Rapid Assessment of Disability in Kurigram and Narsingdi Districts of Bangladesh, 2017

Towards Global Health: Strengthening the Rehabilitation Sector through Civil Society

European Union

THE UNIVERSITY OF MELBOURNE | THE NOSSAL INSTITUTE FOR GLOBAL HEALTH

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BANGLADESH BUREAU OF STATISTICS

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humanity & inclusion

Data Collection: December, 2016 – February, 2017

Data Analysis & Reporting: May – December, 2017

Published in: November, 2018

Published by: Handicap International – Humanity & Inclusion Bangladesh

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Foreword

Handicap International – Humanity & Inclusion (HI) is an independent and impartial aid organization working in situations of poverty and exclusion, conflict and disaster. HI is operating in Bangladesh since 1997 and supporting to strengthen health, rehabilitation system and prevention of disability; promote universal access to quality mainstream services; disability rights promotion; and disability inclusive humanitarian and disaster risk management system.

HI Bangladesh programme is delighted to introduce the study report on RAD, conducted from December 2016 to February 2017 in Kurigram and Narsingdi districts of Bangladesh to map out the situation of people with disabilities in Bangladesh.

I highly appreciate for generous support from BBS and the Nossal Institute for Global Health to conduct this study. The project of which this work is a part was overseen by an evidence committee, namely the National Consortium on Evidence & Action in Disability and Health (NCEADH). My heartiest appreciation also goes for their technical support and guidance in the survey.

We wish to acknowledge the team of enumerators and coordinators, who represented both the BBS and Disabled Persons' Organisations in Kurigram and Narsingdi. And also the communities, who were the subjects of this research. They were generous with their time and personal experiences.

Last, but not the least, we acknowledge the European Union as the main contributing donor for the project Towards Global Health: Strengthening the Rehabilitation Sector through Civil Society. I wish the findings and recommendations in this report are a result of data collection and discussion would help in policy formation for people with disabilities action in Bangladesh.

Dhaka
September, 2018

Jean-Loup Gouot

Director
Demography and Health Wing
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Message

Disability is an increasing extent being addressed as an issue to be included into mainstream development rather than as a matter of separate programmes and charity. This follows the recognition that people with disabilities are citizens with equal rights, who – given the opportunity - are able to contribute economically and socially to their households and communities. However, people with disabilities are often discriminated against, socially marginalized and do not have access to basic social services.

The Rapid Assessment of Disability (RAD) survey was conducted jointly by Bangladesh Bureau of Statistics (BBS) and Handicap International – Humanity & Inclusion (HI) Bangladesh with the technical support of the Nossal Institute for Global Health, Melbourne, Australia to understand the situation of people with disabilities in Kurigram and Narsingdi districts, as part of the 'Towards Global Health: Strengthening the Rehabilitation Sector through Civil Society' project of HI.

To estimate the prevalence of disability and to determine the socio-demographic factors associated with disability, RAD toolkit was used for methodological purpose. The survey also compared the level of well-being, access to services and participation in the community among people with disabilities compared to people without disabilities.

I would like to express my profound regards and deep gratitude to the Secretary, Statistics and Informatics Division and Director General, BBS for their valuable suggestions, continuous guidance and all out support in smooth completion of all activities and bringing the report into its final shape.

It is worth mentioning that HI Bangladesh has provided generous support in implementation of the RAD Survey. I take the opportunity to express my indebtedness to Nossal Institute for Global Health, Melbourne, Australia for the partnership of this survey of BBS. My sincere thanks to all Local Registrars, Supervisors and Monitoring Officers working with RAD. The working team headed by Mr. A K M Kamrul Islam, Focal Point, deserves special appreciation for organizing the survey.

I hope this report will be useful to the policy-makers, planners, researchers, development partners and other stakeholders. Suggestions and comments for further improvement will be highly appreciated.

Dhaka
September, 2018

Md. Mashud Alam

Ambassador of the European Union to Bangladesh

Message

People with disabilities are disproportionately represented amongst the world's poorest people. They face many barriers preventing them from fully participating in society on an equal basis with others and are more likely to experience deprivation and discrimination. The promotion of the rights of people with disabilities is therefore central to the 2030 Agenda for Sustainable Development, which commits to "leave no one behind" and includes disability as a cross-cutting issue in most of the Sustainable Development Goals (SDGs). By signing and ratifying the United Nations Convention on the Rights of Persons with Disabilities (UN-CRPD), the European Union (EU) has committed to systematically mainstream the rights of persons with disabilities in its cooperation programmes and policies. The New European Consensus on Development adopted in 2017 further reinforces these commitments to engage actively in disability-inclusive development.

The EU is pleased to support the RAD survey through the EU-funded project "Towards Global Health: strengthening the rehabilitation sector through civil society". The EU highly commends the leading role of the Bangladesh Bureau of Statistics (BBS) in carrying-out this important assessment, along with Handicap International – Humanity & Inclusion (HI) and Nossal Institute for Global Health. Appreciation is also extended to the Disabled People's Organizations who actively participated to the survey, as well as to the Evidence Committee of the project for their technical support and guidance throughout the process. The EU encourages BBS to replicate the RAD module across the country in order to get a comprehensive overview of people with disability in Bangladesh.

By estimating the disability prevalence in two districts of Bangladesh and comparing the levels of well-being, access to services and participation in community life between people with and without disabilities, the Rapid Assessment of Disability (RAD) survey is an important contribution to fill the information gap at national level. It is also an important step to fulfil Article 31 of the UN-CRPD which requires its signatories to collect appropriate statistical and research data at national level to help parties to formulate and implement policies to achieve the Convention's objectives. The findings of the survey on met/unmet needs and barriers in accessing services for people with disabilities will be useful for all stakeholders in defining their strategy on disability in Bangladesh.

I trust the findings of this survey will be useful for the Government of Bangladesh, development partners, researchers and others to take the necessary measures to ensure the full inclusion of people with disability in society and their equal participation in the labour market, notably as the country is delivering on its commitments to become a Middle-Income Country by 2021.

Dhaka
November, 2018

Rensje Teerink

Director
Nossal Institute for Global Health
University of Melbourne

Message

The Nossal Institute for Global Health was proud to collaborate with Humanity & Inclusion Bangladesh and the BBS to implement this Rapid Assessment of Disability (RAD) survey. The RAD was developed at the University of Melbourne by The Nossal Institute for Global Health and the Centre for Eye Research Australia, with funding from the Australian Government. HI Bangladesh and its partners recognised that one of the main challenges for evidence-based inclusive development is having comparable, valid data to inform program design and measure change. The RAD helps address that problem by providing a standardised, reliable method to measure disability prevalence, and understand the barriers persons with disabilities face. By working together with DPOs, this RAD survey was also a powerful way to build collaborations for practice, at the same time as generating evidence about disability in the target districts.

