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PATTERNS AND DETERMINANTS OF DISABILITY IN OLDER POPULATIONS OF NEPAL

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ABSTRACT

Disability is a critical issue of human condition and poses a increasing health concern in the context of rapidly aging population in Nepal. The aim of this paper is to assess the prevalence of disability and examine the factors associated with disability among older people in Nepal. Microdata samples from the 2021 National Population and Housing Census, including 296,256 individuals aged 60 years and above, were analyzed using multivariable log-binomial regression. Disability prevalence was 7.6 percent. Physical disability most common disability accounted for 2.2 percent of older people, followed by low vision. Older people aged 85 years and above had an 89% higher prevalence of disability (aPR=1.89). Females reported a 22% lower prevalence of disability (aPR=0.78). Older people in the Terai had a 23% higher prevalence of disability (aPR=1.23) and those in Gandaki province had a 28% higher prevalence (aPR=1.28), whereas those in Madhesh province had a 26% lower prevalence of disability (aPR=0.74). The prevalence of disability was 15% higher in rural residents (aPR=1.15), 14% higher among Mountain/Hill Janajati (aPR=1.14)) and 19% higher among Hill Dalits (aPR=1.19). Conversely, the prevalence of disability was 22% lower among Madhesh/Terai caste (aPR=0.78) and Madhesh/Terai Dalits (aPR=0.78). Older people who belonged to Kirat had a 12% higher (aPR=1.12) and Christians had 21% higher (aPR=1.21) prevalence of disability. Married older people had a 24% lower prevalence (aPR=0.76). The prevalence of disability was 19% lower among older people with primary education (aPR=0.81), 31% lower with secondary (aPR=0.69), and 48% lower with higher education (aPR=0.52). Older people from the richest households had a

38% lower disability prevalence (aPR=0.62). These findings indicate the structural inequalities influencing disability among older people in Nepal and emphasize the need for health and social policies to reduce disparities and promote healthy and active aging.

Keywords: Disability, older people, prevalence, microdata sample, log-binomial regression

INTRODUCTION

Disability is a multi-dimensional and complex concept that refers to conditions in which an individual experiences limitations in functioning, participation, or access to opportunities due to the interaction among individual circumstances, environmental barriers, and societal structures. Disability involves long-term physical, mental, or intellectual impairments which may hamper full and effective participation in society on an equal basis with others (Mont *et al.,* 2022). Disability as an umbrella term that encompasses impairments, activity limitations, and participation restrictions, indicating to the negative aspects of the interaction between individual's health conditions and contextual factors (WHO, 2011). The United Nations Convention of the Rights of Persons with Disabilities (UNCRPD) emphasizes disability as an outcome of the interaction between persons with impairments and attitudinal or environmental barriers that restrict their full and effective participation in society on an equal basis with other persons (United Nations, 2006). These disability concept emphasize that disability should be understood beyond the medical model. In Nepal, conceptualization is often focused on impairment, which is based on medical model and ignores broader social and environmental barriers.

Globally, the prevalence of disability is increasing, driven by population aging, growing burden of chronic and degenerative diseases, and their adverse health effects on multiple organs (Jin *et al.,* 2025; Xi *et al.,* 2025). Persons with disabilities frequently encounter barriers in health care, education, employment and lack of access to essential service, leading to exclusion from social, economic, and civic life (Department of Population, 2017). Disability is cross-cutting issue that effects multiple dimensions of well-being, contributing to socioeconomic disadvantage, poverty, psychological stress, and limited opportunities for social participation and support (Groce, 2011).

Older people are at a greater risk for multiple physical and mental health complications. These complications lead to morbidity and disability

(Malik, 2022). Older people are disproportionately affected by multiple chronic diseases, social isolation, and limited access to age- and disability-sensitive services. Therefore, disability among older people has become a pressing concern. In Nepal, the inclusion of disability questions in census began in 1971 and continued in 1981, but was excluded in 1991 census (Khanal, 2014). The question on disability was incorporated in the 2021 census with recognizing the importance of disability data for evidence-based policy making and inclusive development as a cross-cutting issue. However, disability data in Nepal face persistent limitations due to inconsistent measurement, stigma, and underreporting. Despite this, disability—particularly for older persons with disabilities— is recognized in policy discourse and interventions.

