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Impact of the COVID-19 pandemic on the lives of persons with disabilities in rural Nepal: A mixed method study

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1. Introduction

COVID-19 was declared a pandemic by the World Health Organization (WHO) on 11th March 2020 [1]. Since then, it has affected all sectors and people from every walk of life worldwide. Nepal is no exception [2–5]. Between the identification of the first COVID-19 case in Nepal on 17th January 2020 and the time of writing this paper, 809,056 people out of the population of 29 million have tested positive and 11,348 have died of COVID-19 [6]. Similar to most other countries, the Government of Nepal has deployed various means of controlling the spread of the virus, including national and localized lockdowns (starting from 24th March 2020), the dissemination of awareness messages, a large-scale testing and contact tracing programme, and quarantine/self-isolation rules for contacts of positive cases [4,7–9]. Furthermore, at various points in the pandemic travel restrictions were put in place, international borders were closed, and domestic transport services were restricted [10]. These restrictions were lifted slowly [11] and life was returning to near normality until the 2nd wave of the pandemic hit Nepal in late April/early May 2021, when restrictions were imposed once again. These measures had a significant impact on almost all economic activities in the country [12].

According to the 2011 census, Nepal is home to at least 600,000 Persons with Disabilities (PWDs), many of whom live in rural areas. The 2015 Constitution of Nepal guarantees the right of PWDs to equal opportunities and federal law explicitly prohibits discrimination against any form of disability. The Disabled Protection and Welfare Regulation Act (2051/1994), the ratification of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) in 2010 [13], and the Disability Rights Act 2017 have all guaranteed the rights of PWDs in Nepal. Despite these protections, PWDs in Nepal often face disadvantage and discrimination [14,15].

In many countries of the world, it has been noted that the effects of the COVID-19 pandemic have been most acute for those who were already disadvantaged, not least PWDs [16–21]. Studies have shown that the pandemic has affected the mental health of PWDs [22–24], their economic status [25], and their access to resources and services [16,18,24,26]. In addition, PWDs have often been especially vulnerable to the virus itself as a result of a lack of knowledge, pre-existing health conditions, barriers to accessing health and hygiene measures, and their reliance on personal carers making it impossible to maintain social distance [2,7,27]. In Nepal, it has been noted that PWDs, along with poor people, women, children, and daily waged workers, have been the most affected [1,12]. But while some countries took additional measures to support PWDs through the pandemic [19], in Nepal these have been minimal.

Little research has been able to quantify the impact of the pandemic on PWDs in Nepal, or to provide a comparative in-depth understanding of the lived experiences of PWDs before and during the pandemic. We conducted a mixed method study to generate more complete and validated evidence. In addition, combining qualitative and quantitative data collection will provide an integrated comprehensive understanding of the impact of COVID-19 pandemic in the lives of PWDs. From this study, we seek to address the following research questions.

a) What level of knowledge and awareness of the pandemic did PWDs have?
b) How has PWDs' access to healthcare services and assistive devices been affected by the pandemic?

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c) How has the pandemic impacted on the mental health of PWDs?
d) How have PWDs' livelihoods been affected by the pandemic and government restrictions?

2. Methods

2.1. Study design and sample

This is a mixed method study to understand how PWDs perceive the impact of COVID-19 on their lives. We simultaneously conducted a cross-sectional survey and in-depth interviews (IDIs) with persons with disabilities (PWDs). The participants were selected from the cohort of 1138 PWDs who participated in our previous study, who were identified through census in March–April 2019 from Ajirkot, Gandaki and Dharche Rural Municipalities of Gorkha District, Nepal. The main objective of the previous study was to identify vulnerable populations, and the most vulnerable groups and individuals among them, and assess their vulnerability to plan interventions for reducing vulnerability and improving livelihoods. PWDs, vulnerable single women, vulnerable elderly, IDPs after resettlement, extremely poor and food insecure were included in the previous study. As a result of having carried out this large-scale survey of PWDs in Gorkha District shortly before the pandemic (in March/April 2019), we were able to resurvey/re-interview respondents from the same cohort in April/May 2021 (at the point at which Nepal's 'second wave' was just beginning) to allow for a unique comparative analysis.

