



Association between self-reported disability and population profiles among Bhutanese population

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ABSTRACT

Although numerous initiatives are being undertaken to prevent and address the issues related to disabilities, more than 15% of the global population still live with disabilities. The information on prevalence of self-reported disability (by domains) and their association with population profiles among Bhutanese population is limited. A cross-sectional analytical study was conducted using secondary data collected during National Health Survey 2012 to see the associations between self-reported disability and the potential explanatory factors.

The prevalence of self-reported disability was 5.59% with 2.13% (95% CI: 2.02-2.25%) reporting disabilities in two or more domains and 0.06% reporting disabilities in all six domains. The male (5.89%; aOR: 1.74, 95% CI: 1.59-1.90), no formal schooling (12.06%), unemployed (aOR: 1.78 95% CI: 1.42-2.22), and poorest wealth quintile (7.96%; aOR: 1.37, 95% CI: 1.16-1.63) were at higher risk of self-reported disability as compared to their counterparts. The prevalence of disabilities increased with age (aOR: 4.51, 95% CI: 3.72-5.45) and higher among rural populations (6.78%; aOR:2.28, 95% CI: 1.93-2.69). The prevalence rate of self-reported disability was 5.9% and socio-demographic characteristics such as age, sex, wealth quintile, education, residence (rural/urban), region, and occupation were significantly associated with self-reported disability.

Keywords: Prevalence; association; self report; people with disability

INTRODUCTION

Globally 15.6% of people are living with at least one form of disability and 18.6 million of people are living with severe disability (World Health Organization, 2008). In Bhutan, Population and Housing Census of Bhutan (PHCB 2005) showed that the prevalence of persons having one or more self-reported disabilities was 3.4% (Office of the Census Commissioner, 2005). The two-Stage Child Disability Survey carried out in 2010 and 2011 reported that 21% of children between two and nine years in Bhutan have at least one form of disability (National Statistics Bureau, 2012). The National Health Survey (NHS) 2012 found that highest self reported disability was hearing disability (2.9%) (Ministry of Health, 2012).

Given that a significant proportion of population lives with disabilities, numerous initiatives are being undertaken at all levels prevent disabilities and address the issues related to disabilities. The disability is reflected in six of the 17 sustainable development goals (SDG) - goals 1, 4, 8, 10, 11 and 16 marking the latest development in the field of people with disabilities (Leonard Cheshire Disability, 2017). Similarly, the Royal Government of Bhutan has accorded high priority to prevention of disability and in addressing the challenges faced by the persons with disabilities. Bhutan is also a signatory to United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2007). The principles of state policy states that “the State shall endeavor to provide security in the event of sickness and disability or lack of adequate means of livelihood for reasons beyond one’s control” (Royal Government of Bhutan, 2008).

However, there is dearth of information on the association between self-reported disability and population profiles among Bhutanese population. Studies carried out in other countries suggests that socio-demographic characteristics such as age (Felicissimo et al., 2017; Malta et al., 2016; Serrano-Urrea et al., 2017; Yokota et al., 2017; Zhong et al., 2017), sex (Felicissimo et al., 2017; Malta et al., 2016;

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Serrano-Urrea et al., 2017; Zhong et al., 2017), wealth quintile (Banks et al., 2017; Felicissimo et al., 2017; Psychiatry, 2015; Zhong et al., 2017), education (Felicissimo et al., 2017), residence (rural/urban)(Malta et al., 2016; Serrano-Urrea et al., 2017; Zhong et al., 2017), region (Malta et al., 2016), injury (Felicissimo et al., 2017; Yokota et al., 2017), occupation and employment (Beltrán-Sánchez et al., 2017; Psychiatry, 2015), access to health care services (Yokota et al., 2017), and marital status (Zhong et al., 2017) to be associated with disability. Two-Stage Child Disability Survey found wealth quintile, age, mother's education, and different region of the country to be significantly associated with children's disability. However, little is known about factors associated with disability adult Bhutanese population(National Statistics Bureau, 2012).

In this light, this study was carried out with the aim of assessing the association between self-reported disability and population profiles among Bhutanese population using the secondary data from the national health survey 2012.

MATERIALS AND METHODS

Study Design: This study was carried out using the most recent secondary data available, collected through a cross-sectional and country representative National Health Survey 2012 data set.

