

Socio-demographic differences of disability prevalence among the population aged 60 years and over in Bangladesh

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Abstract

This study aims to delineate the sociodemographic differences in disability prevalence across the population aged 60 years and over in Bangladesh, and to investigate the association of factors with reporting disability in later life. A microdata sample for those aged 60 years or over from the Census of Bangladesh 2011 was used where disability was assessed with a self-reported single response question. Logistic regression models were performed separately for men and women. Results reveal that the disability prevalence rate increased sharply with age, and it was higher among older women (5.2%) compared to men (4.8%). Physical and vision disabilities were the two categories with the highest prevalence of reported disabilities, with a higher prevalence of physical disability among men and vision disability among women. Being older, female, currently not in marital partnership, and having a lower educational attainment, not being employed, living alone, and residing in the rural areas were significantly associated with reporting disability in later life. The higher prevalence of disability among older women, those who are illiterate, and those residing in rural areas highlights the need for policies prioritising these groups. Special attention should also be given to those who are currently not in marital partnership, particularly women who are living alone.

Keywords: Disability, later life, sociodemographic characteristics, Census, Bangladesh.

Introduction

It is well-documented both in the developed and developing countries that the prevalence of disability is higher among people of advanced age (Brault, 2012; Office of National Statistics (ONS), 2013; Tareque et al., 2014; World Health Organization (WHO), 2011) with the very old (aged 85 and over) experiencing a very high prevalence rate (Cherry et al., 2012; Elwan, 1999). This positive association between age and disability not only stems from the physiological changes that occur with increasing age, but also from the accumulation of health impacts arising from acute and chronic diseases, falls, and other injuries across the life course. Consequently, older people often experience ill-health, disability, and other functional limitations, with many exhibiting multiple health conditions simultaneously (Melzer & Parahyba, 2004).

Mobility, high cognition, vision, and hearing play a significant role in healthy and active ageing, and are strongly associated with an individual's wellbeing, informal care needs, and long-term care support (Gill et al., 2001). Research has shown that disability and long term health conditions among older people result in increased cost for social services, medical care, and social care in addition to a decline in quality of life (Parker & Thorslund, 2007). Moreover, older people (aged 60 or over) in developing

countries, like Bangladesh, face further impacts on health and well-being as a result of a poor public health system, low pension coverage rates, and a scarcity of formal care (Knodel et al., 2015). Furthermore, the majority of older people in low and middle-income households would not be able to afford the cost of formal health and social care. This may result in a significant decline in their quality of life and can hinder active ageing. Given the significant role of disability in the quality of life and health of older people, this study aims to delineate the sociodemographic differences in disability prevalence across the population aged 60 years or older in Bangladesh, and to investigate the factors associated with reporting disability in later life.

Background

Bangladesh, the eighth most populous country in the world, happens to be one of the twenty developing countries with the largest number of older people (Kabir et al., 2013). The combined effect of declining fertility and mortality rates over the last four decades has meant that both life expectancy at birth and the proportion of older people have increased in recent years. As of 2015, life expectancy at birth in Bangladesh was 71 years for males and 73 years for females (WHO, 2015). Although the proportion of older people is still low in Bangladesh (6.7%), the absolute number of older people is very high (around 9.7 million) (Bangladesh Bureau of Statistics (BBS), 2010). This proportion is projected to increase to 22%, amounting to almost 20 million, by 2050, which is similar to the current number of people in Romania (United Nations Department of Economic and Social Affairs/Population Division (UNDESA), 2012). Within this context of population ageing, persistent socioeconomic inequalities are noticeable across the country, affecting health gradients particularly in later life (Mostafa & van Ginneken, 2000; Rahman et al., 1992; Razzaque et al., 2010). Studies have shown that older people from a lower socio-economic status (SES) are more exposed to health risks, in comparison to people from a higher SES. Before Bangladesh gained independence from Pakistan in 1971, and even up to a decade after, access to education, employment, and health care services was poor in rural areas and, as such, substantial socio-demographic gradients in health have been reported in several studies for the older rural population in Bangladesh (Mostafa & van Ginneken, 2000; Razzaque et al., 2010). Moreover, although access has been less limited in urban areas, these services have been mainly available to men (Abedin, 2003).

Using data collected from those aged 60 and over through the 2010 Bangladesh Household Income and Expenditure Survey (BHIE), Tareque and colleagues (2013) found that 38.9% of older men and 46.5% of older women had at least one form of disability. Furthermore, the prevalence of disability was almost four times higher for older men and five times higher for older women compared to the overall rate for the adult population (9.1%). They also reported that eyesight disability was the most

prevalent form of disability, with 28.9% of men and 36.5% of women being affected. However, the disability data in this study did not include people living in institutions, and was prone to rural-urban bias as the individuals were accounted in the complex sampling design without applying any weights. Another study by Cherry and colleagues (2012), using survey data (collected by Gonoshasthaya Kendra Bangladesh) found that 26.0% of people aged 60 or over living in rural villages reported experiencing 'much difficulty' on at least one of 12 functional activities, and this proportion increased with age. The majority (55.0%) of those aged 85 and over experienced problems with eyesight and widespread difficulties with some of the functional activities such as carrying and lifting, and going outside the house. However, the data of this study was collected from selected villages within a district and so may not be representative of all of rural Bangladesh.