In this project, RAD findings have been used to build awareness of unmet needs of people with disabilities, re-think barriers to rehabilitation and other services, and the inequities experienced by persons with disabilities. HI and the BBS also planned and successfully implemented a knowledge transfer process, wherein the implementation of this RAD was also used to build skills and knowledge for future assessments. So, while the findings of this RAD are being used today, we can look forward to more high quality, evidence-based inclusive development practice, building on Bangladesh's proud achievements in disability rights and services to date.

Melbourne

September, 2018

Professor Barbara McPake

Acronyms

APAT	Assistive Product Assessment Tool
BBS	Bangladesh Bureau of Statistics
CI	Confidence Interval
DPOs	Disabled People's Organisations
DSS	Department of Social Services
EA	Enumeration Area
GPS	Global Positioning System
HI	Handicap International- Humanity & Inclusion
HIES	Household Income and Expenditure Survey
ICF	International Classification of Functioning, Disability and Health
IDSC	Integrated Disability Service Centre
JPUF	Jatiyo Protibondhi Unnayan Foundation
PSOSK	Protibondhi Seba O Sahajjo Kendra
RAD	Rapid Assessment of Disability
SD	Standard Deviation
UNICEF	United Nations Children's Fund
WG	Washington Group on Disability Statistics
WHO	World Health Organization
WHS	World Health Survey

Definitions

Adults	Individuals aged 18 years and older.
Cases	People with disabilities identified in this study.
Children	Individuals aged less than 18 years. In this study children aged 2-17 years were recruited.
Cluster	Refers to the enumerating areas used for the population census, villages in rural areas and muhallas in urban areas.
Controls	People without disabilities selected on purpose to match with a case within similar age group, same sex and from the same neighbourhood.
Disability	As defined by the International Clasification of Functioning, Disability and Health (ICF), disability is "an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors)"**.** Impairment: problems in body function or structures. Activity limitation: Difficulties an individual may have in executing activities such as mobility, self-care and communication. Participation restriction: Problems an individual may have in involvement in life situations.
Household	Group of people, often family, living together and sharing meals in the same kitchen as other members of the household for at least 6 months in a year.
Kobo Toolbox	A free open-source software for filed-survey data collection on a mobile device.
People with disabilities	In this study, people with disabilities are individuals with significant activity limitations.
Socioeconomic status	Determined by calculating wealth index based on the characteristics of the make of the house and durable assets the household owns.

Executive Summary

Background

There are different estimates on the prevalence of disability in Bangladesh ranging from 1.4% to 31.9%. Planning development programs requires reliable estimates on the prevalence of disability and information on the level of participation of people with disabilities in the community and associated barriers for participation. The Rapid Assessment of Disability (RAD) survey was commissioned by Handicap International Bangladesh to understand the situation of people with disabilities in two target areas in Kurigram and Narsingdi districts, as part of the *Towards Global Health: Strengthening the Rehabilitation Sector through Civil Society* project, funded by the European Union.

Objectives

- To estimate the prevalence of disability among people aged 2 years and above in two unions of Kurigram and Narsingdi districts of Bangladesh.
- To determine the socio-demographic factors associated with disability in two unions of Kurigram and Narsingdi districts of Bangladesh.
- To compare the level of well-being, access to services and participation in the community among people with disability compared to people without disabilities matched for age, sex and cluster.

Methods

A cross sectional population-based household survey was undertaken in two unions of Kurigram and Narsingdi districts of Bangladesh. A sample of more than 6000 participants aged 2 and over were recruited. This was comprised of more than 3000 participants per union from 60 clusters in each of Kurigram and Narsingdi. The RAD survey, developed to identify people at risk of disability[1] and the impact of disability on participation in the community, was used. The RAD questionnaire is interviewer-administered and has two parts. The first part contains questions about the socio-economic characteristics of the household, which was administered to the head of the household.

[1]The term 'at risk of disability' refers to people with difficulties performing activities such as seeing, hearing and walking and most likely experiencing restrictions for participating in the community. Elsewhere in this report, this is reported simply as prevalence, percentage or similar, of people with disability.

The second part is questionnaire designed for each individual in the household comprised of four sections: (1) demographic information, (2) self-assessment of functioning, (3) well-being and (4) access to the community. A new tool to understand access to assistive products, in development by the World Health Organization, was incorporated into the survey.

People at risk of disability were identified based on the responses to the 'self-assessment of functioning' section. For adults, this section comprised questions about difficulty performing activities on seeing, hearing, mobility, communication, self-care, cognition, gross and fine motor, appearance and psychological distress domains. The Washington Group (WG) Short Set questions are included in this section. Each question asks about difficulties in doing the activity due to a health problem using the 4-point Likert scale: 'no difficulty,' 'some difficulty,' 'a lot of difficulty,' and 'cannot do it at all.' People who reported 'a lot of difficulty' or 'cannot do at all' in at least one of the domains related to sensory/physical/communication/cognitive and/or responding 'most' or 'all of the time' to at least two out of six items on the psychological distress domain were considered to have disability.

In case of children (2-17 years), the latest draft UNICEF/WG Module on Child Functioning and Disability was used in the self-assessment of functioning section. It comprised items on seeing, hearing, walking, self-care, understanding, communication, cognition, worry/feel sad, behaviour and social function. The response categories were same as the adult questionnaire. Responses to having 'a lot of difficulty' or 'cannot do at all' to at least one domain were considered to indicate disability.

The well-being section of the RAD for adults and children captured participation in different aspects of life such as general health, sleep, opinion being counted, making new friends, and feeling safe in daily life. Each item had four response categories ranging from 1 (all of the time) to 4 (never). The access to the community section comprised questions on the level of access and inclusion in different services and in the community. The domains included health, rehabilitation, assistive devices, water and sanitation, education, employment, community consultations, social activities and disaster management related services. This section captured the level of access to the domain in the last six months as much as needed and barriers for not having access as much needed. The well-being and access to the community sections were administered to those who were identified to have disability and their age and sex matched controls. The access section was

adapted to capture more in-depth information on access to rehabilitation and assistive devices, using the WHO pilot *Assistive Product Assessment Tool – Needs Module*.

