JOURNAL OF HEALTH PROMOTION
Volume 13, 2025, **pp:** 55-64
ISSN: 2631-2441 (Print)
ISSN: 2822-1591 (Online)

Review Article

Assistive Device Needs for Children with Disabilities in Nepal: A Census Analysis

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Abstract

Children with Disabilities (CwD) in Nepal face widespread exclusion from formal education, primarily due to limited access to assistive devices. Although Article 31 of the Constitution of Nepal mandates an inclusive education policy ensuring the right to quality education for Persons with Disabilities (PwDs), many children with visual and hearing impairments in schools lack access to basic assistive devices. This study aims to estimate the need and associated costs for basic assistive devices for school-enrolled Children with hearing and visual impairments. Descriptive analysis of data from the Nepal Population and Housing Census (NPHC) 2021 using Statistical Package for Social Science (SPSS) and cost estimates based on the Priority Assistive Product List of Nepal 2018, the study provides essential insights into the resource requirements. The findings indicate that 114,671 school-enrolled children with visual and hearing impairments require basic assistive devices, with 35% in basic education and 19% in secondary education. The total estimated cost to meet this demand amounts to NPR 920,968,600. The study concludes by emphasizing the need for different tiers of government and decision-makers to critically review on their programmatic assumptions and policies to foster a more inclusive educational environment to address the assistive device needs for students with hearing and visual impairments. This research addresses a critical knowledge gap and offers actionable recommendations to improve educational access for CwD through policy implications.

Article History

OPEN ACCESS

Received: 21 July 2025

Accepted: 12 October 2025

Published: December 2025

DOI:

https://doi.org/10.3126/jhp.v13i1.87163

Keywords

Persons with disability; Children with disability; Hearing impairment; Visual impairment; Assistive device

Introduction

Children with Disabilities (CwD) face persistent exclusion from mainstream education in Nepal, characterized by lower school enrollment, attendance rates, and educational attainment compared to their non-disabled peers (Dutta, 2024). They were on average ten times less likely to attend school than children without disabilities were and even when they did attend; their level of schooling was below that of their peers (Kuper et al., 2014). This exclusion is fundamentally rooted in societal stigma, limited accessibility, and a failure to provide inclusive learning and social settings (Yousef, 2018). According to the Act Relating to the Rights of Persons with Disabilities (2017), "person with a long-term physical, mental, intellectual or sensory disability or functional impairments that may hinder his or her full and effective participation (p. 1)".

Both international (Universal Declaration of Human Rights (UDHR 1948) Article 26; UN Convention on the Rights of Persons with Disabilities (UNCRPD) Article 24) and national

(The Constitution of Nepal 2015; School Education Sector Plan (SESP) 2022/23 - 2031/32) frameworks mandate and emphasize the right to an inclusive and equitable quality education for all children. The Goal 4 of the 2030 Sustainable Development Goals (SDGs) seeks to ensure an inclusive and equitable quality education for all (United Nations, 2015). The Constitution of Nepal (2015) state all citizens, citizens with disabilities, and economically indigent citizens have the right to get compulsory and free education up to the basic level (Nepal Law Commission, 2015).

Nepal has initiated progress toward inclusive education through legal rights like the Act Relating to the Rights of Persons with Disabilities (2017) and the establishment of special and integrated schools (Barriga, 2011). However, these efforts are significantly hampered by a lack of funding, a shortage of trained staff, and limited provision of essential assistive devices (WHO & UNICEF, 2022). Consequently, CwD enrolled in formal education often do not receive an appropriate learning environment at school due to prevailing beliefs and perspectives that they cannot easily learn in the classroom (Tiwari & Sharma, 2015).

For students with hearing and visual impairments, assistive devices are critical to bridging the gap between an inaccessible environment and successful learning (Tangcharoensathien et al., 2018). Devices such as hearing aids, and Braille displays and screen readers are necessary tools for accessing auditory and visual information in the classroom (Lamichhane, 2013). Despite this essential need, these students face systemic barriers, leading to widespread exclusion, lower academic performance, and limited life opportunities (Adhikari et al., 2024; Kuper et al., 2014; Lamichhane, 2013). The provision of these products should embody a people-centered service approach.