Based on the INDEPTH-WHO SAGE Matlab 2007 data set, Razzaque and colleagues (2010) reported that socio-economic indicators such as education and asset score were associated with older people's health outcomes including disability level, self-rated health, and quality of life. The authors further argued that older people who were living with a spouse at the time of data collection had better health compared to those who were not. Whether the gradient in observed disability in a field surveillance setting applies to the entire country remains unclear. So far, there has been no study conducted in Bangladesh that investigates sociodemographic differences in disability prevalence in later life using nationally representative data. Using a microdata sample, limiting for those aged 60 and over, from the Census of Bangladesh 2011, this study aims to explore the sociodemographic differences in disability among older people and to examine the association of sociodemographic factors with reporting disability in later life in Bangladesh.

Methods

Data source

This study utilised individual-level 5.0% microdata from the Census of Bangladesh 2011. The dataset was obtained formally from the Integrated Public Use Microdata Series (IPUMS) (Minnesota Population Centre, 2014) and is deposited by the Bangladesh Bureau of Statistics (BBS) (BBS, 2011a). The Population and Housing Census is one of the main data collection projects in Bangladesh, and the BBS is officially mandated to conduct it decennially. The objectives, design, and methodology of the 2011 Census have been described elsewhere in detail (BBS, 2012). In brief, a house-to-house interview method was used, and data collection was conducted using the modified De Facto method (BBS, 2011b). One of the distinguished features of this 2011 Census was that, in addition to the traditional sociodemographic variables, the Census questionnaire included a question on individual-level disability status according to the recommendation of the Washington Group (WG) in 2010.

The microdata sample was drawn by BBS using the systematic random sample of every 10th household with a random selection of the first household. The size of the 5.0% microdata sample was 7,205,720 individual records. As our analyses focused only on individuals aged 60 or over, the final sample size for this study was 537,933 individuals. The proportion of males in the microdata sample was 53.2%, which is similar to the Census statistics covering the whole of the Bangladeshi population aged 60 and over

Response variables

Disability status: In the 2011 Census questionnaire, question number 19 was designed to assess individual-level disability status and to identify the types of disability. This question was asked in the following format (in Bangla): Q19. Disability: 0=No problem or none, 1=Speech, 2=Vision, 3=Hearing, 4=Physical, 5=Mental, and 6=Autistic. Respondents in a household were asked whether they had any of the six categories of disability. If no disability was present, then he or she was considered as 'not having disability'. However, if anyone stated having any one of six disabilities, then he or she was considered as 'having disability' of that category. Individuals with multiple disabilities across different categories were recorded as having a disability in the one category that they felt their disability was most severe. For this study, a binary disability status variable was constructed by dividing the responses into two categories: "have no disability" (coded as 0), for the responses of 'none', and "disability" (coded as 1) for any recorded disability of the six forms of disabilities included in the questionnaire. Six separate binary variables were also created for each of the types of disability reported, such as physical disability (1= yes, 0=no) and vision disability (1= yes, 0=no) to fit separate logistic regression models on each type of disability.

Predictor variables

We considered a range of sociodemographic indicators such as age, sex, marital status, education, living arrangements, employment status, and urban-rural status. These were selected based on their associations with health indicators found in previous studies (Cherry et al., 2012; Razzaque et al., 2010; Tareque et al., 2013). Where indicators were missing, we used indicators that could capture similar information. For example, as asset or wealth data were not available in the Census data, we included two other important indicators of SES: education and employment (Table 1), as these have been shown to be strongly associated with wealth status. The predictor variables are described in detail below.

Age group: In order to examine the age gradient of disability in later life, this study created an 'age group' variable, which consisted of four age categories: 60-64, 65-69, 70-74, and 75 and over. This comprised 36.7%, 19.7%, 20.7%, and 23.0% of the total older population, respectively.

Household type: There was no specific question in the 2011 Census questionnaire relating to household type. However, a 'household type' variable was constructed by IPUMS-International, which considered household heads and other members of the family in adherence to the UN classification system recommended for the Population and Household Censuses (Principles, 2008). This derived variable had thirteen categories but for this study these were collapsed into four categories: one-person (3.7%), couple living without children (9.9%), couple living with children (16.8%), and other types (69.7%).

Educational attainment: The educational attainment variable was originally constructed with six categories: No schooling, some primary completed, primary completed, lower secondary completed, secondary completed, and university completed. However, considering the distribution of educational attainment of older people, this study collapsed the variable into four categories: no schooling (67.0%), some primary or primary completed (20.1%), lower secondary or secondary completed (10.8%), and university completed (2%).

Marital status: In the Census questionnaire, marital status of each individual was classified as unmarried, married, widowed, and divorced or separated. Considering the distribution, this study categorised this variable into two categories: currently in partnership (includes married at the time of data collection: 72.2%) and currently not in partnership or now single (includes unmarried, widowed, divorced or separated at the time of data collection: 27.8%).