Study setting: Bhutan, is a landlocked country in South Asia and occupies an area of 38,394 km² with estimated population of 692,895 in 2012 with with 6.3% of the population above 65 years (Ministry of Health, 2017). The Bhutan living standard Survey 2012 estimated 127,942 number of households in the country with 66 % of the households in rural areas. More than half (55%) of the population above 6 years has had no formal schooling and the general literacy rate among the population greater than 6 years and above is estimated to be 63%.

Study Population and Sample: The NHS 2012 covered 13,256 sampled households and a total of 59,521 (29,159 males and 30,362 females) individual records were collected. The individuals were disaggregated into urban-rural and with representative samples from all 20 districts of Bhutan. The household questionnaire collected demographic information about all the members of the household and information about the household as a social unit. The questions on disability included data on the presence of any person in a household having difficulties in seeing, hearing, walking, speaking, remembering/ concentrating, and in performing self-care activities.

Variables and data Extraction: Independent variables include the socio-demographic characteristics such as age, sex, wealth quintile, education, residence (rural/urban), region, occupation and employment, access to health care services, injuries and marital status.

The dependent variable is the number of people with self-reported disability by functional domains (seeing, hearing, walking, speaking, remembering/concentrating, and in performing self-care activities). All required variables for

the analysis were extracted from the National Health Survey 2012 data set.

Operational Definition: Self-reported disability is defined as a member(s) of a household self-reported to have some impairment in seeing, hearing, speaking, walking, or in remembering/ concentrating, not necessarily confirmed by clinical examination.

Data Analysis: The proportions of self-reported Disability were calculated up to district level using sample weights affixed to the data sets in NHS 2012 report (Ministry of Health, 2017). The associations between self-reported disability and the potential explanatory factors such as the age, wealth quintile, education, residence (urban/rural), and region were examined using a log-binomial regression model. The factors that are significant at p value 0.1 in a bivariate model were included to calculate adjusted odds ratios (aORs). All statistical associations at $p \leq 0.05$ from the multiple variables model were considered significant. The analysis was done using STATA/IC 15 (StataCorp. 2017 Stata Statistical Software: Release 15. College Station, TX: StataCorp LLC).

Ethical considerations: Administrative clearance was sought from the Ministry of Health, Royal Government of Bhutan, for the use of NHS2012 dataset and to conduct the study. The ethical approval including waiver of informed consent was obtained from the Research Ethics Board of Health (REBH), Bhutan.

RESULTS

Out of 59,521 individuals, 5.59% of the total respondents reported any one or more disabilities with the highest proportion having hearing disability followed by sight disability (Table 1). The self-reported disability was found to be higher in male (5.89%) and those who have not had any formal schooling (12.06%). A total of 17,240 people aged ≥ 40 had participated in the study, of those 1,136 (7.37%) reported hearing disability. Table 1 Prevalence of self-reported disability according to demographic characteristics as per national health Survey 2012, Bhutan

Any form of disability was found higher among the rural population compared to urban dwellers (6.78% vs 1.86%). The region wise comparison of the prevalence of disability show that self-reported disability was higher in eastern region (6.64%) while among district Samtse had the maximum cases (296) followed by Tashiyangtse (278) (Figure 1).

The distribution of self-reported disability was found higher among the poorest quintile of the people (7.96%) as compared to those in the richest quintile (2.7%). Higher number of people amongst the richest quintile reported sight disability (1.42%), followed by hearing (0.99).

At least 2.13% (95% CI: 2.02-2.25%) has multi domain disability, defined as having two or more types of disability is higher in those aged 40 and above and the poorest section of the population with 0.06 % of the respondents reporting disability in all six domains.

Table 1. Prevalence of self-reported disability according to demographic characteristics among Bhutanese population, 2012