For each participant identified as at risk of disability, an age and sex matched control who had been screened not to have disability, was identified from a neighbouring household in the same neighbourhood that did not have a person with a disability. For children aged 2 to 4 years, the age matching was exact. Age matching for those aged 5 to 50 years was within 2 years and for those over 50 years was within 5 years.

The data were collected on mobile Android based tablets using the 'KoBo Toolbox' application and server. Both English and Bengali questions were used.

Ethics approval was obtained from the Human Research Ethics Committee at the University of Melbourne. In Bangladesh, the study protocol was endorsed by the Bangladesh Bureau of Statistics (BBS).

Key findings

A total of 3,180 individuals in Kurigram and 3,572 individuals in Narsingdi participated in the survey with an overall response rate of 87.9% and 90.6% respectively. The mean age ± standard deviation (± SD) was 27.2 ± 11.1 and 28.9 ± 12.1 with 53% and 56% women in Kurigram and Narsingdi respectively.

Prevalence of disability among adults (18 years and older)

- The prevalence of disability using RAD definition was 5.0% (95% CI: 4.1, 6.1) in Kurigram and 5.0% (95% CI: 4.1, 6.1) in Narsingdi among adults aged 18 years and older.
- Using Washington Group six Short Set questions, the prevalence was 4.4% (95% CI: 3.6, 5.4) in Kurigram and 4.0% (95% CI: 3.2, 4.9) in Narsingdi.
- The most commonly reported difficulties were psychological distress (3.0% in Kurigram and 2.1% in Narsingdi) and mobility (2.4% in Kurigram and 2.2% in Narsingdi).
- Psychological distress was reported as a concurrent limitation among a little over half (56.5%) and approximately one-third of those who reported sensory/physical/communication/cognitive limitations in Kurigram and Narsingdi respectively.

Prevalence of disability among children

- In Kurigram, the prevalence was 1.7% (95% CI: 0.6, 5.2) among 2-4 years age group and 1.9% (95% CI: 1.2, 3.1) among 5-17 years age group.
- In Narsingdi, the prevalence was 1.1% (95% CI: 0.3, 4.5) among 2-4 years age group and 1.2% (95% CI: 0.7, 2.3) among 5-17 years age group.
- Mobility was the most commonly reported limitation in both age groups of children in Kurigram.
- Self-care was the most commonly reported limitation among 5-17 years old age group. Being understood and learning were the most commonly reported difficulties among 2-4 years old age group.

Factors associated with disability

- The prevalence of disability was not different between men and women in either district. However, women with disabilities were more likely to be separated/widowed/divorced and undertake unpaid work or unemployed compared to men with disabilities in both districts.
- Disability prevalence increased significantly with increasing age where one in six people and one in seven people aged 55 years over had disability in Kurigram and Narsingdi respectively.
- The prevalence of disability was higher among those who never attended school (7.5% in Kurigram and 10.3% in Narsingdi) compared to those who had schooling (2.8% in Kurigram and 3.1% in Narsingdi).
- The prevalence of disability was similar among different socioeconomic status groups measured using household characteristics and the ownership of assets.
- People with disabilities were more likely to be unemployed in both districts, where 24% in Kurigram and 18% in Narsingdi among unemployed adults had a disability.
- The risk of having a disability increased to up to two fold among adults who reported poor general health compared to those who reported very good/good health.
- Disability prevalence was similar in different age groups between 2 and 17 years and different socioeconomic status groups. Children with disabilities were less likely to have attended school, reported poor general health and injuries in both districts.

Case-control study: Disability and access to the community

- Adults and children (5-17y) with disabilities had significantly poorer wellbeing compared to their age and sex matched controls in Kurigram.
- While adults with disabilities had similar wellbeing compared to controls in Narsingdi, children with disabilities had poor wellbeing scores than their age and sex matched controls.
- In both districts, adults with disabilities had higher unmet needs for accessing health, work, community consultations and social activities compared to controls.
- In Kurigram, adults with disabilities had higher unmet need for toilet facilities, whereas there was no difference in Narsingdi. This difference between districts is probably attributable to poorer WASH infrastructure in general, and accessible toilets specifically, in Kurigram.
- Among children, the difference in unmet need was only significant for accessing health care services between children with and without disabilities.
- Barriers reported by people with disabilities and their controls were similar. Lack of services and information were the most commonly reported barrier for accessing services in most domains by people with and without disabilities.
- Cost of services was reported as a barrier for health services, assistive devices and rehabilitation.
- Negative attitudes were reported as a barrier for participating in social activities in Kurigram and in religious activities in Narsingdi for children with disabilities.

Conclusion

In both districts, people with disabilities were more likely to be older, unemployed and have poor health. Psychological distress was commonly reported among adults with disabilities. Children with disabilities were less likely to attend school in both areas. People with disabilities have lower well-being and higher unmet needs for participation in their communities than people without disabilities. Lack of services and information were reported to be the main barriers for participation of people with disabilities in their communities.

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1 Background

The International Classification of Functioning, Disability and Health (ICF) conceptualises disability as an outcome of the interaction between a health condition and contextual factors [1]. People with disabilities face all forms of discrimination and exclusion from the social, cultural, political and economic lives of their communities [2]. In many contexts, people with disabilities are more likely to experience poverty, yet are often not appropriately considered or included in development programs [3-5]. There is growing recognition of the need for disability disaggregated data to increase understanding of the prevalence of disability and, importantly, from a development programming perspective, to support the design, implementation and monitoring of effective inclusive development programs [2]. Ensuring disability data are context specific and relevant to the intended purpose is essential. Responding to the needs and priorities of people with disabilities requires context specific information on the lived experience of disability and how this intersects with access to essential life domains, such as health, education, employment and social inclusion.

Different disability prevalence estimates were made for Bangladesh between 2004 and 2010 that ranged from 1.4% to 31.9%. The variation in the estimates was due to different methodologies used [4]. The Census 2011 used direct questioning on speech, vision, hearing, physical, mental and autistic disabilities that resulted in a national disability prevalence estimate of 1.4% for all ages [6]. Direct questioning, and use of the terms 'disability' or 'impairments' in household surveys result in underestimation of disability and only capturing severe forms of disability [7]. For many people, the word 'disability' refers only to the most serious limitations and, therefore, mild and moderate disabilities are often not reported. Also, people may feel stigma or shame to report having a disability. Further, this type of direct questioning often does not capture hidden disabilities related to mental or psychosocial disabilities.