The systemic challenges faced by CwD in Nepal, including low attendance and poor learning outcomes due to societal stigma and inaccessible infrastructure. However, a specific analysis quantifying the prevalence of hearing and visual impairments among school-aged children and their need for assistive devices using the latest national data is critically lacking. This study addresses this gap by leveraging the comprehensive dataset of the Nepal Population and Housing Census, 2021.The objective of this study is to provide evidence-based insights to inform the educational disparities experienced by students with hearing and visual impairment in Nepal, specifically by analyzing the existing status and their need for assistive devices. This is further divided in to two research questions.

a. What is the prevalence of school-age children with hearing impairments and visual impairments, as identified by the Nepal Population and Housing Census, 2021?
b. What is the estimated quantitative need and cost for assistive devices among school-age children with hearing and visual impairments in Nepal, based on the findings of the Nepal Population and Housing Census, 2021?

Methods and Materials

Study Design

The study employed a descriptive-analytical approach, utilizing data from the Nepal Population and Housing Census (NPHC) 2021, focusing on children aged five years and above with hearing and visual impairments and their educational attainment. The researcher conducted a comprehensive review of existing literature on constitutional, policy, and legal provisions

related to PwDs in Nepal. The main analysis is based on census data, the literature review is supplementary, not the primary design for this study.

Data Source

The National Population and Housing Census (NPHC) 2021 data for this analysis was sourced from the publicly accessible dataset of the National Statistics Office (NSO) of Nepal. The NSO, formerly known as the Central Bureau of Statistics (CBS), is the official government body responsible for collecting and disseminating NPHC data. The dataset used is from the NSO's official website, specifically from its census portal at https://nsonepal.gov.np/censusnepal.cbs.gov.np/.

Data Processing

The dataset was precisely cleaned and pre-processed by fixing errors, filling unique code for missing information and included data from permanent households that had full details about their demographics and housing to ensure accuracy and usability for percentage and frequency analysis as part of the descriptive statistical analysis. Any records that were incomplete or duplicated were left out. The study recognizes that using existing data has some limitation, such as not knowing exactly how the data was collected originally, and sometimes important information that study needed wasn't available in the dataset.

Data Analysis

The data for this study was analyzed focused on the frequency and percentage distributions of key variables i.e. demographic factor, educational attainment, type of disability, population with hearing and visual impairment, school age children and type of disability. All statistical procedures were conducted using the Statistical Package for Social Sciences (SPSS). Descriptive statistics, specifically cross tabulation, frequency counts and percentages, were calculated to summarize the demographic characteristics of the persons with disabilities. The results of the analysis are presented in tables.

Ethical Consideration

Ethical considerations were carefully integrated throughout the study process, particularly during data collection. While using publicly available data mitigated privacy concerns, the researcher remained mindful of the ethical responsibility to represent the data respectfully and accurately, ensuring that findings contribute to informed policy discussions and improvements in educational access for students with hearing and visual impairments.

Results

The findings provide a clear picture of the status of individuals with disabilities enrolled in formal education, their need for basic assistive devices, and the estimated costs required to procure these devices.

Demographic Information

The NPHC, 2021 found that about 2.2% (647,744 persons) of the population had a disability with a slightly higher prevalence among males. Among the total population with disabilities female with disability percentage is 2% and males with disability are 2.5%.

Table 1. *Population with Disability by Type of Disability and Age Group (N=647,744)*

Age Groups/ Disability Type (%)	0-4	5-9	10-14	15-19	20-29	30- 39	40- 49	50-59	60.+	Total %
Physical Disability	6	6	5	8	12	11	12	14	25	**37**
Low vision	1	2	3	5	6	6	9	17	50	**17**
Blind	12	12	9	9	11	10	8	8	19	**5**
Deaf	2	4	5	7	6	6	9	18	46	**8**
Hard of Hearing	1	2	3	4	7	6	9	17	50	**8**
Deaf and Blind	5	6	4	7	8	7	7	12	43	**2**
Speech Problem	2	7	8	8	13	11	13	18	19	**6**
Mental Problem	1	3	7	10	22	19	14	11	13	**4**
Intellectual Disability	2	7	10	11	21	14	11	10	14	**2**
Hemophilia	4	5	6	6	14	15	15	14	21	**1**
Autism	22	16	7	6	9	8	7	9	16	**1**
Multiple Disability	5	7	7	8	14	11	10	13	25	**9**
Total	**4**	**5**	**5**	**7**	**11**	**10**	**11**	**15**	**32**	**100**

The prevalence of disability is highest among the elderly, with nearly one-third (32%) of the population with disabilities being 60 years or older. It is also significant that school-age children (5-19 years) constitute 17% of the total population with disabilities, highlighting the substantial need for targeted support and inclusive educational resources for this group.