Other predictor variables: Other independent variables considered in the analysis are sex (53.2% male; 46.9% female), urban-rural status (82.1% living in rural areas; 17.9% in urban areas), and employment status categorised as employed (41.2 %), unemployed (29.2%), and household work (29.6%) at the time of data collection. As a category of employment status, household work refers to the list of regular daily life activities in people's own home or in someone else's. This covers physical, mental, emotional, and spiritual work and is performed by whoever has that responsibility whether they are male or female (Eichler & Albanese, 2007).

Statistical Analysis

Initially, bivariate analysis was performed using cross-tabulation to exhibit and compare the prevalence of disability among different sociodemographic sub-groups, and the significance of the differences in disability prevalence was measured by the chi-square test. From the bivariate analysis, it was found that gender distribution of sociodemographic variables such as 'marital status', 'education' and employment status' was highly skewed. Thus, considering the strong association of 'sex' with other predictor variables, multiple binary logistic regression technique was performed separately for men and women in order to explore the factors associated with reporting disability through controlling various predictors. Logistic regression models were also applied to estimate the association of reporting physical and vision disability, the two highly prevalent categories of disability in later life (Table 3). Analyses were performed using STATA/SE 14.0 (StataCorp LP, College Station, Texas, United States of America).

Results

Table 1 presents the distribution of the characteristics of the sample by sex highlighting significant differences between men and women across all sociodemographic characteristics. The proportion of women in the sample was 46.9%, and more than half of them (53.6%) were not partnered at the time of the Census, compared to only 5.1% of older men. Almost 80.0% of older women did not receive any formal education compared to 55.0% of men, and a very small proportion of women (0.3%) completed university education, compared to 3.5% of men. Due to lower educational attainment and other barriers such as gender norms and expectations related to female work, Bangladeshi women had significantly lower employment rates with only 4.0% of women currently employed compared to 74.0% of men. The majority of older women (60.6%) were involved in housework in contrast to only 2.3% of older men showing that the majority of work performed by older women was unpaid despite their active social and economic engagement. In terms of living arrangements, 6.6% of older women lived in one-person households compared to only 1.1% of men. This may be due to women having a higher probability of being widowed. Furthermore, only 5.6% of women lived in households categorised as 'married couple with children', compared to 26.6% of men. Almost, 82.0% of older people resided in rural Bangladesh, and the proportion was similar for both sexes (81.6% for male and 82.7% for female).

Table 2 presents the prevalence of disability by sex and sociodemographic characteristics. Table 2 shows significant gender differences in disability prevalence across all sociodemographic characteristics. The proportion of older women with disability was 5.3% compared to 4.8% of older men (overall rate was 5.0%), and disability was more prevalent among the oldest age group (75 and over) (7.8% for men vs. 8.6% for women, $p < 0.001$) compared to those aged between 60-64 (3.3% for

men vs. 3.4% for women, $p < 0.001$). Older people who were not currently partnered were more likely to experience disability, and the absolute number with disability was highest among single, divorced or widowed women ($n=8,932$). In terms of living arrangements, older people who lived in one-person households were more likely to experience disability compared to those living in other types of households (6.6% in one-person households vs. 3.4% in households containing a married couple living with children, $p < 0.001$). The lack of caregiver availability in one-person households might partly be responsible for the higher prevalence of disability among older people living alone. Disability prevalence was also higher among older people living in rural areas compared to those in urban areas (5.24% in the rural settings vs. 4.0% in the urban settings, $p < 0.001$) and this might be due to limited access to education and healthcare services in rural areas. There was a sharp decline in disability prevalence with increasing educational attainment, and educated older women were less likely to experience disability than educated older men. However, illiterate women were more likely to experience disability compared to illiterate men (5.6% for women vs. 5.2% for men, $p < 0.001$). In terms of employment status, disability was more prevalent among the unemployed (11.8% for men vs. 9.0% for women, $p < 0.001$) compared to those who were employed (2.8% for both sexes) or involved in household work (3.3% for both sexes).

Table 3 shows the percentage of older people reporting different types of disability by sociodemographic characteristics. The percentages increased with age for all types of disability (e.g. vision disability 2.5% for the people aged 75 and over compared to 0.9% for the aged 60-64). Among the six types of disability, physical disability was the most prevalent category (2.1%), followed by vision disability (1.5%), hearing disability (0.7%), mental disability (0.3%), speech disability (0.2%) and autistic (0.2%). Furthermore, the prevalence of the different types of disability differs by sex. For example, physical disability was more prevalent among older men compared to older women (2.3% vs. 2.0%, respectively). However, vision disability was more prevalent among older women compared to older men (1.8% vs. 1.3%, respectively). Older people currently not in a partnership, living in one-person households, and living in rural areas, had a higher prevalence of all disability types compared to their respective counterparts. In particular, the prevalence of vision, hearing, and mental disabilities among older people who were currently not in a partnership was nearly close to twice the prevalence of partnered older people (1.2% vs 2.3%, 0.5% vs 1.0% & 0.2% vs 0.5%. respectively)

In terms of educational attainment, the prevalence of all types of disabilities declined with increasing level of education. The rate of decline in vision and hearing disabilities with increasing educational attainment was slightly higher than that of physical disability (vision: 1.7% for 'no schooling' to 0.6% for 'university completed' vs. physical: 2.2% for 'no schooling' to 1.6% for 'university

completed'), and thus, physical disability was still high among more educated older people. Also, the prevalence of physical and vision disabilities was very high among currently unemployed older people compared to those who were currently employed or doing household work (vision disability: 2.8% for currently unemployed vs. 0.9% for employed; physical disability: 4.6% for 'currently unemployed' vs. 1.1% for employed).