	Sight	Hearing	Speech	Mobility	Mental	Self care	Any disability‡
Sex							
Male	655(2.5)	783(3.1)	303(1.2)	358(1.3)	200(0.7)	237(0.9)	1522 (5.89)
Female	767(2.5)	750(2.7)	320(1.2)	395(1.3)	221(0.7)	267(0.9)	1554(5.30)
Education							
No education	1007(5.43)	1188(6.82)	486(2.89)	575(3.19)	325(1.73)	380(2.04)	2116 (12.06)
Primary	218(1.41)	158(1.18)	30(0.15)	66(0.4)	32(0.23)	31(0.2)	422 (2.83)
Higher education	7(1.97)	3(0.56)	0(0)	0(0)	0(0)	0(0)	10 (2.53)
Monastic school	48(3.15)	40(2.36)	5(0.24)	25(1.22)	8(0.26)	19(0.86)	98 (5.85)
Non-formal education	54(1.72)	26(1.99)	13(0.38)	20(0.57)	13(0.33)	9(0.23)	91 (2.97)
Age							
0-19	133(0.16)	168(0.8)	121(0.63)	94(0.39)	62(0.26)	85(0.4)	427 (1.95)
19-39	176(0.96)	229(1.48)	164(1.04)	87(0.49)	83(0.5)	50(0.29)	500 (2.94)
40 and above	1113(6.95)	1136(7.37)	338(2.23)	572(3.75)	276(1.65)	369(2.24)	2149 (5.59)
Residence							
Urban	130(0.8)	105(0.77)	39(0.4)	57(0.5)	40(0.3)	32(0.4)	271 (1.86)
Rural	1292(3.1)	1428(3.6)	623(1.5)	696(1.6)	381(0.9)	472(1.1)	2805 (6.78)
Region							
Eastern Central	1.4(207)	260(2.1)	129(1.1)	121(0.9)	72(0.6)	69(0.6)	532(4.05)
Western	281(2.2)	323(2.6)	138(1.2)	158(1.2)	94(0.7)	85(0.7)	633 (5.01)
Western Central	443(2.9)	469(3.2)	202(1.3)	229(1.5)	135(0.9)	159(1.3)	797 (6.4)
Eastern	491(3.4)	481(3.6)	154(1.2)	245(1.7)	120(0.8)	191(0.9)	1114 (6.64)
Wealth							
Poorest	397(3.42)	493(4.71)	198(1.97)	212(1.81)	117(1.05)	140(1.16)	903 (7.96)
Second	357(3.13)	403(3.64)	164(1.45)	198(1.74)	102(0.86)	132(1.1)	740 (6.98)
Middle	325(2.75)	307(2.75)	133(1.21)	175(1.38)	102(0.81)	120(0.97)	689 (5.82)
Fourth	214(1.91)	235(2.33)	79(0.86)	112(0.97)	62(0.61)	71(0.59)	495 (4.53)
Richest	129(1.42)	95(0.99)	49(0.55)	56(0.75)	38(0.32)	41(0.62)	249 (2.7)
Occupation							
Employed	73(1.17)	31(0.59)	4(0.07)	14(0.24)	7(0.09)	4(0.06)	111 (1.9)
Farmers	347(3.86)	404(5)	141(1.72)	116(1.34)	77(0.86)	51(0.54)	746 (8.87)
Skilled based/manual works	18(1.63)	16(1.4)	8(0.51)	8(0.66)	2(0.19)	0(0)	43 (3.79)
Unemployed	956(2.38)	1055(2.71)	456(1.24)	599(1.48)	327(0.78)	439(1.11)	2,114 (5.31)
Total	2.5(1422)	2.9(1533)	1.2(623)	1.3(753)	0.7(421)	0.9(504)	3076(5.59)

Factors associated with self-reported disability

Participants were assessed for age, sex, residence, economic status to determine the possible factors associated with self-reported disability. People aged more than 40 years are more likely to suffer from disability as compared to those below 19 years of age (aOR: 4.51, 95% CI: 3.72-5.45). males were 1.74 times more likely to suffer from disability as compared to women (aOR: 1.74, 95% CI: 1.59-1.90).

Another significant difference was observed between those living in the rural and urban areas. People living in

rural areas had a higher chance of having a disability as compared to those in urban areas (aOR: 2.28, 95% CI: 1.93-2.69). Similarly, the poorest section of the population had a higher chance of reporting disability (aOR: 1.37, 95% CI: 1.16-1.63) as compared to those in the richest quintile of wealth.

The prevalence of disability was higher among unemployed (aOR: 1.78 95% CI: 1.42-2.22) while farmers/unskilled workers were 3.12 times more likely (aOR: 3.12; 95% CI: 2.51-3.88) to have self-reported disability as compared to those who are employed.