Hearing and Visual Impairment

Table 2. *Population with Hearing and Visual Impairment by age (***N=251,543)**

Age Group	Low vision	Blind	Deaf	Hard of Hearing	Deaf and Blind	Total	Percentage
05 - 09	2,154	4,375	1,821	1,179	581	10,110	**4**
10 – 14	3,212	3,266	2,431	1,764	394	11,067	**4**
15 – 19	5,336	3,172	3,380	2,148	750	14,786	**6**
20 – 29	6,924	3,935	2,916	3,480	830	18,085	**7**
30- 39	6,731	3,606	2,862	3,277	723	17,199	**7**
40- 49	10,247	2,904	4,496	4,681	742	23,070	**9**
50-59	19,043	2,973	9,007	8,881	1,216	41,120	**16**
60+	55,786	6,646	23,616	25,636	4,413	116,097	**46**
Total	**109,433**	**30,877**	**50,529**	**51,046**	**9,649**	**251,534**	
%	**44**	**12**	**20**	**20**	**4**		

Among the total population with hearing and visual impairments, 46% belong to the 60 and above age group, followed by 16% from the 50-59 age group, 9% from the 40-49 age group, and 7% from the 20-29 age group. School-age children (5-19 years) account for 14% of the population. Data shows that while most persons with hearing and visual impairments are older adults, a significant portion are school-age children. This means that efforts to help persons with these disabilities must focus on two different groups: older individuals who need support for their daily lives and younger individuals who need resources to succeed in school.

Table 3. *Age 5 years and Above out-of-School Population with Visual and Hearing Impairment (N=136,863)*

Type of Disability	Male (n)	Percentage	Female (n)	Percentage	Total (n)	Percentage
Low vision	21,436	36	38,900	64	**60,336**	**44**

Blind	4,584	41	6,689	59	**11,273**	**8**
Deaf	13,081	43	17,048	57	**30,129**	**22**
Hard of hearing	11,809	40	17,963	60	**29,772**	**22**
Deaf and Blind	2,266	42	3,087	58	**5,353**	**4**
Total	**53,176**	**39**	**83,687**	**61**	**136,863**	

Out of the total population of individuals with visual and hearing impairments aged 5 and above, a significant number 136,863 people, or 45.5% are not enrolled in school. The data highlights a notable gender disparity among this group, with females making up 61% of those out of school. The most common impairments among the school-going population are low vision (44%), followed by equal percentages of individuals who are deaf and hard of hearing (both at 22%). These statistics reveal a critical need for policies and programs that address the barriers preventing female students with disabilities from attending school, while also tailoring support to the specific needs of students with low vision and hearing impairments.

Table 4. *Age 5 years and Above School-Going/Enrolled in Formal Education Children who need Assistive Devices (N=114,671)*

Types of Disability	**Low vision**	**Blind**	**Deaf**	**Hard of hearing**	**Deaf and Blind**	**Total**	**Percentage**
Early childhood	738	1,324	479	382	198	**3,121**	**3**
Primary	15,872	6,798	7,808	8,274	1,555	**40,307**	**35**
Lower Secondary	8,628	3,756	4,248	4,119	840	**21,591**	**19**
Upper secondary	6,664	2,682	2,900	2,648	582	**15,476**	**13**
S.L.C./ SEE & equivalent	4,481	1,481	1,481	1,544	375	**9,362**	**8**
10+2 and above	12,714	3,563	3,484	4,307	746	**24,814**	**22**
Total (N)	**49,097**	**19,604**	**20,400**	**21,274**	**4,296**	**114,671**	

Of the students aged five and above with visual and hearing impairments who are in school, the need for assistive devices is highest at the primary level (35%). The demand decreases as students' progress to lower secondary (19%) and upper secondary levels (13%). This suggests that early intervention and support with assistive devices are critical for foundational learning, with the need becoming less frequent in later educational stages, possibly due to a drop-off in school attendance for those with more severe needs or a failure to provide continuous support. Estimating the Need for Assistive Devices

Accurate data on the need for assistive devices is a major requisite for planning and developing services. The need for assistive devices for the age 5 years and above population enrolled in formal education was estimated based on the NPHC 2021 data set and the device and rate mentioned in the Priority Assistive Product List of Nepal, 2018. The tables in the below section will illustrate the cost estimate for the assistive device.