Table 4 presents the odds ratios (OR) and 95% confidence intervals of multiple logistic regression models conducted separately for older men and women. In both models, all sociodemographic variables were statistically significantly associated with reporting disability in later life. The OR of most of the variables in the model for older women were higher than those in the model for older men, and older women were more likely to report disability than older men. In particular, the likelihood of reporting disability increased with age in both models; older men and women in the age group 75 and over had a 35% and a 72% higher likelihood of reporting disability, respectively, compared to those, who were in the age group 60-64. Again, older men and women who were currently not in a partnership were 13% and 25% more likely to report disability, respectively compared to those who were in a partnership at the time of data collection. In terms of living arrangements, older men and women who lived in one-person households were 34% and 72% more likely, respectively to report disability compared to those who lived in 'married couple with children' households. Similarly, compared to living in 'married couple with children households', both men and women living in 'married couple with no children' households were 23% and 52% more likely to report disability, respectively. Furthermore, individuals who were living in rural areas had a higher likelihood of reporting disability in later life; men were 50% and women were 27% more likely to report disability than their urban counterparts. This was partly due to disparities between rural and urban areas in terms of wealth, education, and access to health care services.

Increasing educational attainment decreased the odds of reporting disability. Older men who were university educated, secondary or lower secondary, and primary or lower than primary educated were 49%, 20% and 9%, respectively, less likely to report disability compared to those who did not have any formal education. Similarly, the respective odds of older women reporting disability were 29%, 23%, and 18% lower. Individuals who were currently employed or active in household work were less likely to report disability compared to the currently unemployed. For older men, those who were employed or performed household work at the time of the survey were 77% and 63% less likely, respectively to report disability compared to currently unemployed men. However, currently employed and household working women were 61% less likely to report disability than those currently

unemployed indicating the importance of employment in an environment where formal employment, public health, and pension systems are weak.

Table 5 presents the outputs (OR and 95% CI) of multiple logistic regression models separately for older men and women, investigating associations between sociodemographic variables and reported physical disability in later life. Advancing age significantly increased the odds of reporting physical disability among women whereas the odds were not significant among men (except aged 75 and over). Women of the age group 75 years and over were 82% more likely to report physical disability compared to those aged 60-64 whereas for men this figure is only 8%. In terms of partnership status, men currently not in a partnership were 10% less likely to report physical disability than men who were partnered. In contrast, women currently not in a partnership were 6% more likely to report physical disability than those who were partnered.

For older women, education was not found to be significantly associated with physical disability while for older men education was significantly associated with physical disability. Older men who had completed university education and secondary or lower secondary education, were 38% and 12% less likely report physical disability, respectively compared to those who had no formal education. Employment status was significantly associated with physical disability both for older men and women, with men who were currently employed and active in household work 84% and 72%, respectively less likely to report physical disability compared with the currently unemployed men. The respective percentages of likelihood for older women are 66% and 68%.

In terms of living arrangements, older men who lived in 'couple living without children' households were 17% more likely to report physical disability compared to those living households classified as 'couple living with children'. Living in a one-person household was not significantly associated with reporting physical disability, probably partly due to a small number of older men (1.1%) living in one-person households. On the other hand, older women living in one-person households and in the 'couple without children' households were 60% and 38% more likely to reporting physical disability respectively compared to those who lived in the 'couple with children' households. However, in the case of residing in rural areas, both older men and women were significantly associated with reporting physical disability but the OR is higher for older men (OR: 1.5, CI:1.4-1.7) compared to older women (OR: 1.2, CI:1.1-1.3).

Age was significantly associated with reported vision disability for both men and women (Table 6). In particular, older men and women aged 75 years and over had 2.1 times and 1.8 times higher odds, respectively of reporting vision disability compared to those aged between 60 and 64. Current partnership status was not significantly associated with reporting vision disability for older men but older women who were currently not in a partnership were 39% more likely to report vision disability compared to those who were partnered. Education and employment status of both men and women were significantly associated with reporting vision disability but as a negligible number of older women had had access to university education, the odds ratios did not show any significant associations. Older men who completed university education and secondary or lower secondary education were 49% and 23% less likely to report vision disability, respectively compared to those who had had no formal education.

Older men who were currently employed were 63% less likely to report vision disability compared to unemployed men. Contrastingly, older women who were involved in household work were 50% less likely to report vision disability compared to unemployed women. Moreover, older women who were living alone were 77% more likely to report vision disability compared to those living in the 'couple with children' household. However, in the case of older men, living alone was not significantly associated with vision disability. This might be due to few older men living alone in Bangladesh. Both men and women who were living in the 'couple without children' household were 23% and 53% more likely to report vision disability, respectively compared to those living in 'couple with children' households. Furthermore, both older men and women residing in rural areas were significantly associated with reporting vision disability (OR: 1.4 for men and 1.3 for women).

