepal. Due to the limited research in Nepal on disability and education, this study is a contribution toward a knowledge base upon which to develop equitable educational policies and measures in Nepal. For the country to reach its obligations as a signatory to the Convention on the Rights of Persons with Disabilities, it will be necessary to address the rights of persons with disabilities as the country strive toward improving access generally. A two-pronged strategy will be necessary in both strengthening the entire educational sector and at the same time allocate resources that will ensure that all children are on board and that particular efforts are implemented to cater for those who easily will be sidelined when even the general child population is struggling to obtain education.

Disclosure statement

No potential conflict of interest was reported by the authors.

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