Census data show that the reported disability in Nepal's population has been increasing over the last two decades, from 0.45 percent in 2001 to 1.94 percent in 2011 and 2.22 percent in 2021. Among older people aged 60 and above, the proportion reported some form of disability steadily rising, from 0.97 percent in 2001 to 6.1 percent in 2011 and 6.92 percent in 2021 (Central Bureau of Statisitics, 2002; Central Bureau of Statistics, 2012; National Statistics Office, 2025a), suggesting that there is growing importance of research on disability in older populations to inform inclusive policies, ensure proper resource allocation, and support for full involvement of persons with disabilities in socio-economic development of Nepal. This paper examines the prevalence and determinants of disability among older people in Nepal. The study provides insights essential for designing policies and programs that help to promote healthy, active, and inclusive aging in Nepal.

METHOD AND MATERIALS

Data Source and Disability Measurement

Data for this study was extracted from anonymized microdata samples from the 2021 National Population and Housing Census (NPHC), the 12th round of population census of Nepal. The 2021 NPHC collected information on the disability status for all individuals. The 2021 NPHC comprised the question: "What type of disability does [Name] have?", which included twelve different types of disability such as physical disability, low vision, blind, deaf, hard to hearing, deaf and blind, speech problem, mental or psychosocial, intellectual disability, hemophilia, autism, and multiple disabilities. Disability was categorized into a binary variable:

'no disability' and 'with disability.' Older people who reported no disability is categorized into 'no disability', whereas the category 'with disability' comprised older people who reported any of the disability types listed in the census questionnaire.

Sample and Study Population

Using a scientifically designed probability sampling approach, the 2021 NPHC Microdata Samples were derived with normalized weights, ensuring both statistical validity and data confidentiality. The sample design employed A robust probability-based sampling method was employed for sample design with adequate sample sizes, distribution, and allocation to enable both descriptive and inferential statistical analyses up to the municipal level. A detail description of the sampling design and use of microdata is available elsewhere (National Statistics Office, 2025b). The sample data comprised 718,913 households, representing 10.8 percent of the total households of the country. These households included 3,203,269 individuals, accounting for 11 percent of the national population. Among them, 296,256 individuals aged 60 years and above were identified as the study population, accounting 9.2 percent of total sample populations.

Variables

In this study, demographic and socioeconomic characteristics such as age, sex, ecological zone, place of residence, province, marital status, literacy, educational attainment, and household wealth quintile were taken as independent variables. Age was classified into six groups: 60-64, 65-69, 70-74, 75-79, 80-84, and 85 years and above. Marital status was categorized as unmarried, married, widow/widower, and divorced/separated. Religion was categorized as Hindu, Buddhist, Islam, Christian, Prakarti, and Others, while educational attainment of older people was classified as no education, primary, secondary, and higher education.

Disability status was dependent variable, measured as a binary outcome and coded as 1 for older people reporting any kinds of disability and 0 for those older people reporting no disability.

Data Analysis

Descriptive statistics were used to assess the characteristics of the study population and prevalence of disability. The burden of disability and

its associated factors were calculated using sampling weights to ensure repressiveness. Before conducting multivariable analysis, collinearity among the variables was assessed using the variance inflation factor (VIF). Multivariable log-binomial regression was used to examine the factors associated with disability among older people. For all statistical analyses, STATA version 15 was used.

RESULTS AND DISCUSSION

Sociodemographic Characteristics of Study Population

More than a half of older people are in the 60–69 age group. Females account a slightly higher proportion (51%) than males (49%). The majority of older people reside in Hill and in rural areas, followed by Terai and peri-urban areas. About one-fifth of older people are resident of Koshi province, with subsequent concentrations in Madhesh and Bagmati provinces. In contrast, only six percent of older people are from Karnali province. One-third of older people belong to the Hill caste, followed by Mountain and Hill Janajati (30%) and Madhesh/Terai caste (14%). The majority of the older people (80%) are Hindus, while 10 percent follow Buddhism. Regarding the marital status, 71 percent are married, whereas 27 percent are widowed. In terms of educational attainment, only about one-fourth of older people are literate, with 73 percent reporting no education. More than half of older people belong to lowest or lower household wealth quintiles (Table 1).