Table 2. Bivariate and multivariable log-binomial regression of putative factors associated with self-reported disability

	Total	PLSRD n (%)	Crude OR (95% CI)	Adjusted OR (95% CI)	<i>p</i> value
Total	59521	3076 (5.59)			
Sex					
Female	30655	1554 (5.3)	Ref	Ref	Ref
Male	28866	1522 (5.89)	1.12 (1.04-1.20)	1.74 (1.59-1.90)	< 0.01
Education					
High school and above	365	10 (2.53)	Ref	Ref	Ref
No education	19675	2116 (12.06)	5.28 (2.71-10.30)	2.01(0.95-4.24)	0.07
Primary	16067	422 (2.83)	1.12 (0.57-2.20)	1.03(0.49-2.19)	0.93
Monastic school	1910	98 (5.85)	2.39 (1.19-4.81)	1.1(0.51-2.38)	0.81
Non-formal education	2768	91 (2.97)	1.18 (0.59-2.38)	0.79(0.36-1.73)	0.56
Age Group					
0-19	24816	427 (1.95)	Ref	Ref	Ref
19-39	17465	500 (2.94)	1.52 (1.35-1.73)	1.31(1.08-1.59)	0.01
40 and above	17240	2149 (5.59)	7.98 (7.21-8.81)	4.51(3.72-5.45)	< 0.01
Place of Residence					
Urban	12589	2805 (6.78)	Ref	Ref	
Rural	46932	271 (1.86)	3.84 (3.38-4.35)	2.28(1.93-2.69)	<0.01
Regions					
Central Eastern	12955	532(4.05)			
Western	14045	633 (5.01)	1.25 (1.10-1.41)	2.06 (1.76-2.37)	< 0.01
Central Western	14190	797 (6.4)	1.62 (1.41-1.86)	1.79 (1.54-2.09)	< 0.01
Eastern	18331	1114 (6.64)	1.68 (1.48-1.91)	1.75 (1.52-2.01)	< 0.01
Wealth Index					
Richest	10115	249 (2.7)	Ref	Ref	Ref
Fourth	11672	495 (4.53)	1.67 (1.45-1.93)	1.08(0.91-1.27)	0.37
Middle	13000	689 (5.82)	2.33 (2.03-2.67)	1.08(0.91-1.28)	0.36
Second	12342	740 (6.98)	2.88 (2.52-3.28)	1.19(1-1.41)	0.05
Poorest	12392	903 (7.96)	3.17(2.78-3.61)	1.37(1.16-1.63)	< 0.01
Occupation²					
Employed	4965	111 (1.9)	Ref	Ref	Ref
Farmer/unskilled	10556	746 (8.87)	4.97 (4.05-6.09)	1.78(1.42-2.22)	< 0.01
Skilled based/manual worker	1277	43 (3.79)	2.03 (1.46-2.81)	1.29(0.92-1.8)	0.14
Unemployed	41792	2114 (5.31)	2.89 (2.37-3.52)	3.12(2.51-3.88)	0

DISCUSSION

The prevalence rate of self-reported disability is 5.9%, which is comparable to most of the countries in Asia Pacific region. The study also found that socio-demographic characteristics such as age, sex, wealth quintile, education, residence (rural/urban), region, and occupation to be significantly associated with self-reported disability as found in other studies (Felicissimo et al., 2017; Malta et al., 2016; Serrano-Urrea et al., 2017; Yokota et al., 2017; Zhong et al., 2017).

The prevalence of multi-domain as well as any disability is higher in male, in the poorest quintile and increases with the age. This was similar to the study conducted in Brazil which concluded that mostly men who are older than 60 years had more disability and with lower educational and income levels (Felicissimo et al., 2017; Malta et al., 2016).

The prevalence of disability was also higher among those who had no formal schooling and those who are unemployed and farmers. This suggests that those with disability are less likely to be employed and receive schooling and its similar to other studies conducted in the region (UNESCAP, 2015). Such statistics supports that people with disability are not employed and therefore needs to work on their own (Moniruzzaman et al., 2016).