Discussion

Sample composition

The microdata sample used for this study is a strength considering its size and representativeness of the national population. The proportion of women is lower than men in the sample which is disproportionate with the general preponderance of women in older populations (UNDESA, 2013). This difference might partly be attributed to the very high maternal mortality rate in Bangladesh over the second half of the last century. For example, in Matlab, rural Bangladesh maternal mortality in 1978 was 600 per 100,000 livebirths, and then substantially declined to 200 in 2000 (Ronsmans et al., 2006). The higher proportion of older men is also partly due to the accumulated disadvantage that Bangladeshi women face throughout their lives. Some of this disadvantage might stem from partnership status. The disparity in partnership status between men and women might be attributed

to men traditionally marrying younger women in Bangladesh, and also remarrying at an older age (HelpAge, 2013). Women's accumulated disadvantages also stem from educational inequalities. Due to lower educational attainment and other barriers, Bangladeshi women had very low employment rates. Further, as a higher proportion of older women are likely to be widowed compared to older men, due to the gap in marital age, many women in Bangladesh would experience poverty in later life after the loss of their earning partner.

Disability Prevalence

This is the first study to explore disability prevalence among the older population in Bangladesh using national Census data. Disability in later life not only affects the individual, but also other members of the family who care for them. We found that the disability prevalence rate among the older population was almost four times higher compared to that of the whole population (5.0% vs. 1.4%) (BBS, 2012), with a similar gender disparity as shown in studies from other developing countries (Balogun & Guntupalli, 2016). However, the disability prevalence rate is a much lower than reported in other survey studies conducted in Bangladesh (Cherry et al., 2012; Tareque et al., 2013) as well as in international studies. For example, WHO (2011) estimated the global disability prevalence using data from the World Health Survey (2002-2004), and found that the proportion of older people with disability was 43.4% in developing countries compared to 29.5% in developed countries. However, the prevalence rate reported here is consistent with that of the 2011 Census of India, where the proportion of people with disability in the older age groups was 4.4% for those aged between 60 and 69, 6.2% for those aged 70 to 79, 8.4% for those aged 80-89 and 8.4% among those aged 90 and over (Source: C-series, Table c-20, Census of India 2011).

Reasons for these discrepancies may be due to the difficulties in assessing disability and functioning capacity using the Census questionnaire in low income countries such as Bangladesh where only one question on disability is included in the questionnaire. In contrast, general survey questionnaires tend to use complex and expanded measures of disability which include more detailed questions compared to the Census questionnaire and thus tend to report a higher prevalence of disability than the Census measures of disability. For instance, the Bangladesh Census 2011 disability prevalence across all age groups was 1.4% whereas the Bangladesh Household Income and Expenditure Study (HIES) 2010 estimates showed that the overall disability prevalence was 9.0% (BBS, 2015). The low prevalence of disability found in the Census data could be due to lack of specialised skills and probes required to identify a person with disability. Despite this drawback, it is important to note that, the Census-based approach of measuring disability using the Washington Group questions in the Census questionnaire

is the only standardised data available for the purposes of international comparisons and within country analysis of general disability prevalence (Mont, 2007). Another drawback of this disability measure is that allows the respondent to report only the most severe disability rather than reporting multiple disabilities. Hence, older people with multiple disabilities had to select only one disability that impacts them most severely. This could have further reduced the prevalence rates of disability.

It is important to note that the Census disability measure did not capture functional disability, the most prevalent disability in later life and this could also have contributed to the lower prevalence of disability. Furthermore, as the disability data used in this study are self-rated, there may be risk of reporting bias. In the context of Bangladesh, many believe that disability is a curse as well as a cause of embarrassment to other members of the family (JICA, 2002) and they might not report the disability of older members of the family if they were responding to the questionnaire.. In contrast, other surveys mostly collect their data through individual interviews or proxy interviews. In addition, many people in Bangladesh also think that lower functional ability and ill health are a common part of later life and so may not report this as a disability. As well as collecting data from household heads, the Census may collect information for the adult who answers the door. It is less likely that people with disabilities would be head of the household and would answer the door, and hence, they are less likely to respond to the Census question. Despite all these limitations highlighted in this section, it is important to note that the Census has excellent geographical coverage as it covers all corners of the country and is an excellent source of capturing disability and relevant socioeconomic characteristics. We also argue that our data are reliable as the Census methodology is robust and reliable. Besides, we argue that the low prevalence rates reported by the Census would influence the strength of the association rather than direction of the association. In support of our argument, the Bangladesh Bureau of Statistics (BBS, 2015) contends that the Census data are reliable as the prevalence of severe and acute disability reported by the Bangladesh Household Income and Expenditure Survey is close to the Census prevalence rate.

In terms of types of disability, the prevalence of physical disability was higher than other types of disability and more prevalent among older men. As men are more likely than women to take part in outside activities in Bangladesh including driving, they have a higher likelihood of facing accidents which may contribute to more physical disability among men than women. Additionally, this may partly be due to higher accident rates (including road accidents) in Bangladesh as men are more likely to drive and travel compared to women (Maniruzzaman & Mitra, 2005). Men have a lower chance of under-reporting the disabilities that are easily identifiable (e.g. physical disability) compared to women.