The larger study was conducted in four rural municipalities of Gorkha district, Nepal in 2019. We identified the number of PWDs in one municipality through census and in the other three through snowballing. Although we had initially planned to conduct a full census in all rural municipalities, time and resource constraints limited us to completing the census only in one municipality.

For the census, a roster was prepared for each household, detailing the name, gender, and age of each household member. Enumerators asked if any members fell into any of the vulnerable groups, including persons with disabilities (PWDs). If any PWDs were identified, detailed interviews were conducted with PWDs as appropriate, or with a caregiver/representative. Enumerators were encouraged to include additional households in the survey if they received any indication that these should be included. The selection of the target sample to be surveyed was as comprehensive as possible.

During the snowballing method, the enumerators kept interviewing the PWDs identified through community meetings and interviewees themselves, till no more participants were suggested.

In this follow-up study, in addition to an updated assessment of the situation of PWDs who had originally participated in 2019, we explored the impact of COVID-19 through additional questions related to COVID-19 in the survey questionnaire and IDIs. Using a sampling framework to revisit a sub-set of the previous cohort allowed for a direct comparison of their situation before and during the pandemic. We used the Consolidated criteria for Reporting Qualitative Research (COREQ) checklist for the development and reporting of the qualitative data gathered in this study.

For the quantitative study, we calculated our sample size using the statistical formula $n = z2pq/d2$ (where n denotes sample size, z – statistics for confidence level, usually set at 1.96, and d denotes degree of accuracy). This resulted in a sample size of 243. In practice, we sampled a slightly higher number ($n = 254$) during the fieldwork conducted in April and May 2021. We used a simple random sampling to select our study participants from among the 1138 who had been surveyed before COVID-19. All the participants selected consented to participate in this follow-up study. We asked these 254 participants to complete the same survey questionnaire used in 2019, with the addition of a number of specific questions on the impact of the COVID-19. Their responses were person-matched, allowing for a direct comparison between the same 254 participants in 2019 and 2021. The survey was administered during a home visit.

In addition, a purposive sample of 40 PWDs, drawn from the 254, took part in an In-Depth Interview (IDI), conducted face to face, on their experiences of COVID-19. The interviews were conducted at participants' homes, or at another place of their convenience. To maintain confidentiality, participants were interviewed in a quiet place without any disturbance. To make the sample representative of male, female, different castes and different types of disabilities we purposively selected these 40 PWDs from the group of 254 who participated in the survey.

Due to the focus of the original pre-pandemic project, only PWDs with mobility or vision-related disabilities were included, and only PWDs over 18 years of age were included. PWDs with other types of disabilities, and those below 18 years of age, were excluded from our study. For the IDIs, those who were not able to communicate and participate independently were also excluded.

2.2. Ethical considerations

Prior to conducting this research, we obtained ethical approvals from the University of Sheffield ethical review board and the Nepal Health Research Council (Ref No. 203–2021). Before conducting the survey and the interviews, we explained to the participants the purpose of the research. We informed them of the voluntary nature of their participation and their right to withdraw from the study at any time. We obtained written consent for the survey and/or interview and for audio recording of the interviews. In the case of participants who could not read and write (including those with visual impairments), the study information and the consent forms were read aloud by the interviewer and audio recorded consent was obtained, along with written consent from a family member.

2.3. Data collection, tools and techniques

We developed our original 2019 survey questionnaire based on the Washington Group Short Set on Functioning (WG-SS) Questions on Disability [28]. In 2021, we added some extra questions to the survey focusing specifically on the impact of COVID-19. The outcome variable of our study was the impact of COVID-19 on the lives of PWDs. Socio-demographic characteristics (age, sex, educational status and geographic area), access to services (health services and livelihood opportunities, mobility and rehabilitation), psychological distress, and knowledge of COVID-19 were the predictors studied. To ensure the suitability of the survey tool, we piloted the survey questionnaire with 10 PWDs in Lalitpur district, Nepal, and made some minor amendments. We collected survey data using the online data collection platform Kobo Toolbox installed on smartphones.

For the qualitative part of our study, we prepared an interview guide and piloted that with four participants in Lalitpur district, Nepal. Interviews were conducted in Nepali, transcribed in Nepali, and then translated them into English. On average, the length of interviews was between 30 and 60 min. Along with the recordings, observational notes were also taken in the field. Four researchers with extensive experience in qualitative research (3 females and 1 male) conducted all the interviews. Before starting each interview, we introduced ourselves to the participant, maintained a good relationship and used neutral terms throughout the interview. None of the participants refused to participate in our study. Data was collected until saturation was reached and no new information was being generated.