Evidence suggests that asking about difficulties in performing activities such as seeing, hearing and walking, and not using the term 'disability' in census type surveys results in reliable information. The World Report on Disability [2] and Mitra and Sambamoorthi [8] estimated a disability prevalence of 31.9% and 22.0% respectively using data from the World Health Survey (WHS) 2002-2004. Although the WHS data were based on difficulty in performing activities, the survey could have overestimated disability as difficulties were reported for the last 30 days, which might have included short-term conditions.

The United Nations (UN) Statistics Commission recommends the use of the Washington Group's (WG) Short Set of Questions on Disability in censuses or household surveys, for generating consistent and internationally comparable data on disability. These questions focus on people's basic activities, such as walking, seeing, hearing, communicating, concentrating and remembering. The Household Income and Expenditure Survey (HIES) 2010 used the WG short set questions and reported a disability prevalence of 9.1% [9]. The Rapid Assessment of Disability (RAD) survey (2010) conducted in Bogra district of Bangladesh used WG short set questions and additional questions on activities such as fine motor and psychological distress estimated disability prevalence of 8.9% [4].

A mapping process undertaken by Handicap International as part of a European Union funded regional project on rehabilitation identified a need for robust evidence to help governments strengthen and extend physical rehabilitation services. The research in this report is part of a consultancy by the Nossal Institute Limited for Handicap International to address these gaps. The research was conducted in partnership with the Bangladesh Bureau of Statistics (BBS) aiming to understand the situation of people with disabilities in two target areas in Kurigram and Narsingdi districts.

2 Study Objectives

- To estimate the prevalence of disability among people aged 2 years and above in two unions of Kurigram and Narsingdi districts of Bangladesh.
- To determine the socio-demographic factors associated with disability in two unions of Kurigram and Narsingdi districts of Bangladesh.
- To compare the level of well-being, access to services and participation in the community among people with disability compared to people without disabilities matched for age, sex and cluster.

3 Methodology

3.1 Sampling strategy

A cross sectional population-based household survey was undertaken in two unions of Kurigram and Narsingdi districts of Bangladesh. We assumed all-age prevalence of 9% [9]. This required a sample size of 2913 people per union to estimate the prevalence with a 95% confidence level,

sampling error of 20%, an estimated design effect of 2.5, and a non-response rate of 20%. This required 59 clusters of 50 people each aged 2 years and above per union. The number of clusters was rounded up to 60 clusters per union.

The sampling frame comprised all enumeration areas (EAs) in the Bhogdanga Union of Kurigram Sadar Upazila in Kurigram, and the Sukundi Union of Monohordi Upazila in Narsingdi, provided by the Bangladesh Bureau of Statistics (BBS). Each EA was created to include an average of 50 households.

A two stage cluster random sampling was used. In the first stage, 60 EAs were selected from each of the Kurigram and Narsingdi districts, with a probability proportional to the estimated EA population. A total of 60 EAs out of 192 EAs from Kurigram and 60 EAs out of 80 EAs from Narsingdi was selected. This resulted in 60 EAs, or clusters, in each of the 2 districts. Enumerators then conducted a pre-listing of all households within selected EAs to create a sampling frame for the second stage sampling. In the second stage, approximately 15 households (depending on the average household size) were randomly selected using a systematic sampling approach from each cluster. All eligible members of sampled households aged 2 years and older were interviewed until there were at least 50 in the cluster and all eligible members of the last household had been interviewed. When an eligible household member was absent at least two return visits were made.

3.2 Questionnaires and data collection

The survey tool was based on the RAD, the WG Short Set questions, and the UNICEF/WG Module for Child Functioning and Disability. The questionnaires were reviewed locally for cultural appropriateness and relevance by local stakeholders. The questionnaires were translated into Bengali and back-translated into English.

The RAD survey was developed by The University of Melbourne's Nossal Institute for Global Health and the Centre for Eye Research Australia as a population-based household survey designed to identify people with disabilities, and measure well-being and access to the community for people with disabilities. RAD has been tested and validated in Bangladesh, Fiji, the Philippines and India. The RAD survey is interviewer administered and has two parts: the first part contains questions about the socio-economic characteristics of the household, which was administered to the head of the household; the second part is questionnaire designed for each individual in the household

comprised of four sections: (1) demographic information, (2) self-assessment of functioning, (3) well-being and (4) access to the community. For this context, we appended the RAD with section 5 - a draft of the World Health Organization's Assistive Product Assessment Tool – Needs Module.

The demographic section included items related to age, gender, religion, marital status, education, occupation, health conditions and information on any assistive devices used. The self-assessment of functioning section identifies people with disabilities based on the activity limitations component of the ICF framework. In the case of adults (18 years and older), this section comprises 15 questions asking difficulties on eight domains: vision, hearing, mobility, communication, self-care, cognition, gross and fine motor performance, appearance, and psychological distress. The WG Short Set questions are included in this section. Each question asks about difficulties in doing the activity due to a health problem using the 4-point Likert scale: 'no difficulty,' 'some difficulty,' 'a lot of difficulty,' and 'cannot do it at all.' The psychological distress domain was a modified Kessler-6 scale used to identify people with depression and anxiety. The responses to difficulty are rated as 'never,' 'some of the time,' 'most of the time,' and 'all of the time.' Responses indicating 'a lot of difficulty' or 'cannot do at all' in at least one of the eight domains related to sensory/physical/communication/cognitive and/or responding 'most' or 'all of the time' to at least two out of six items on the psychological distress domain were considered to have disability [10].

In case of children (2-17 years), the latest draft UNICEF/WG Module on Child Functioning and Disability was used in the self-assessment of functioning section [11]. This Module has been tested in several countries and the research team sought permission to use it in the format provided by the UNICEF/WG team at the time of the project. It comprised items on seeing, hearing, walking, self-care, understanding, communication, cognition, worry/feel sad, behaviour and social function. Each item measured the level of difficulty in functioning even when using assistive devices available (e.g. seeing even if wearing glasses). The response categories were 'no difficulty,' 'some difficulty,' 'a lot of difficulty,' and 'cannot do it at all.' People who responded as having 'a lot of difficulty' or 'cannot do at all' to at least one domain were considered a person with disability.

The well-being section of the RAD for adults and children captured participation in different aspects of life such as general health, sleep, opinion being counted, making new friends, and feeling safe in daily life. Each item had four response categories ranging from 1 (all of the time) to 4 (never).

The access to the community section comprised questions on the level of access and inclusion in different services and in the community. The domains included health, rehabilitation, assistive devices, water and sanitation, education, employment, community consultations, social activities and disaster management related services. Each domain first asked for the level of access to the domain in the last six months as much as needed and then asked for barriers for not having access as much needed. In addition, respondents were asked to rank the most limiting barrier.