Prevalence of Disability

Table 1 shows that the prevalence of disability increases steadily with advancing age, from 5.9 percent among those aged 60-64 years to 12.8 percent among those aged 85 years and above. The prevalence of disability is slightly higher among males (8.0%) compared to female (7.3%). It is found that the prevalence of disability is higher in the Mountain (8.8%) and Hill (8.6%) compared to the Terai (6.4%). Similarly, disability prevalence is higher among rural residents (9.2%) compared to those in peri-urban (6.2%) and urban (5.7%) areas. At provincial level, the prevalence is highest in Gandaki (9.6%) and Karnali (9.5%), while it is lowest in Madhesh (4.7%). Across caste and ethnic groups, the prevalence of disability is highest among Hill Dalits (10.2%) and lowest among Madhesh/Terai castes (4.8%). Likewise, the highest prevalence is observed among Christians (10.7%) and Prakarti followers (10.4%), while the lowest is recorded among Hindus (7.4%) and Muslims (4.7%).

Prevalence of disability among older people is closely related to marital status, education and household wealth. It is highest among the unmarried (24.8%) and divorced/separated (14.1%), compared to married (6.8%). An inverse relationship is observed with the education; decreasing from 8.2 percent among those with no education to 2.9 percent among those with higher education. Similarly, the prevalence of disability decreases as household wealth increases, from 9.6 percent in the lowest quintile to 5.2 percent in the highest quintile.

Table 1

Distribution of Study Population and Prevalence of Disability by Demographic, and Socioeconomic Characteristics

Characteristics	Population (%)	Prevalence		N
		Disability (%)	95% CI	
Age group				
60-64	22.6	5.9	[5.7-6.1]	65,766
65-69	29.6	6.6	[6.4-6.7]	85,159
70-74	23.5	7.9	[7.7-8.1]	66,620
75-79	13.6	9.1	[8.8-9.4]	38,733
80-84	7.1	11.4	[11.0-11.9]	20,595
85+	3.7	12.8	[12.2-13.5]	11,021
Sex				
Male	48.6	8.0	[7.9-8.1]	139,446
Female	51.4	7.3	[7.2-7.4]	148,449
Ecological zones				
Mountain	10.3	8.8	[8.5-9.1]	19,219
Hill	46.0	8.6	[8.5-8.8]	128,269
Tarai	43.7	6.4	[6.2-6.5]	140,407
Place of residence				
Urban	15.6	5.7	[5.5-6.0]	67,928
Peri-urban	34.6	6.2	[6.1-6.4]	107,382
Rural	49.9	9.2	[9.1-9.4]	112,585
Province				
Koshi	19.3	7.6	[7.4-7.8]	55,156
Madhesh	18.7	4.7	[4.5-4.8]	50,805
Bagmati	18.4	7.7	[7.5-7.9]	64,234
Gandaki	11.8	9.6	[9.3-10.0]	32,454
Lumbini	16.1	8.1	[7.9-8.4]	47,789
Karnali	6.0	9.5	[9.1-9.9]	13,068
Sudurpashchim	9.7	8.9	[8.6-9.3]	24,389

Contd.