In our study, vision disability was reported as the second most prevalent category of disability. In contrast to our findings, Tareque et al. (2013) found that eyesight disability was the most prevalent type of disability among older people in Bangladesh in 2010. This difference may be partially due to using different methods of measuring disability as described in the methodology, or due to the different year of the study. Older studies might report a higher prevalence of vision disability. However, recent studies might report lower prevalence of vision disability owing to a significant increase in the number of eye surgeries conducted by government-run hospitals as well as different private or voluntary hospitals. Vision and hearing disability was more prevalent among older women and this finding might partly attributed to hearing and vision aids being more commonly used by men for these types of disabilities. This may be either due to households discriminating against older women, or older men being more involved in policy interventions and having better access to services compared to older women.

Sociodemographic differences in disability prevalence

Gender

We observed that older women had significantly higher odds of reporting disability than their male counterparts. This result is in agreement with women reporting lower functional ability scores across all older age groups (Razzaque et al., 2010). Tareque and colleagues (2013) also found similar results of a higher prevalence of disability among older women compared to older men, and they demonstrated that women had a lower disability-free life expectancy compared to men. As women's life expectancy is higher than men's in Bangladesh (Razzaque et al., 2009) it may be that they may experience disability for a greater proportion of their later life.

Women were more likely to report all types of disability (except physical and speech disabilities) than men in later life. The higher prevalence of disability among older women might partly be due to their lower educational attainment, less access to health care services particularly during pregnancy, consuming a poor diet during the reproductive age, and high reproductive burden (Tareque et al., 2013). This suggests that women's lifelong experiences of deprivation, neglect, and discrimination reflect on their health in later life (Chaklader & Kabir, 2003). Moreover, according to cultural and religious traditions in Bangladesh, women have less control over family income and assets than men do, as well as a lower standing in their families (Razzaque et al., 2010). In particular, widowed women get less family care and medical attention than older men in later life. This is supported by findings from (Abedin, 2003), which revealed that widowed women who lived alone or lived without a

son had a particular risk of social isolation and poverty. All these circumstances may have contributed to a poorer health that could have resulted in a higher likelihood of disability among older women compared to older men in Bangladesh.

Marital status

This study found that being widowed and single or divorced has a significant effect on reporting disability compared with being currently married in later life. This result is in line with other findings that show that those who are currently partnered have a better health status in rural Bangladesh (Razzaque et al., 2010), and currently married are less likely to suffer disability than single older people (Tareque et al., 2014). The association between being un-partnered in older age and having a higher incidence of disability may arise from gender discrimination in Bangladesh as discussed earlier. In addition, the prevalence of vision and mental disabilities was almost double among people who were not partnered compared to those who were partnered, again reflecting the higher prevalence of these disabilities among women.

Education

Older people who had completed primary education or had education beyond this level were less likely to report suffering disability than those who had no education or less than primary education. This finding is in line with other studies that found that education is associated with older people's health status (Razzaque et al., 2010), and that higher education is protective against disability in Bangladesh (Tareque et al., 2014). Educated individuals are more likely to be employed and earn higher wages than those who have no education or low educational attainment. Thus, they could be more financially stable, which may allow them to access support and services facilitating a normal life, even where disability is present.

Employment

The association between disability and employment among older people has never been addressed in any previous studies in Bangladesh. This study found that older people with disability were less likely to be currently employed than those who had no disability. Studies have shown that individuals with disability generally tend to have lower education and employment rates, or are employed but receive low wages, compared to individuals without disability (Gannon & Nolan, 2004). In Bangladesh, the majority of people with disability are less than primary educated or are illiterate and are not currently employed. The main reason behind the very low participation of people with disability in employment in Bangladesh is likely to be linked to a lack of accessible and supportive workplace environments.

Likewise, individuals who had disability in their younger years were not supported by accessible environments in educational institutions, and did not receive support from any rehabilitation programs. As a result, they became a burden to their families.

Living arrangements and area of residence

The reasons behind the higher incidence of disability among older people in one-person households and married couple without children households may be, in part, due to a lack of family care, which is considered as the main support in later life in Bangladesh. There might also be a lower chance of misreporting as there are no other persons in the household, and so data were collected through direct interviews with the older persons who were living alone. This study also found that older people living in rural areas were more likely to suffer disability compared to those living in urban areas, a finding that has been reported in other studies (Danish Bilharziasis Laboratory for the World Bank (DBLWB), 2004; Tareque et al., 2014). The main reasons behind a higher incidence of disability in rural areas are due to a lack of access to health care services and scarce educational opportunities. In rural Bangladesh, health care facilities are very limited, and sometimes not available. Consequently, people with chronic diseases in rural areas do not get adequate medical attention, which is mostly available in urban areas, and so they often live with the disability in thinking that this is their only fate. Such a lack of access to health care may result in poor treatment of various avoidable health conditions, further increasing the prevalence of disability among the rural elderly.