The well-being and access to the community sections were administered to those who were identified to have disability and their age and sex matched controls. The access section was adapted to capture more in-depth information on access to rehabilitation and assistive devices. For each participant identified at risk of disability, an age and sex matched control, who had been screened not to have disability, was identified from the same cluster. For children aged 2 to 4 years, the age matching was exact. Age matching for those aged 5 to 50 years was within 2 years and for those over 50 years was within 5 years. The matched control was selected from a neighbouring household that did not have a person with disability from the same cluster.

The WHO Assistive Product Assessment Tool (APAT) is comprised of three modules; 'needs', 'impact', and 'capacity'. Here, the needs module was adapted for use. The APAT 'needs' module includes sociodemographic questions similar to the RAD, and a battery of questions related to the use, benefit and access to assistive products. The APAT tool was incorporated into the RAD methodology, and followed the same cultural adaptation and translation process. This section was administered to all participants who were identified as having any difficulties in section 2, and their matched controls. The purpose of including this tool was to pilot the instrument, and to develop a richer understanding of availability, use, and benefit of assistive products. Results from this component of the research are presented separately, as they are beyond the scope of the main purpose of the research.

The adult individual questionnaire was administered to all eligible members aged 18 years and older in a selected household and the child questionnaire was administered to parents/guardians as a proxy respondent of children aged 2-17 years in the household.

3.3 Survey teams

A survey team of 12 people was recruited for each of the Narsingdi and Kurigram sites. Each team comprised of six enumerators from the BBS and six additional enumerators recruited through Disabled People's Organisations (DPO). The intent was to have a mix of skilled enumerators and people with disabilities. For each site, three male and three female BBS enumerators were selected based on previous experience with tablet-based population surveys which included similar question types (such as the recent Demographic and Health Survey). Too few people with disabilities could be recruited due to other commitments, therefore, family members of people with disabilities were recruited. Three male and three female enumerators were selected through DPOs. DPO enumerators were selected based on good numeracy, literacy, previous experience in similar tasks (data entry, administrative tasks, etc.).

During the survey, three teams of four people were created in each site. Each survey team included two BBS enumerators and two DPO enumerators, and at least one woman. Each team was allocated a team leader from the BBS.

An eight-day training and piloting workshop was conducted. The training included:

- Introduction to disability concepts;
- Research ethics including obtaining consent, and interviewing techniques particularly on recruiting people with disabilities, especially those with intellectual and psychosocial disabilities, speech and hearing impairments and working with children;
- Two day sessions on reviewing and practising surveys with feedback from the project team;
- Two days of mock interviews with volunteers from local DPOs (including parents of children with disabilities, and adults with disabilities) for practising interviewing techniques;
- Pilot testing in the local community (not from selected clusters) and real-time verification of survey data;
- Using the tablet-based survey methodology;
- Data integrity and security, including handling running sheets, consent forms, PLSs, etc.

The training included verification of a set of surveyor competencies, which were verified by the project team before the commencement of the actual survey. The training workshop also provided an opportunity to further refine question wording, unclear translations and remaining typographical and survey logic errors.

3.4 Ethics

The study protocol was approved by the Human Research Ethics Committee at the University of Melbourne. In Bangladesh, the study protocol was endorsed by the BBS.

Potential participants were approached and invited to participate by the interviewers with assistance from field supervisors at the potential participants' household. Enumerators provided household members (aged 13 years and above) with written and translated information about the study in the form of a plain language statement. Participants aged 13 – 17, after initial consent from a parent or guardian, were approached for recruitment with information given and consent obtained directly from the child. Parents or carers were asked to complete the survey on behalf of children aged 3-12. Enumerators and supervisors discussed usual communication methods with people who did not use verbal language. This included the use of home sign language, or lip-reading for participants who are illiterate and Deaf or hard of hearing, and verbally or large print text for participants who are vision impaired. Enumerators were instructed to take time to listen and communicate with all people, particularly people with psychosocial impairment, dementia, or similar, before discussing communication options and capabilities with family members where they were available. People who could not communicate using these measures were interviewed by a proxy, using another adult member of the household, with enumerators instructed to direct all questions to the participant, even when a proxy was used.

Potential participants were encouraged to ask questions or request additional information prior to being invited to provide consent. For participants who were unable to sign the consent form, the consent form was read to them and their verbal agreement recorded by the enumerator in front of a witness.

3.5 Mobile tool for data collection

3.5.1 Survey software

The survey was administered using mobile hand-held 'Android' based tablets[2], and 'KoBo Toolbox' survey software[3]. The Kobo platform is a free and open-source, fully-featured software suite, developed for field-surveys with poor or varied internet connections. The suite is comprised of an online survey development tool, a password secured and encrypted database feature, and an Android 'app' installed on each device.

The survey is hosted on the KoBo server, and retrieved onto handheld devices using a password and the Kobo app. The survey can be used 'offline' on the handheld devices and uploaded to the database when a connection is available, and deleted from the handheld device at the completion of each cluster.

3.5.2 Electronic survey design

The electronic version of the survey was designed to replicate the paper-based RAD tool used in previous RAD surveys, reflecting specific adaptations for this implementation. The survey was coded using the XLS-Form[4] language. A separate survey form was developed for the household survey, Adult survey and Child survey. Both English and Bengali questions could be viewed at any time, using a simple drop-down menu.

The survey skip-logic was coded to only populate relevant questions based on previous responses. This minimised enumerator error and shortens the time for each survey. This skip logic included only issuing survey questions if the enumerator selects and verifies the option for consent having been given by the participant. Constraints were used to minimise data entry errors, and time-gates (duration between different questions) were generated to assist data verification.

The tablet populated questions for wellbeing, access to the community only for people who were marked as a person with disability in the self-assessment of functioning section, or nominated as a

[2] Samsung ™ Galaxy ™ Tab 3, 8.0 4G enabled
[3] http://www.kobotoolbox.org/
[4] XLSForm.org

control participant. The APAT questions were asked to anyone who identified any difficulty in any domain, and all control participants.

3.5.3 Data security

Data security was ensured by deleting surveys from the tablet after successful uploading and completion of each cluster. The online database was accessible only by the Melbourne-based researcher and the project manager based in Bangladesh.

3.6 Database verification

The researchers monitored the database from Melbourne, and conducted verification checks including:

- Time verifications to ensure surveys were not conducted in an unrealistically short time frame (avoids 'fake' data entry).
- GPS verification with EA maps.
- Unique identity number verification with running sheets used by enumerators in the field.
- Proportion of people at risk of disability identified per enumerator (with highest and lowest rates followed up by field coordinator).
- Number of interviews per household.