Characteristics	Population (%)	Prevalence		N
		Disability (%)	95% CI	
Caste and ethnic group				
Hill Castes	33.9	7.5	[7.4-7.7]	100,901
Madhesh/Tarai Caste	14.0	4.8	[4.6-5.0]	39,128
Mountain/Hill Janajatis	30.4	9.0	[8.8-9.2]	85,231
Tarai Janajatis	7.1	7.8	[7.4-8.1]	22,576
Hill Dalits	7.9	10.2	[9.8-10.6]	20,631
Madhesh/Tarai Dalit	3.5	5.4	[5.0-5.9]	9,746
Religious/Linguistic groups	3.1	4.7	[4.3-5.2]	8,869
Others, Foreigners & Not stated	0.2	5.7	[4.2-7.7]	811
Religion				
Hindu	79.5	7.4	[7.3-7.5]	233,527
Buddhist	10.4	8.9	[8.6-9.2]	27,815
Islam	3.1	4.7	[4.3-5.2]	9,007
Kirat	4.6	9.1	[8.7-9.6]	11,000
Christian	1.4	10.7	[9.8-11.6]	4,224
Prakarti	0.5	10.4	[8.9-12.1]	1,114
Others	0.5	11.7	[10.1-13.5]	1,209
Marital status				
Unmarried	1.2	24.8	[23.4-26.3]	3,449
Married	71.4	6.8	[6.7-6.9]	205,202
Widow/Widower	26.7	9.0	[8.8-9.2]	77,288
Divorced/Separated	0.7	14.1	[12.7-15.7]	1,956
Literacy status				
Literate	27.1	5.9	[5.7-6.1]	87,595
Illiterate	72.9	8.3	[8.2-8.4]	200,299
Level of education				
No education	73.4	8.2	[8.1-8.4]	201,921
Primary	15.7	6.4	[6.1-6.6]	46,778
Secondary	5.5	4.5	[4.2-4.8]	20,243
Higher education	1.2	2.9	[2.4-3.5]	6,205
Others	4.3	7.4	[7.0-7.9]	12,747
Wealth quintile				
Lowest	27.9	9.6	[9.4-9.8]	64,926
Lower	24.4	7.9	[7.7-8.1]	59,987
Middle	21.6	7.1	[6.9-7.3]	59,832
Higher	13.2	6.1	[5.9-6.4]	44,183
Highest	12.9	5.2	[5.0-5.5]	58,968
Total	100.0	7.6	[7.6-7.7]	287,895

Disability among older adults in Nepal is influenced by interplay of demographic and socioeconomic factors such as age, place of residence, caste/ethnicity, religion, marital status, education, and household wealth. The burden of disability is disproportionately higher among socioeconomically disadvantaged individuals and socially marginalized groups.

Types of Disability

Majority of older people reported no disability (92.3%), with slightly higher prevalence among females compared to males. Physical disability is most common among older people (2.2%), with a slightly higher proportion among males than females. Low vision is the second most frequently reported disability (2.1%) and it is similar between males and females. Hard of hearing (1.0%) and deafness (0.9%) are common impairments among older people with minimal sex differences. Multiple disabilities, speech problems, blindness, and deaf-blindness are less common. Mental and psycho-social disabilities and intellectual disabilities are very low, while prevalence of autism and hemophilia are very rare (Table 2).

Table 2

Percentage Distribution of Older People by Type of Disability and Sex

Disability type	Male	Female	Total
Physical disability	2.5	1.9	2.2
Low vision	2.0	2.1	2.1
Hard of hearing	1.0	1.0	1.0
Deaf	1.0	0.9	0.9
Multiple disability	0.6	0.5	0.5
Speech problem	0.3	0.3	0.3
Blind	0.2	0.3	0.2
Deaf and Blind	0.2	0.2	0.2
Mental or psychosocial	0.1	0.1	0.1
Intellectual disability	0.0	0.1	0.1
Autism	0.0	0.0	0.0
Hemophilia	0.0	0.0	0.0
No disability	91.9	92.6	92.3
Not reported	0.0	0.1	0.1
Total (=100%)	139,446	148,449	287,895

The data shows that males exhibited slightly higher proportions of physical disability, deafness, and mental disability, while females reported marginally higher prevalence of low vision, blindness, and intellectual disability. It has been noted that the proportion of older people without disability is slightly higher among females (92.6%) than among males (91.9%).