To conclude, as an initial study examining the sociodemographic differences in disability prevalence in later life in Bangladesh, this study provides notable findings. Our analysis show that the disability prevalence rate increased sharply with age, and it was higher among older women compared to older men. The analysis also showed that physical and vision disabilities were the two categories with the highest prevalence of reported disabilities, with a higher prevalence of physical disability among men and vision disability among women. The logistic regression analysis showed that age, gender, marital status, living arrangements, rural residence and educational attainment were significantly associated with reporting disability in later life. However, some limitations of this study should be taken into consideration while interpreting and comprehending the findings, particularly given that the rates of disability are likely to be underestimated. Firstly, our study uses self-reported disability measures that might have resulted in a reporting bias. It is likely that our respondents underreported disability due to social stigma. Secondly, our disability measure captured the most severe disability rather than taking into consideration multiple disabilities. As a result, older people with multiple disabilities had to choose one of their disabilities and this might have further lowered

the prevalence rates of disability. Thirdly, the disability measure did not capture functional disability, the most prevalent disability in later life.

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Tables

TABLE 1

Percentage distribution of the characteristics of the sample by gender.

Variables	Male (N=285,936)	Female (N=251,997)	P value
Age group			
60-64	36.45	36.87	p<0.001
65-69	20.13	19.10	
70-74	20.99	20.30	
75 and over	22.42	23.74	
Marital status			
In partnership	94.88	46.43	p<0.001
Now single	5.12	53.57	
Educational status			
No schooling	55.39	80.25	p<0.001
Primary or less	23.77	16.02	
Secondary or lower	17.36	3.43	
University completed	3.48	0.31	
Employment status			
Unemployed	23.68	35.37	p<0.001
Employed	74.02	4.02	
Household work	2.30	60.60	
Household type			
One person	1.06	6.62	p<0.001
Couple without Children	12.89	6.45	
Couple with Children	26.64	5.64	
Other types	59.42	81.29	
Urban-rural status			
Rural	81.55	82.64	p<0.001
Urban	18.45	17.36	

TABLE 2

Prevalence estimates (in percentage) of disability among the older population in Bangladesh by sex and other characteristics.

Variables	Male (N=285,936)		Female (N=251,997)		P value
	n	%	n	%	
Age group					
60-64	3,403	3.26	3,186	3.43	p<0.001
65-69	2,237	3.89	1,995	4.15	
70-74	3,062	5.10	2,937	5.74	
75 and over	5,025	7.84	5,161	8.63	
Overall	13,727	4.80	13,279	5.27	
Marital status					
In partnership	12,469	4.60	4,347	3.72	p<0.001
Now single	1,258	8.59	8,932	6.62	
Educational status					
No schooling	8,305	5.24	11,414	5.64	p<0.001
Primary or less	3,117	4.59	1,564	3.88	
Secondary or lower	2,031	4.09	281	3.25	
University completed	274	2.75	20	2.60	
Employment status					
Unemployed	7,555	11.77	8,027	9.00	p<0.001
Employed	5,870	2.77	334	3.29	
Household work	302	4.60	4,918	3.22	
Household type					
One person	219	7.23	1,067	6.39	p<0.001
Couple without Children	2,133	5.79	622	3.83	
Couple with Children	2,903	3.81	331	2.33	
Other types	8,472	4.99	11,259	5.50	
Urban-rural status					
Rural	11,778	5.05	11,357	5.45	p<0.001
Urban	1,949	3.69	1,922	4.39	

TABLE 3

Disability prevalence (in percentage) by types and socio-demographic characteristics

Variables	Types of disability						Total
	Speech	Vision	Hearing	Physical	Mental	Autistic	
Age group							
60-64	0.22	0.93	0.40	1.42	0.26	0.12	3.43
65-69	0.20	1.19	0.49	1.72	0.25	0.15	4.00
70-74	0.24	1.69	0.73	2.31	0.26	0.16	5.40
75 and over	0.31	2.64	1.14	3.47	0.36	0.29	8.22
Overall	0.24	1.54	0.66	2.13	0.28	0.17	5.02
Sex							
Male	0.25	1.31	0.58	2.25	0.25	0.16	4.80
Female	0.23	1.79	0.74	2.01	0.31	0.19	5.27
Marital status							
In partnership	0.22	1.25	0.53	1.98	0.21	0.14	4.33
Now single	0.29	2.28	0.98	2.54	0.47	0.25	6.81
Educational status							
No schooling	0.29	1.71	0.76	2.21	0.31	0.19	5.74
Primary or less	0.16	1.30	0.50	2.01	0.22	0.12	4.32
Secondary or lower	0.16	1.02	0.41	1.98	0.26	0.14	3.97
University completed	0.06	0.64	0.17	1.59	0.21	0.08	2.74
Employment status							
Unemployed	0.37	2.79	1.05	4.64	0.69	0.40	9.93
Employed	0.20	0.89	0.45	1.10	0.09	0.07	2.80
Household work	0.17	1.21	0.55	1.10	0.15	0.09	3.28
Household type							
One person	0.41	2.08	1.20	2.19	0.43	0.22	6.62
Couple without children	0.28	1.52	0.74	2.29	0.20	0.17	5.19
Couple with children	0.21	0.97	0.42	1.70	0.16	0.11	3.58
Other types	0.24	1.65	0.67	2.21	0.31	0.18	5.27
Urban-rural status							
Rural	0.25	1.61	0.70	2.21	0.29	0.18	5.24
Urban	0.19	1.18	0.46	1.80	0.25	0.14	4.01