A report on these integrity checks were sent to the survey coordinator at least every three days, and feedback, corrections and explanations returned to the Melbourne researchers. These were used to modify the database as appropriate.

3.7 Data analysis

Statistical analysis was performed using the statistical package StataSE (Ver 14). Disability (present or absent), as measured using the self-assessment of functioning section, was the dependent variable. The independent variables were age of respondent, sex, education level, and wealth percentiles. Wealth index was used as a proxy indicator for wealth status using principal components analysis on the data from the household questionnaire [12]. Individuals were ranked by the asset index of the household in which they resided. The households were then divided into 40, 40, 20 percentiles representing poor, middle and rich socioeconomic status. Both univariate

and multivariate (binary logistic regression) analyses were undertaken to assess the associations between socio-demographic characteristics and prevalence of disability. Confidence intervals (CI) for prevalence estimates and regression odds ratios were calculated with adjustment for clustering effects in the study design using the generalised estimating equation approach.

Rasch analysis was used to derive person measures for the well-being section. Rasch analysis is a form of Item Response Theory, where ordinal ratings are transformed to estimates of interval measures. Andrich rating scale model was used with Winsteps (Ver 3.92) to perform Rasch analysis [13]. The resulting measures showed adequate psychometric properties and therefore the Rasch scores were used in subsequent analyses. For ease of interpretation the scores were rescaled to range from 0 to 100, where a high score represented better well-being.

Multivariate logistic and linear regression analyses were undertaken to identify differences in quality of life and access to the community between cases and controls. The matching of cases and controls was not complete, particularly among those aged 55 years and over, and therefore analyses were adjusted by the matching variables of age, sex and cluster.

4 Results

4.1 Study population

A total of 3,180 individuals in Kurigram and 3,572 individuals in Narsingdi participated in the survey with an overall response rate of 87.9% and 90.6% respectively. The non-response rate was due to participants being away from home for work or other reasons at the time of survey.

In this survey, the mean age ± standard deviation (± SD) was 27.2 ± 11.1 and 28.9 ± 12.1 years with 53% and 56% women in Kurigram and Narsingdi respectively. The socio-demographic profile of the sample from two districts is provided in Annexes 1 and 2. Most participants were Muslim (95.8% in Kurigram and 98.8% in Narsingdi among adults). In both districts, women were more likely to be younger, widowed/divorced/separated, and less likely to have ever attended school, completed higher education and have paid work than men ($p<0.05$). Girls were more likely to have formal schooling and be married than boys in both districts ($p<0.05$).

4.2 Prevalence of disability

4.2.1 Kurigram

A total of 120 (3.7%) participants using the RAD definition were identified to have a disability in the sample from Kurigram. Among adults, the disability prevalence was 5.0% (95% CI: 4.1, 6.1) using the RAD definition and was 4.4% (95% CI: 3.6, 5.4) using the internationally recommended definition using WG Short Set questions. The prevalence was 1.7% (95% CI: 0.6, 5.2) among 2-4 years age group and 1.9% (95% CI: 1.2, 3.1) among 5-17 years age group.

The most commonly reported difficulties among adults were psychological distress (3.0%, 95% CI: 2.3, 3.8), mobility (2.4%, 95% CI: 1.7, 3.1) and hearing (1.5%, 95% CI: 1.0, 2.2). Although psychological distress was one of the most commonly reported limitations, a little over half (56.5%) of adults with sensory/physical/communication/cognitive limitations also reported psychological distress as a comorbid condition.

Mobility was the most commonly reported limitation in both age groups of children (Table 1). Anxiety and depression were not reported in children aged 5-17 years. Seeing and communication difficulties were not reported in any children aged 2-4 years.

4.2.2 Narsingdi

In Narsingdi, a total of 132 (3.6%) participants were identified to have a disability according to the study definition in the sample. The disability prevalence among adults was 5.0% (95% CI: 4.1, 6.1) using the RAD definition and 4.0% (95% CI: 3.2, 4.9) using the WG Short Set questions. The prevalence was 1.1% (95% CI: 0.3, 4.5) among 2-4 years age group and 1.2% (95% CI: 0.7, 2.3) among 5-17 years age group.

The most commonly reported limitations among adults were mobility (2.2%, 95% CI: 1.7, 2.9) and psychological distress (2.1%, 95% CI: 1.6, 2.8). Psychological distress was reported as a comorbid limitation among approximately one-third (34.7%) of people with sensory/physical/communication/cognitive limitations.

Self-care (1.0%, 95% CI: 0.5, 1.8) was the most commonly reported limitation among 5-17 year old age group. Being understood and learning were the most commonly reported difficulties among 2-4 year old age group (Table 1). Seeing, hearing and behaviour difficulties were not reported among any children in 2-4 years age group.