2.4. Data analysis

After completing the quantitative data collection, the data were downloaded to a computer for data cleaning and analysis. SPSS 24 statistical software was used to analyze the data, using descriptive statistics to calculate frequencies and percentages.

We used a reflexive thematic approach to analyze the interviews. In the first step, all of the recorded interviews were listened to and/or read many times. After that, initial codes were developed and subsequently combined to create a refined codebook in which codes were grouped into major thematic categories. NVivo software (version 12 pro, QRS international) was used. KII transcripts were coded by five researchers against the following themes: awareness/knowledge of COVID-19; access to healthcare and assistive technology services; mental health; and livelihoods. The KII findings were subsequently triangulated with the findings from the survey. Quotes from the KIIs are presented below to support and contextualise the survey findings.

3. Results

There were 254 survey respondents in April/May 2021, of which 113 (44.5%) were female and 141 (55.5%) male. Ages ranged from 18 to 94 years. 15.4% were from the Brahmin/Chhetri castes, 72% Adibasi/Janajati, and 12.6% Dalits. Of the 40 interviewees, 14 were female and 26 male, with ages ranging from 19 to 84 years. Thirty-seven had a mobility-related disability and three had a vision-related disability, 17.5% of KII participants were from the Brahmin/Chhetri castes,72.5% Adibasi/Janajati, and 10% Dalits (see Table 1).

3.1. PWDs' knowledge and awareness of COVID-19

88.8% of participants reported having knowledge about the pandemic and about preventive measures. The findings from our qualitative study supported this, with the vast majority of PWDs being aware of the COVID-19 pandemic. Interview participants were aware of the initial spread of disease and the second wave that was emerging at the time of the fieldwork:

> *"At first, corona was seen in China then in America, and now it has increased in India as I heard on the radio (PWD_AJ_05)"*).

Table 1
Socio demographic characteristics of participants (n = 254).

Variables	Number (%)
Quantitative data	
Age (Mean ± SD) in years	(50 ± 20)
Sex	
Male	141 (55.5)
Female	113 (44.5)
Ethnicity	
Brahmin/Chhetri	39 (15.4)
Adibasi/Janajti	183 (72)
Dalit	32 (12.6)
Education	
Informal Education	38 (15)
Primary Level (Class1-5)	49 (19.3)
Secondary Level (Class6-10)	24 (9.4)
Higher Secondary Level (11–12)	7 (2.8)
University Degree	5 (2)
Uneducated	131 (51.6)
Disability	
Physical Disability	149 (58.7)
Visual Disability	34 (13.4)
Hearing Disability	36 (14.2)
Deaf Blind Both	7 (2.8)
Vocal And Speech	31 (12.2)
Intellectual Disability	11 (4.3)
Mental Illness	21 (8.3)
Multiple Disability	11 (4.3)
Descriptive data of in-depth interviews (n = 40)	
Aware about COVID-19	38 (95)
Impact on access to health services	32 (80)
Impact on access to AT services	14 (35)
Impact on access to Transportation services	34 (85)
Impact on livelihood	36 (90)
Impact on mental health	33 (82.5)

Interviewees also stated that COVID-19 was a dangerous disease that could cause threat to life.

3.2. Impact on access to healthcare and assistive devices for PWDs

In the 2019 survey, we found that very few respondents (5.1%) had knowledge of their constitutional rights (e.g. access to health services and their right not to be discriminated against). This had almost doubled in the 2021 survey, although it remained at a low level (9.8%). However, 82.6% of PWDs reported difficulty in accessing health care in 2021 compared to 71.7% in 2019.

In terms of the impact of COVID-19 on access to health services, 83.7% of survey respondents felt that the travel restrictions/lockdowns had affected their ability to attend health facilities. The table (Table 2) below show the health service disruption that respondents had experienced as a result of COVID-19:

The lack of transportation during the pandemic was identified by almost all survey participants as the major barrier to accessing health services. This was also the case in the IDIs:

> *"Since transportation facilities were not available during that time, people had to walk for many hours to reach places. To go to a place where a non-disabled person can walk in one hour, it takes us 3–4 hours. Sometimes, it takes a whole day for us to walk, whereas other people can reach there in two hours (PWD_DC_04)".*

In addition to transportation issues, our qualitative study also showed that fear of contracting the virus and the disruption of primary health centres also reduced access to health services.