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REFERENCES

- Banks, L. M., Kuper, H., & Polack, S. (2017). Poverty and disability in low- and middle-income countries: A systematic review. *Plos One*, *12*(12), e0189996. <https://doi.org/10.1371/journal.pone.0189996>
- Beltrán-Sánchez, H., Pebley, A., & Goldman, N. (2017). Links between primary occupation and functional limitations among older adults in Mexico. *SSM - Population Health*, *3*(October 2016), 382–392. <https://doi.org/10.1016/j.ssmph.2017.04.001>
- Felicíssimo, M. F., Friche, A. A. de L., Andrade, A. C. de S., Andrade, R. G. de, Costa, D. A. da S., Xavier, C. C., Proietti, F. A., & Caiaffa, W. T. (2017). prevalence of Factors Associated with Self-reported Disability; Comparison between Genders. *Revista Brasileira de Epidemiologia*, *20*(1), 147–160. <https://doi.org/10.1590/1980-5497201700010013>
- Leonard Cheshire Disability. (2017). *Disability Inclusion and the Sustainable Development Goals: Practices and Challenges* (Issue July). leonardcheshire.org/international
- Malta, D. C., Stopa, S. R., Canuto, R., Gomes, N. L., Mendes, V. L. F., Goulart, B. N. G. de, & Moura, L. de. (2016). Self-reported prevalence of disability in Brazil, according to the National Health Survey, 2013. *Ciência & Saúde Coletiva*, *21*(10), 3253–3264. <https://doi.org/10.1590/1413-812320152110.17512016>
- Ministry of Health. (2012). *National Health Survey Report 2012*. Ministry of Health. <http://www.health.gov.bt/publications/national-health-survey/>
- Ministry of Health. (2017). *Annual Health Bulletin 2017*. Ministry of Health. <http://www.health.gov.bt/annual-health-bulletin/>
- Moniruzzaman, M., Zaman, M. M., Mashreky, S. R., & Rahman, A. K. M. F. (2016). Prevalence of disability in Manikganj district of Bangladesh: Results from a large-scale cross-sectional survey. *BMJ Open*, *6*(7), 1–8. <https://doi.org/10.1136/bmjopen-2015-010207>
- National Statistics Bureau. (2012). *Two stage child disability; Among children 2-9*. National Statistics Bureau, 2012. www.nsb.gov.bt
- Office of the Census Commissioner. (2005). Results of Population & Housing Census of Bhutan 2005. In *Design*. Office of Census Commissioner, Royal Government of Bhutan. <http://www.bhutancensus.gov.bt>
- Psychiatry, F. (2015). *Disability, Its Issues and Challenges: Psychosocial and Legal Aspects in Indian Scenario*. *18*(1), 195–205.
- Royal Government of Bhutan. (2008). *The Constitution of the Kingdom of Bhutan*. <https://doi.org/10.1017/S0165070X0001202X>
- Serrano-Urrea, R. N., Gó Mez-Rubio, V., & García-Meseguer, M. J. (2017). Individual and institutional factors associated with functional disability in nursing home residents: An observational study with multilevel analysis, Domingo Palacios-Ceña 3, Cé sar Fernández-de-las-Peñas. *PLoS One*, *12*(8), 1–15. <https://doi.org/10.1371/journal.pone.0183945>
- UNESCAP. (2015). Disability at a Glance 2015: Strengthening Employment Prospects for Persons with Disabilities in Asia and the Pacific. In *United Nation Economic and Social Commission for Asia and the Pacific*. <https://doi.org/10.1017/CBO9781107415324.004>
- United Nations. (2007). General Assembly: Convention on the Rights of Persons with Disabilities. In *Treaty Series* (Issue January, p. 3). <http://www.un.org/disabilities/documents/convention/convoptprot-e.pdf>
- World Health Organization. (2008). The Global Burden of Disease: 2004 update. *2004 Update*, 146. <https://doi.org/10.1038/npp.2011.85>
- Yokota, R. T. C., Nusselder, W. J., Robine, J. M., Tafforeau, J., Deboosere, P., Moura, L., Andrade, S. S. C. A., Castro, S. S., & Van Oyen, H. (2017). Contribution of chronic conditions to functional limitations using a multinomial outcome: Results for the older population in Belgium and Brazil. *Archives of Public Health*, *75*(1), 1–12. <https://doi.org/10.1186/s13690-017-0235-3>
- Zhong, Y., Wang, J., & Nicholas, S. (2017). Gender, childhood and adult socioeconomic inequalities in functional disability among Chinese older adults. *International Journal for Equity in Health*, *16*(1). <https://doi.org/10.1186/s12939-017-0662-3>