Table 1. Prevalence of disability by functional domain

	Kurigram		Narsingdi	
	N=1980		N=2273	
18 years and older	**n**	**% (95% CI)**	**n**	**% (95% CI)**
Vision*	28	1.4 (0.9, 2.0)	20	0.9 (0.5, 1.4)
Hearing*	30	1.5 (1.0, 2.2)	28	1.2 (0.8, 1.8)
Walking or climbing*	47	2.4 (1.7, 3.1)	51	2.2 (1.7, 2.9)
Remembering*	27	1.4 (0.9, 2.0)	18	0.8 (0.5, 1.2)
Self-care*	24	1.2 (0.8, 1.8)	27	1.2 (0.8, 1.7)
Communication*	23	1.2 (0.7, 1.7)	19	0.8 (0.5, 1.3)
Fine motor	20	1.0 (0.6, 1.6)	22	1.0 (0.6, 1.5)
Learning	22	1.1 (0.7, 1.7)	33	1.5 (1.0, 2.0)
Appearance	21	1.1 (0.7, 1.6)	15	0.7 (0.4, 1.1)
Functional limitation	92	4.6 (3.8, 5.7)	98	4.3 (3.5, 5.2)
Psychosocial distress	59	3.0 (2.3, 3.8)	48	2.1 (1.6, 2.8)
Overall disability	99	5.0 (4.1, 6.1)	112	4.9 (4.1, 5.9)
Washington Group definition	88	4.4 (3.6, 5.4)	91	4.0 (3.2, 4.9)
5-17 years	**N=1002**		**N=1095**	
Seeing	3	0.3 (0.1, 0.9)	1	0.1 (0.0, 0.5)
Hearing	2	0.2 (0.0, 0.7)	3	0.3 (0.1, 0.8)
Mobility	10	1.0 (0.5, 1.8)	6	0.5 (0.2, 1.2)
Self-care	3	0.3 (0.1, 0.9)	11	1.0 (0.5, 1.8)
Being understood inside household	2	0.2 (0.0, 0.7)	5	0.5 (0.1, 1.1)
Being understood outside household	3	0.3 (0.1, 0.9)	5	0.5 (0.1, 1.1)
Learning new things	5	0.5 (0.2, 1.2)	9	0.8 (0.4, 1.6)
Remembering things	4	0.4 (0.1, 1.0)	9	0.8 (0.4, 1.6)
Concentrating on things	5	0.5 (0.2, 1.2)	5	0.5 (0.1, 1.1)
Accepting changes in routine	6	0.6 (0.2, 1.3)	5	0.5 (0.1, 1.1)
Making friends	4	0.4 (0.1, 1.0)	6	0.5 (0.2, 1.2)
Nervous or worried	0	0.0 (0.0, 0.4)	1	0.1 (0.0, 0.5)
Depressed	0	0.0 (0.0, 0.4)	2	0.2 (0.0, 0.7)
Controlling behaviour	2	0.2 (0.0, 0.7)	3	0.3 (0.1, 0.8)
Any impairment	17	1.7 (1.0, 2.7)	17	1.6 (0.9, 2.5)
2-4 years	**N=192**		**N=203**	
Seeing	0	0.0 (0.0, 1.9)	0	0.0 (0.0, 1.8)
Hearing	1	0.5 (0.0, 2.9)	0	0.0 (0.0, 1.8)
Mobility	2	1.0 (0.1, 3.7)	1	0.5 (0.0, 2.7)
Understanding you	0	0.0 (0.0, 1.9)	1	0.5 (0.0, 2.7)
Being understood	0	0.0 (0.0, 1.9)	2	1.0 (0.1, 3.5)
Learning new things	1	0.5 (0.0, 2.9)	2	1.0 (0.1, 3.5)
Playing	1	0.5 (0.0, 2.9)	1	0.5 (0.0, 2.7)
Behaviour	1	0.5 (0.0, 2.9)	0	0.0 (0.0, 1.8)
Any impairment	4	2.1 (0.6, 5.2)	3	1.5 (0.3, 4.3)

*WG Short Set domains

4.3 Factors associated with disability

4.3.1 Adults

The prevalence of disability was not different between men and women in either district (Tables 2 and 3). However, women with disabilities were more likely to be separated/widowed/divorced and undertake unpaid work or unemployed compared to men with disabilities in both districts.

Disability was significantly associated with age, poor health and unemployment in both districts. Disability prevalence increased significantly with increasing age where around one in six people (16.4%) and one in seven people (13.6%) aged 55 years over had disability in Kurigram and Narsingdi respectively. The prevalence of disability was high among those who never attended school (7.5% in Kurigram and 10.3% in Narsingdi) compared to those who had schooling in both districts; however, the association between schooling and disability was not statistically significant when adjusted for other factors. Socioeconomic status estimated based on the wealth index was also not associated with disability in both districts. This may be attributable to the small variability in household wealth in both districts.

Unemployment was significantly associated with disability in both districts where 24% in Kurigram and 18% in Narsingdi among unemployed adults had a disability. Poor general health was also significantly associated with disability in both districts. The risk of having a disability increased to up to two folds among adults who reported having poor general health compared to those who reported very good/good health.

Table 2. Socio-demographic correlates of prevalence of disability among adults in Kurigram

		Total (n=99)		Male (n=50)		Female (n=49)		p value	Prevalence (95% CI)*	Adjusted Odds Ratio (95% CI)#
		n	%	n	%	n	%			
Sex	Male	50	50.5%					0.293	5.53 (3.84, 7.21)	1
	Female	49	49.5%						4.51 (2.92, 6.09)	0.99 (0.97, 1.02)
Age groups	18-24	7	7.1%	2	4.0%	5	10.2%	0.052	1.65 (0.52, 3.82)	1
	25-34	8	8.1%	3	6.0%	5	10.2%		1.64 (0.37, 3.66)	1.02 (0.99, 1.04)
	35-44	14	14.1%	7	14.0%	7	14.3%		3.50 (1.26, 5.73)	1.02 (0.99, 1.05)
	45-54	16	16.2%	4	8.0%	12	24.5%		4.93 (2.51, 7.34)	1.02 (0.99, 1.05)
	>=55	54	54.5%	34	68.0%	20	40.8%		16.35 (13.91, 18.78)	1.08 (1.05, 1.12)
Marital status	Unmarried/never married	11	11.1%	3	6.0%	8	16.3%	0.000	6.81 (3.40, 10.23)	1
	Currently married	73	73.7%	47	94.0%	26	53.1%		4.27 (2.87, 5.67)	0.95 (0.92, 0.98)
	Separated/divorced/widowed	15	15.2%	0	0.0%	15	30.6%		11.66 (7.85, 15.47)	0.97 (0.93, 1.02)
Ever attend school/madrasa	No	69	69.7%	32	64.0%	37	75.5%	0.213	7.50 (5.83, 9.17)	1
	Yes	30	30.3%	18	36.0%	12	24.5%		2.77 (1.17, 4.36)	1.02 (0.99, 1.04)
Employment	Paid work	19	19.2%	16	32.0%	3	6.1%	0.001	2.94 (1.04, 4.83)	1
	Unpaid work/Student/too old	61	61.6%	26	52.0%	35	71.4%		5.00 (3.50, 6.49)	1.02 (0.99, 1.04)
	Unemployed	16	16.2%	5	10.0%	11	22.4%		23.92 (18.69, 29.15)	1.06 (1.01, 1.11)
	Other	3	3.0%	3	6.0%	0	0.0%		5.37 (0.00, 10.79)	0.99 (0.95, 1.04)
Read newspaper	No	83	83.8%	40	80.0%	43	87.8%	0.295	7.15 (5.59, 8.71)	1
	Yes	16	16.2%	10	20.0%	6	12.2%		1.78 (0.01, 3.56)	0.98 (0.96, 1.01)
General Health	Very good/Good	24	24.2%	15	30.0%	9	18.4%	0.383	0.15 (0.56, 2.40)	1
	Moderate	20	20.2%	10	20.0%	10	20.4%		7.58 (5.45, 9.72)	1.05 (1.03, 1.08)
	Bad	30	30.3%	16	32.0%	14	28.6%		50.01 (45.58, 54.43)	1.57 (1.50, 1.64)
	Very Bad	25	25.3%	9	18.0%	16	32.7%		89.09 (82.64, 95.54)	2.29 (2.14, 2.45)
Socioeconomic status	Poor	38	41.3%	18	38.3%	20	44.4%	0.688	4.87 (3.02, 6.71)	1
	Middle	41	44.6%	23	48.9%	18	40.0%		5.70 (3.84, 7.57)	1.01 (0.99, 1.02)
	Rich	13	14.1%	6	12.8%	7	15.6%		3.76 (1.28, 6.23)	0.98 (0.96, 1.01)

*adjusted for clustering

#adjusted for all socioeconomic variables listed in the table.