Table 3

Prevalence Ratio Showing association between Socio-demographic Factors and Disability Among Older People Aged 60 Years and Above, Nepal

Variables	Adjusted Prevalence Ratio (aPR)	95% CI
Age group		
60-64	*Reference*	
65-69	1.11***	1.07 - 1.16
70-74	1.28***	1.23 - 1.33
75-79	1.41***	1.35 - 1.48
80-84	1.71***	1.63 - 1.80
85+	1.89***	1.78 - 2.01
Sex		
Male	*Reference*	
Female	0.78***	0.76 - 0.80
Ecological zone		
Mountain	*Reference*	
Hill	1.03	0.98 - 1.07
Tarai	1.23***	1.16 - 1.30
Province		
Koshi	*Reference*	
Madhesh	0.74***	0.70 - 0.79
Bagmati	1.09***	1.04 - 1.13
Gandaki	1.28***	1.23 - 1.34
Lumbini	1.14***	1.09 - 1.19
Karnali	1.19***	1.13 - 1.26
Sudurpashchim	1.13***	1.08 - 1.19
Place of residence		
Urban	*Reference*	
Peri-urban	1.05*	1.00 - 1.10

Contd

Variables	Adjusted Prevalence Ratio (aPR)	95% CI
Rural	1.16***	1.10 - 1.21
Caste and ethnicity group		
Hill Castes	*Reference*	
Madhesh/Terai Castes	0.78***	0.73 - 0.83
Mountain/Hill Janajati	1.14***	1.09 - 1.18
Terai Janajati	1.04	0.98 - 1.11
Hill Dalits	1.19***	1.14 - 1.24
Madhesh/Terai Dalits	0.78***	0.71 - 0.86
Religious and others	0.88	0.67 - 1.16
Religion		
Hindu	*Reference*	
Buddhist	1.01	0.96 - 1.05
Islam	0.82	0.62 - 1.09
Kirat	1.12***	1.05 - 1.20
Christian	1.21***	1.11 - 1.32
Prakarti	1.09	0.93 - 1.28
Others	1.18*	1.01 - 1.36
Marital status		
Unmarried/Divorced/Separated	*Reference*	
Married	0.76***	0.74 - 0.78
Education		
No education	*Reference*	
Primary (1-8 Grade)	0.81***	0.78 - 0.85
Secondary (9-12 Grade)	0.69***	0.64 - 0.74
Higher education	0.52***	0.43 - 0.63
Others	0.87***	0.82 - 0.93
Wealth quintiles		
Lowest	*Reference*	
Lower	0.84***	0.81 - 0.87
Middle	0.80***	0.77 - 0.83
Higher	0.71***	0.68 - 0.75
Highest	0.62***	0.58 - 0.65
Constant	0.08***	0.07 - 0.09

*** $p<0.001$, ** $p<0.01$, * $p<0.05$

Table 3 presents the adjusted prevalence ratio (aPR) for the association between sociodemographic factors and disability among older people in Nepal. Age was strongly associated with disability, and prevalence increased steadily with advancing age. Older people aged 85 years and above have 89 percent more prevalence of disability compared with those aged 60-64 years [aPR=1.89, 95% CI:1.78 - 2.00]. This age gradient is consistent with result from other low-and middle-income countries (Hosseinpoor *et al.,* 2016) as well as previous studies of Nepal (Dhakal *et al.,* 2025), indicating that increasing longevity is often associated with a higher burden of chronic conditions and functional limitations. A study carried out in India also showed that disability prevalence increases with age, being highest among older people aged 80 years and above, largely due to chronic illness, degenerative conditions, falls and injuries (Agrawal *et al.,* 2024).

Disability was 22 percent less among females than males [aPR=0.78, 95% CI:0.76–0.80], indicating females had a significantly lower prevalence of disability compared to males. However, previous studies conducted in Nepal, utilizing data from the 2021 Nepal Demographic Health Survey, reported that the prevalence of disability was higher among older females compared to older males (Thapa *et al.,* 2025). This differences in disability may be attributed to gender roles in Nepalese society, differences in healthcare, and variations in reporting of disability. A study conducted in India showed that females are at higher risk of disability, particularly functional disability, due to the various risk factors related to women (Malik, 2022).