> *"I even faced shortages of medicine. Health centres are quite far from here. Usually, it takes 2-3 hours to get there. During the time of corona, it was difficult to get medicines even for fever and headache. I was too scared to go. People who went there didn't get medicines because it was closed (PWD_GD_07)".*

Despite these additional challenges, in comparing the 2021 and 2019 surveys there was only a minor difference in the level of difficulty PWDs reported in accessing health services - and the reported behaviour of health workers towards PWDs had actually improved, as shown in Table 3.

In addition to general health services, we found that the majority of PWDs also had difficulty in accessing Assistive Technology (AT) services during the pandemic, due to problems at various points in the supply chain. These difficulties, coupled with the government restrictions on movement, significantly affected the mobility of PWDs during the pandemic (Table 2).

Notwithstanding these issues, overall, we found a significant

Table 2
Health service disruption experienced (2021) N = 254.

Variables	N (%)
Non availability of hospital care during lockdown	99 (92.5)
Disruption in corrective surgeries for existing disabilities, including congenital disability	33 (30.8)
Unavailability of medicines	78 (72.9)
Disruption in ongoing therapies to reduce impact of disability and disability related complications	12 (11.2)
Problems in access to assistive devices due to repair and maintenance problems	6 (5.6)
Lack of transportation to access rehabilitative services	15 (14.0)
Lack of transportation in general	106 (95.5)
Lack of assistive devices	41 (36.9)
Health facilities closed	52 (46.8)
Unavailability of health person/staff	32 (28.8)
Lack of medicines	53 (47.7)
No possibility of the home visits for health services	14 (12.6)
Lack of rehabilitative services	17 (15.3)

Table 3
Level of difficulty to access health care, AT services and Type of AT devices. (N = 254).

Variables	2019	2021
Difficulties to access health care	N (%)	N (%)
Very difficult	97 (38.2)	89 (35)
Somewhat difficult	85 (33.5)	121 (47.6)
I never go to health services	43 (16.9)	6 (2.4)
No difficulty	29 (11.4)	38 (15)
Health workers' behaviour towards PWDs		
Very Nice	23 (9.1)	33 (13)
Nice	129 (50.8)	155 (61)
Fair	102 (40.2)	57 (22.4)
Difficulties to access AT services (2021)		
Disruption in the manufacture of assistive devices		52 (92.9)
Problems in repair and maintenance		28 (50)
Lack of proper infrastructure		41 (73.2)
Problems in procurement (new users)		26 (46.4)
Types of Assistive Devices used		
Hearing Device	19 (7.5)	2 (2.2)
Glasses/magnifying glass etc	13 (5.1)	5 (5.6)
Crutches	20 (7.9)	26 (29.2)
Wheelchair	12 (4.7)	16 (18)
White cane	22 (8.7)	12 (13.5)
Artificial limb/hand	14 (5.5)	5 (5.6)
Locally Produced Stick[a]	–	23 (25.8)
Sitting Toilet[a]	–	3 (3.4)
Prosthesis Stick[a]	–	2 (2.2)
Any other[a]	169 (66.5)	0

[a] No data was collected for locally produced stick, sitting toilet and prothesis stick in 2019 – where found these were reported under 'Any other'.

increase in the use of some types of AT devices (crutches; wheelchair; white cane) between 2019 and 2021. This was due to an intervention that supported PWDs to access AT services which was implemented immediately after the 2019 survey and was still in progress at the time of the 2021 survey (Table 2).

3.3. *Impact of the COVID-19 pandemic on the mental health of PWDs*

The quantitative part of the study showed that the pandemic had a significant negative impact on PWDs' reported mental health status, as the data in Table 4 clearly shows.

Similar results were found in our qualitative study. Many participants were afraid of being infected by COVID-19. Participants were especially scared that there would be no one to care for them if they got infected, and felt themselves a burden to their family. Some even reported wanting to die.

Table 4
Mental health status of PWDs. (N = 254).