Table 5. *Age 5 Years and Above School-Going/Enrolled in Formal Education Persons with Visual Impairment Assistive Device need and cost*

Types of Device/Disability	**Visual Imp (Pop)**	**Spectacles (NPR 1000/unit)**	**Magnifying Glass (NPR 800/unit)**	**White Canes (NPR 1000/unit)**	**Braille Writing (NPR1000/unit)**	**Total NPR**
Early childhood	2,062	2,062,000	1,649,600	2,062,000	2,062,000	**7,835,600**
Primary	22,670	22,670,000	18,136,000	22,670,000	22,670,000	**86,146,000**
Lower secondary	12,384	12,384,000	9,907,200	12,384,000	12,384,000	**47,059,200**
Upper secondary	9,346	9,346,000	7,476,800	9,346,000	9,346,000	**35,514,800**
SLC/SEE and	5,962	5,962,000	4,769,600	5,962,000	5,962,000	**22,655,600**

equivalent						
10+2 and above	16,277	16,277,000	13,021,600	16,277,000	16,277,000	**61,852,600**
Total (N)	**68,701**	**68,701,000**	**54,960,800**	**68,701,000**	**68,701,000**	**261,063,800**

The population aged 5 and above enrolled in formal schooling and experiencing visual impairment requires assistive devices amounting to NPR 261,063,800. This estimated cost encompasses assistive tools such as spectacles, magnifying glasses, white canes, and Braille writing materials. Among primary and lower secondary level students, there is a greater need for support among primary-level students, followed by secondary-level students.

Table 6. *Age 5 Years and Above School/Formal Education Hearing Impairment Persons Assistive Device need and cost*

Types of device/Level of Education	**Hearing Imp (Pop)**	**Hearing Aid (NPR 12000/unit)**	**Face to Face Comm Soft (NPR2000/unit)**	**Total NPR**
Early childhood	861	10,332,000	1,722,000	**12,054,000**
Primary	16,082	192,984,000	32,164,000	**225,148,000**
Lower Secondary	8,367	100,404,000	16,734,000	**117,138,000**
Upper secondary	5,548	66,576,000	11,096,000	**77,672,000**
SLC/ SEE and equivalent	3,025	36,300,000	6,050,000	**42,350,000**
10+2 and above	7,791	93,492,000	15,582,000	**109,074,000**
Total (N)	**41,674**	**500,088,000**	**83,348,000**	**583,436,000**

The population of hearing-impaired individuals aged 5 years and above requiring assistive device support amounts to NPR 583,436,000. Although local, provincial, and federal governments have inclusive education policies, the reflection of these policies in their programs and budgets is not evident. The three tiers of government could enhance support for their education by allocating a budget specifically for assistive devices for the hearing-impaired population.

Table 7. *Age 5 Years and Above School/Formal Education Multiple Disabilities deaf and Visually Impaired Persons Assistive Device need and cost*

Types of Deaf and Blind Disability/Level of Education	**Population**	**Hearing Aid (NPR 14,000)**	**Visual Aid Set (NPR 3,800)**	**Total Set**
Early childhood	198	2,772,000	752,400	**3,524,400**
Primary	1,555	21,770,000	5,909,000	**27,679,000**
Lower Secondary	840	11,760,000	3,192,000	**14,952,000**
Upper secondary	582	8,148,000	2,211,600	**10,359,600**
S.L.C./ SEE & equivalent	375	5,250,000	1,425,000	**6,675,000**
10+2 and Above	746	10,444,000	2,834,800	**13,278,800**
Total (N)	**4,296**	**60,144,000**	**16,324,800**	**76,468,800**

The deaf and blind population, constituting 4% of the total population aged 5 and above, requires assistive devices amounting to NPR 76,468,800 for school or formal education. If provided access to these devices, these population groups can learn course content and broaden their knowledge. Therefore, the local government needs to prioritize these supports in their program and budget by their social inclusion policies and priorities.

Discussion

This study computed the immediate need for basic assistive devices among school-enrolled children with visual and hearing impairments in Nepal, utilizing data from the Nepal Population and Housing Census, 2021. The findings reveal a critical resource gap, demonstrating that existing policy mandates for inclusive education are not translating into effective, budgeted provision. The central quantitative finding that 114,671 school-enrolled children with visual and hearing impairments require basic assistive devices, necessitating an investment of approximately NPR 920.97 million underscores the massive scale of the challenge facing Nepal. This is a minimum baseline cost, particularly considering the high proportion of affected students with low vision (44%) and those identified as hard of hearing (22%). This need is most pronounced at the Primary level, accounting for 35% of the total requirement. This high demand among younger children is consistent with global literature emphasizing that the lack of early intervention and support through assistive products leads to poorer academic outcomes and lower school attainment (Kuper et al., 2014). The progressive drop-off in demand at higher educational levels (Lower Secondary: 19%; Secondary: 13%) likely reflects not success, but rather the cumulative effect of educational exclusion on CwD who lack continuous support. Beyond functional capability, access to appropriate assistive technologies is vital for fostering social engagement and emotional well-being, crucial for full participation in the learning environment. As Mahmoudi et al. (2025) emphasize, "the assistive technologies serve to facilitate participation in everyday activities, educational pursuits, and employment opportunities by addressing various barriers, assistive technology significantly contributes to improving the quality of life for individuals with disabilities (p. 46)".