TABLE 4

Odds Ratio (OR) and 95% Confidence Interval (CI) in reporting disability in later life (Separately for men and women)

Variables	Men (n=285,936)		Women (n=251,997)	
	OR	95% CI	OR	95% CI
Age group				
60-64 (ref.)	1.00		1.00	
65-69	1.07**	1.01-1.13	1.10*	1.04- 1.16
70-74	1.16*	1.10-1.22	1.30*	1.24 - 1.37
75 and over	1.35*	1.28-1.42	1.72*	1.64– 1.81
Marital status				
In partnership(ref.)	1.00		1.00	
Now single	1.13*	1.06-1.21	1.25*	1.20 - 1.31
Educational status				
No schooling (ref.)	1.00		1.00	
Primary or less	0.91*	0.87-0.95	0.82*	0.78 – 0.87
Secondary or lower	0.80*	0.76-0.84	0.77*	0.68-0.87
University completed	0.51*	0.45-0.58	0.71	0.45-1.11
Employment status				
Unemployed (ref.)	1.00		1.00	
Employed	0.23*	0.22-0.24	0.39*	0.34-0.43
Household work	0.37*	0.33-0.42	0.39*	0.37-0.41
Household type				
Couple with children (ref.)	1.00		1.00	
Couple without children	1.34*	1.16-1.56	1.79*	1.57 – 2.04
One person	1.23*	1.15-1.30	1.52*	1.33 - 1.74
Other types	0.87*	0.83-0.91	1.17**	1.04 – 1.32
Urban-rural status				
Urban (ref.)	1.00		1.00	
Rural	1.50*	1.43-1.58	1.27*	1.21 - 1.34

Note: * p<0.001, **p<0.05 & ref. means reference category

TABLE 5

Odds Ratio (OR) and 95% Confidence Interval (CI) of multiple logistic regression models in reporting physical disability as the most severe type in later life

Variables	Men (n=285,936)		Women (n=251,997)	
	OR	95% CI	OR	95% CI
Age group				
60-64 (ref.)	1.00		1.00	
65-69	1.06	0.98-1.14	1.07	0.98-1.18
70-74	1.04	0.96-1.12	1.37*	1.26-1.49
75 and over	1.08**	1.00-1.15	1.82*	1.69-1.97
Marital status				
In partnership(ref.)	1.00		1.00	
Now single	0.90**	0.82-1.00	1.06	0.99-1.13
Educational status				
No schooling	1.00		1.00	
Primary or less	0.98	0.92-1.04	0.97	0.89-1.06
Secondary or lower	0.88*	0.82-0.94	0.91	0.76-1.10
University completed	0.61*	0.52-0.72	1.01	0.55-1.85
Employment status				
Unemployed	1.00		1.00	
Employed	0.16*	0.15-0.17	0.34*	0.28-0.41
Household work	0.28*	0.24-0.34	0.32*	0.30-0.34
Household type				
Couple with children (ref.)	1.00		1.00	
Couple without children	1.17*	1.07-1.27	1.38**	1.11-1.72
One person	1.08	0.86-1.36	1.60*	1.29-1.98
Other types	0.80*	0.75-0.85	1.11	0.92-1.34
Urban-rural status				
Urban (ref.)	1.00		1.00	
Rural	1.54*	1.44-1.66	1.20*	1.11-1.30

Note: * p<0.001, **p<0.05 & ref. means reference category

Table 6: Odds Ratio (OR) and 95% Confidence Interval (CI) of multiple logistic regression models in reporting vision disability as the most severe type in later life

Variables	Men (n=285,936)		Women (n=251,997)	
	OR	95% CI	OR	95% CI
Age group				
60-64 (ref.)	1.00		1.00	
65-69	1.19*	1.07-1.32	1.18*	1.07-1.30
70-74	1.47*	1.34-1.62	1.42*	1.31-1.56
75 and over	2.03*	1.85-2.22	1.83*	1.68-1.98
Marital status				
In partnership(ref.)	1.00		1.00	
Now single	1.02	0.90-1.15	1.39*	1.29-1.49
Educational status				
No schooling (ref.)	1.00		1.00	
Primary or less	0.96	0.89-1.04	0.79*	0.72-0.87
Secondary or lower	0.77*	0.71-0.86	0.66*	0.53-0.83
University completed	0.51*	0.39-0.66	0.56	0.23-1.36
Employment status				
Unemployed (ref.)	1.00		1.00	
Employed	0.37*	0.35-0.40	0.42*	0.35-0.52
Household work	0.61*	0.50-0.75	0.50*	0.47-0.54
Household type				
Couple with children (ref.)	1.00		1.00	
Couple without children	1.23*	1.10-1.37	1.53*	1.21-1.95
One person	0.93	0.67-1.29	1.77*	1.41-2.22
Other types	0.94	0.86-1.03	1.27**	1.03-1.55
Urban-rural status				
Urban (ref.)	1.00		1.00	
Rural	1.41*	1.28-1.55	1.30*	1.19-1.42

Note: * p<0.001, **p<0.05 & ref. means reference category