Mental health indicators	2019	2021
	N (%)	N (%)
Feeling down, depressed or hopeless	34 (13.4)	110 (43.3)
Bothered by having little interest or pleasure in doing things	40 (15.7)	80 (31.5)
Bothered by feelings of worthlessness	36 (14.2)	50 (19.7)
Bothered by poor concentration	36 (14.2)	44 (17.3)
Bothered by thoughts of death	13 (5.1)	17 (6.7)
Bothered by feeling worried, tense or anxious most of the time	32 (12.6)	43 (16.9)
Frequently tense, irritable and/or having trouble sleeping	35 (13.8)	36 (14.2)

> *"There is one radio in this house and it keeps on saying that people have been infected with corona and many people have lost their life due to it. It's too scary to listen to such news. When I listen to news like that it makes me want to die as well (PWD_GD_03)".*

3.4. *Impact of the COVID-19 pandemic on livelihood opportunities of PWDs*

For the majority of PWDs, their livelihood activities did not change significantly; indeed, there was a slight increase in PWDs' involvement in some livelihoods activities in 2021 compared to 2019 (Table 5). Again, this was because of targeted support from an intervention to these PWDs immediately after the 2019 survey which was still continuing during data collection in 2021.

Skills training was one of the areas most impacted by the pandemic.

> *"I wanted to go for level two training, but due to this COVID-19, it got stopped. I would have completed my training and would have been engaged on some sort of job related to being an electrician (PWD_AJ_02)".*

Even though, for the most part, PWDs' livelihood activities had not changed as a result of the pandemic, the income derived from those activities had declined in some cases: 71.8% PWDs reported suffering from financial hardship during the pandemic compared to 61.4% in the 2019 survey. Participants whose livelihood depends on the income from their agricultural production, for example, reported that they were not able to sell their goods:

> *"We couldn't sell the vegetables we grew on our farm. We are still unable to pay off the debt from last year, which is causing us problems now (PWD_GD_04)".*

We used paired *t*-test (see Table 6) to find any statistical significance between the selected variables from the survey conducted in 2019 and 2021. Among the mental health indicators, two of the indicators; feeling down, depressed or hopeless and bothered by having little interest were found to be statistically significant. Similarly, difficulty in receiving allowances and impact on livelihood activities were found to be statistically significant.

4. Discussion

This study aimed to investigate the impact the COVID-19 pandemic has had on the lives of persons with disabilities in rural Nepal. The results of the survey, in which the responses of 254 PWDs in 2021 were directly compared with their responses in 2019, clearly showed significant negative impacts on their mental health, their income, and their access to health care and assistive devices. PWDs' high awareness of the COVID-19 pandemic stood in stark contrast to their low awareness of

Table 5
Access to livelihood activities. (N = 254).

Activities	2019	2021
	N (%)	N (%)
Vegetable production	61 (24)	78 (30.7)
Poultry production	107 (42.1)	126 (49.6)
Dairy production	31 (12.2)	0
Bee keeping	49 (19.3)	40 (15.7)
Off-farm activities (agriculture based small business)	15 (5.9)	5 (2)
Small scale business (shop, hotel etc)	46 (18.1)	42 (16.5)
Vocational skill training (sewing, cutting, painting, mobile repair etc)	35 (13.8)	21 (8.3)
Unable to work[a]	–	62 (24.4)
Goat Farming[a]	–	18 (7.1)
Others	87 (34.3)	0

[a] Data for these indicators were not segregated in 2019 but were recorded as 'Others'.

Table 6
Paired *t*-test among the variables of 2019 and 2021.

Variables	t-statistics	p-value
Difficulty in access to receive health care	0.512	0.609
Difficulty in receiving allowances	2.043	**0.042***
Impact on livelihood activities	2.266	**0.024***
Mental health indicators		
Feeling down, depressed or hopeless	7.227	**0.000***
Bothered by having little interest or pleasure in doing things	4.126	**0.000***
Bothered by feelings of worthlessness	1.505	0.134
Bothered by poor concentration	0.956	0.340
Bothered by thoughts of death	0.755	0.451
Bothered by feeling worried, tense or anxious	1.411	0.159
Frequently tense, irritable and/or having trouble sleeping	0.124	0.902

their rights, which did not change much between the 2019 and 2021 survey results. Media coverage has an important explanatory role here: as in most countries, the pandemic dominated the Nepali media, but issues around disability continue to be rarely discussed – even though PWDs were some of the most vulnerable to the pandemic.