The substantial cost, particularly the NPR 583.4 million attributed to hearing aids, highlights a critical disconnect between the inclusive goals outlined in the Constitution of Nepal (Article 31) and the School Education Sector Plan (SESP), and the actual financial planning and resource allocation at the three tiers of government (Sahani, 2025). This lack of effective provision is corroborated by studies indicating that local government planning often fails to prioritize and provide essential assistive devices (Mwaijande, 2014). This budget allocation must be supported by comprehensive, up to date information. As Mishra et al. (2021) emphasize, the development of an effective national assistive products list requires comprehensive data related to total need, cost-effectiveness, and system analysis to inform policy and resource prioritization. This study, by providing the crucial total need and cost data, offers the necessary empirical evidence for Nepal's policymakers to move towards a data-driven approach.

Furthermore, the data reveals a profound societal challenge; persistent gender disparity in exclusion. The findings show that out of the population aged five and above with visual and hearing impairments not enrolled in school, 61% are female. This suggests that societal misconceptions, cultural stigma, and family economic vulnerability disproportionately impact girls with disabilities, compounding the challenges of disability and gender in accessing education (Poudel & Sapkota, 2019; Banks et al., 2019). The data emphasizes that achieving quality inclusive education (SDG 4) requires not only resource provision but also targeted social interventions. Local planners and decision-makers must critically reflect on their underlying beliefs, assumptions, and values regarding the learning capabilities of CwD, questioning and potentially altering these foundational elements to improve formal education. The investment from the different tire of the government for producing a trained workforce and providing assistive devices to CwD needs to be mainstreamed in their local and national program and plan (World Bank, 2020).

Limitation of the Study

The NPHC 2021 offers a robust sample size, it relies on self-reporting of disability status. Furthermore, the census data does not capture the severity of the impairment and the specific reasons for non-attendance. The cost estimates are also based on the 2018 Priority Assistive Product List of Nepal, and actual procurement costs may vary due to inflation and market fluctuations. Future research should focus on primary data collection to assess the qualitative barriers to device utilization and the effectiveness of inclusive education environments in schools where devices have been provided.

Conclusion and Implications

The study has contributed to generating new knowledge by providing the critical empirical evidence necessary to move Nepal's inclusive education agenda forward to translates abstract policy mandates into concrete, budgeted financial requirements. The most critical personal insight drawn from this study is recognizing the prevalent illusion of policy compliance within Nepal's inclusive education efforts. The out of school population of CwD, particularly the majority of females, demonstrates that the current system is passively filtering out the most vulnerable populations instead of actively supporting them. This insight shifts the focus from what policies exist to how financial and systemic assumptions actively undermine policy goals. The critical resource gap, demonstrating that existing policy mandates for inclusive education are not translating into effective, budgeted provision. To overcome this, it is crucial that the federal, provincial, and local governments allocate specific, dedicated budgets for these life-changing assistive devices, considering the findings of this study as a basis. The calculated resource need must be treated as a minimum resource for action. The three tiers of government must align their social inclusion policies with dedicated financial allocations to bridge this documented gap, prioritizing basic assistive device procurement for CwD and implementing gender-sensitive programs to bring and retain excluded girls with disabilities back into the classroom.

The study's focus on quantifying the need must be complemented by an emphasis on the quality and usability of the products provided. Simply procuring devices is insufficient if they are not appropriate for the rugged environment, culturally relevant, or properly maintained. To ensure assistive technologies are truly useful and easy to use, people with disabilities must be included as active partners in the design and testing processes (Cooper et al., 2023). Therefore, resource provision must be coupled with robust service delivery systems that incorporate user feedback to ensure the devices are truly effective and lead to better educational outcomes.

Acknowledgments

The author would like to thank Dr. Suresh Gautam, Head of Department, Department of Development Education, KUSOED, for providing guidance, support and input while writing this manuscript. I would also like to thank all colleagues and reviewers who commented on this manuscript.

Funding

No funding was received for research and publication.

Conflict of Interest

The author declares no conflict of interest in publishing this paper.

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