Regional disparities were noted across ecological zones and provinces. Older people who reside in the Terai had 23 percent greater prevalence of disability compared to those reside in the Mountain. Likewise, older people in Gandaki province have a 28 percent higher prevalence of disability [aPR=1.28, 95% CI: 1.23–1.34], while those in Madhesh province have a 26 percent lower prevalence [aPR=0.74, 95% CI: 0.70–0.79] compared to those in Koshi province. The study revealed that the prevalence of disability was 15 percent higher among rural residents [aPR=1.15, 95% CI: 1.10–1.21] than among urban residents. The findings of the study indicate that older people residing in the Terai zone, and in Gandaki, Karnal, and Lumbini provinces were more likely to have higher prevalence of disability, whereas those living in Madhesh had relatively

lower prevalence. These patterns of disability suggest the influence of ecological, infrastructure and health care system variation across the zones and provinces. Similarly, higher prevalence of disability among older people living in rural areas reflect the persistence inequalities in access to health care, rehabilitation services, and enabling environments.

Compared with Hill Caste, Mountain/Hill Janajati and Hill Dalits have higher prevalence of disability, notably older people belonging to Madhesh/Terai Castes and Madhesh/Terai Dalits have lower prevalence of disability. The result revealed that caste and ethnicity were strongly associated with disability. The lower prevalence among Madhesh/Terai Castes and Dalits may be due to differences in social structure or cultural perception of disability. Regarding religion, the prevalence of disability was significantly higher among those older people who belonged to Kirat, Christians and others compared to Hindu.

Married older people have a 24 percent lower burden of disability [aPR=0.76, 95% CI: 0.73–0.78] compared to those unmarred, divorced or separated. The result suggests that married people were less likely to be disabled because of social and emotional support that helps to protect deterioration of health condition. A study from low-income and middle-income countries showed that estimate of disability prevalence was higher among unmarried, divorced, separated or widowed than among married older people (Hosseinpoor *et al.,* 2016). Similarly, a study conducted in India found that older people who were never married and divorced/separated/widowed had higher disability rate compared to those who were married (Velayutham *et al.,* 2016).

Regarding education, the prevalence of disability is decreasing with increasing level of education, from primary education to higher education. Compared to older people with no education, the prevalence of disability was 19 percent lower among those with primary [aPR=0.81, 95% CI: 0.78–0.85], 31 percent lower among those with secondary education [aPR=0.69, 95% CI: 0.64 - 0.74], and 48 percent lower among with higher education [aPR=0.52, 95% CI: 0.43–0.63]. This finding of the study is consistent with the existing literature. Prevalence of disability was found to be decreases as education level increases, suggesting that education plays a crucial role in reducing the disability (Agyekum *et al.,* 2024; Rahman & Singh, 2019). Education attainment appears to provide substantial protection, potentially

through improve health literacy, occupational advantages and access to resources and health services. Wealthier households have gradually lower prevalence, with the highest wealth quintile showing 38 percent lower burden of disability (aPR = 0.62, 95% CI: 0.58–0.65) compared to the poorest quintile. A study conducted in six low- and middle-income countries showed that disability rates were found to be higher in poor household wealth (Rahman & Singh, 2019). The wealth quintile indicates the central role of household socioeconomic status in influencing health outcomes and disability conditions among older people.

CONCLUSION

The results of the study show that 7.6 percent of older people in Nepal reported some form of disability, with physical disability being the most common, followed by low vision. The prevalence of disability increases with advancing age. Females reported lower prevalence compared to males. This study noted that there were significant regional, provincial, and social disparities in disability. The prevalence of disability was higher in the Terai zone, in Gandaki, Karnali, and Lumbini provinces, in rural areas, among Mountain/Hill Janajati and Hill Dalits, as well as older people belonged to Kirat, Christians and others religion. Socioeconomic advantages such as being married, attaining higher education, and belonging to wealthier households were associated with lower prevalence of disability, which suggests that social and economic resources have a protective effect in disability.

Overall, the findings of the study indicate that disability in later life is shaped not only by biological aging but also by deep-rooted social, economic, and geographic inequities. Self-reported and cross-sectional data poses several limitations, even though this study makes an important contribution by providing nationally representative evidence on patterns and determinants of disability among older people in Nepal. The findings of the study have policy implications in order to promote healthy, active, and inclusive aging. Interventions must emphasize both health needs and social determinants, providing equitable access to health care, education, and social protection, with particular attention to disadvantaged provinces, rural populations, and marginalized social groups.

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