The decline in mental health and the increase in financial hardship were particularly striking. Indicators of poor mental health had universally increased, in some cases by very significant margins, reflecting the impact of the pandemic on individual PWDs. Although in most cases pre-pandemic livelihood activities continued, financial hardship was increasing – despite rising food prices during the pandemic which might, in theory, have led to an increased income for those engaged in agriculture. Again, the conditions of PWD pre-pandemic were important here: while the loss of jobs, restrictions on business (for example, the ability to PWDs to sell their produce at local markets), and increased food prices pushed many PWDs towards poverty, they and their households were often already living in poverty [29] and had few coping mechanisms or savings to draw upon. The pandemic, therefore, exacerbated their previous situation, but was not the root cause of it.

On many of the survey measures, however, conditions for PWDs had not deteriorated during the pandemic as much as might have been expected: and indeed, in some cases (for example, access to some assistive devices, and engagement in certain livelihood opportunities) there had actually been an improvement as a result of ongoing NGO interventions. This should not, however, be seen as an indication of 'success' in protecting PWDs from the worst effects of the pandemic. Rather, this lack of change reflected the parlous living conditions of many rural PWDs before the pandemic struck. In 2019, more than 70% of respondents were already reporting difficulty in accessing health services: the fact that this 'only' increased to 82.6% in the 2021 survey does not constitute success. Similarly, 73.2% of respondents identified the lack of proper infrastructure as a major factor inhibiting their access to AT services: this situation pre-dated the pandemic.

While the financial protection provided to PWDs by the government was extremely limited i.e. only the regular disability allowances to PWDs with red and blue disability cards, government policies such as lockdowns and movement restrictions designed to minimise the transmission of the virus had a detrimental impact on PWDs' livelihoods, access to services, and mental health - as was found in another study conducted in Nepal [2]. At the same time, despite being vulnerable, PWDs did not generally receive priority for vaccination, except when they fell into a priority age group.

These findings suggest that PWDs were hard hit by the COVID-19 pandemic, especially in terms of access to healthcare services and livelihood opportunities. Our study identified the individual, familial, and societal level obstacles faced by PWDs during the COVID-19 pandemic which will be invaluable while developing disability-inclusive emergency preparedness measures by concerned stakeholders. Furthermore, this study has also highlighted the fact that inclusive approaches must be created to ensure that needs of PWDs will not be compromised during the time of health emergencies like COVID-19 pandemic.

5. Limitations

This study involved PWDs who had mobility- or vision-related disabilities only: PWDs with other forms of disabilities might have had a different experience. While anecdotal evidence suggests that PWDs have experienced similar issues across the country, the results presented here are not necessarily representative of the nationwide experience. Indeed, the presence of the NGO intervention targeted at improving livelihood opportunities and access to assistive devices for PWDs may in some respects have mitigated the pandemic's impact on PWDs in this District.

6. Conclusion and recommendations

This study confirms findings from elsewhere that PWDs have been particularly affected by the COVID-19 pandemic. In part this reflects the direct impact of the pandemic and government responses to it, but it also relates to pre-existing conditions including lower access to resources, fewer livelihood opportunities, and limited service availability. We urgently recommend the Government of Nepal and other stakeholders prioritize improving opportunities and services for PWDs during post-pandemic recovery, to improve their circumstances both in 'normal' times as well as in future emergencies.

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Authors' contributions

JK, SR, SB and LDW conceptualized and designed the research. AK, BR, RN, SJ and SB collected the data and were involved in data analysis and interpretation along with JK and PM. JK drafted the first version of the manuscript. All authors read, reviewed and approved the final draft for submission.

Ethical approval

Prior to conducting this research, we obtained ethical approvals from the University of Sheffield ethical review board and the Nepal Health Research Council Nepal.

Declaration of competing interest

The first author JK is the Executive Director of an NGO PHASE Nepal that implemented an intervention which helped PWDs to access Assistive Technology and livelihood opportunities after the 2019 Survey. No potential conflict of interest was reported by other author(s).

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.puhip.2023.100377.

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