Table 3. Socio-demographic correlates of prevalence of disability among adults in Narsingdi

		Total (n=112)		Male (n=48)		Female (n=64)		p value	Prevalence (95% CI)	Adjusted Odds Ratio (95% CI)
		n	%	n	%	n	%			
Sex	Male	48	43%					0.475	5.33 (3.89, 6.78)	1
	Female	64	57%						4.67 (3.49, 5.86)	1.01 (0.99, 1.04)
Age groups	18-24	4	4%	2	4%	2	3%	0.753	0.87 (0.00, 2.78)	1
	25-34	15	13%	7	15%	8	13%		3.01 (1.13, 4.85)	1.02 (0.99, 1.05)
	35-44	8	7%	5	10%	3	5%		1.88 (0.00, 3.89)	0.99 (0.97, 1.03)
	45-54	17	15%	6	13%	11	17%		4.62 (2.45, 6.79)	1.01 (0.98, 1.05)
	>=55	68	61%	28	58%	40	63%		13.55 (11.69, 15.41)	1.06 (1.02, 1.09)
Marital status	Unmarried/never married	13	12%	7	15%	6	9%	0.000	4.73 (2.17, 7.29)	1
	Currently married	73	65%	40	83%	33	52%		4.15 (3.08, 5.23)	0.97 (0.94, 1.00)
	Separated/divorced/widowed	26	23%	1	2%	25	39%		11.00 (8.23, 13.76)	0.96 (0.91, 1.00)
Ever attend school/madrasa	No	60	54%	20	42%	40	63%	0.029	10.34 (8.57, 12.11)	1
	Yes	52	46%	28	58%	24	38%		3.08 (2.01, 4.14)	0.99 (0.95, 1.00)
Employment	Paid work	12	11%	11	23%	1	2%	0.000	2.43 (0.51, 4.35)	1
	Unpaid work/Student/too old	81	72%	22	46%	59	92%		5.01 (3.91, 6.10)	1.01 (0.99, 1.04)
	Unemployed	17	15%	14	29%	3	5%		17.57 (13.28, 21.85)	1.09 (1.04, 1.14)
	Other	2	2%	1	2%	1	2%		3.28 (0.00, 0.86)	1.01 (0.96, 1.07)
Read newspaper	No	82	73%	32	67%	50	78%	0.175	8.59 (7.19, 9.99)	1
	Yes	30	27%	16	33%	14	22%		2.27 (1.07, 3.48)	0.99 (0.97, 1.02)
General Health	Very good/Good	18	16%	7	15%	11	17%	0.013	0.96 (0.14, 1.79)	1
	Moderate	39	35%	12	25%	27	42%		12.22 (10.26, 14.19)	1.11 (1.08, 1.13)
	Bad	49	44%	23	48%	26	41%		60.49 (56.59, 64.39)	1.75 (1.67, 1.82)
	Very Bad	6	5%	6	13%	0	0%		75.01 (62.60, 87.41)	2.23 (1.93, 2.58)
Socioeconomic status	Poor	53	54%	24	57%	29	52%	0.524	6.79 (5.21, 8.37)	1
	Middle	29	30%	10	24%	19	34%		3.77 (2.17, 5.37)	0.99 (0.97, 1.00)
	Rich	16	16%	8	19%	8	14%		4.39 (2.11, 6.67)	0.99 (0.97, 1.02)

**adjusted for clustering*

	Total (n=112)		Male (n=48)		Female (n=64)		p value	Prevalence (95% CI)	Adjusted Odds Ratio (95% CI)
	n	%	n	%	n	%			

#adjusted for all socioeconomic variables listed in the table.

4.3.2 Children

The prevalence of disability was not different between boys and girls in Kurigram (1.66% vs 1.92%), but boys (2.23%) were more likely to have a disability than girls (0.66%) in Narsingdi. Boys and girls with disabilities were similar in their socio-economic profile in both districts, but girls were less likely to attend school than boys (p=0.045) in Narsingdi. Disability prevalence was similar in different age groups between 2 and 17 years and different socioeconomic status groups (Table 4). The prevalence of disability was higher among children who had never attended school, reported poor general health and injuries in both districts.

Associations of disability with socioeconomic variables was not assessed with logistic regression modelling due to small sample size in both districts. However, there are some trends that can be observed when the proportions of children with disabilities (Table 4) on key variables were compared to the proportions of children included in the survey (Annex 2). For example, the proportion of children with disabilities who had never attended school was higher than the proportion of children included in the sample in Kurigram (28% vs 16%) and Narsingdi (33% vs 7%). Similarly, the proportion of children with disabilities reporting poor general health and injuries was higher than the proportions in the sample.

Table 4. Prevalence of disability and socio-demographic profile of children with disabilities in Kurigram and Narsingdi

		Kurigram			Narshingdi		
		Total		Prevalence (95% CI)	Total		Prevalence (95% CI)
		n	%		n	%	
Sex	Boys	10	48%	1.66 (0.47, 2.84)	15	75%	2.23 (1.08,3.38)
	Girls	11	52%	1.92 (0.73, 3.12)	5	25%	0.66 (0.00, 1.83)
Age groups	2-4	4	19%	2.05 (0.13, 3.98)	3	15%	1.54 (0.00, 3.33)
	5-10	9	43%	1.92 (0.61, 3.22)	4	20%	0.71 (0.00, 1.94)
	11-15	6	29%	1.54 (0.17, 2.92)	13	65%	2.94 (1.60, 4.27)
	16-17	2	10%	1.69 (0.00, 4.16)	0	0%	0
Religion	Islam	20	95%	1.73 (0.79, 2.67)	20	100%	1.49 (0.54, 2.44)
	Hindu	1	5%	3.89 (0.00, 8.77)	0	0%	0
Ever attended school	No	5	28%	2.93 (0.91, 4.95)	6	33%	7.12 (4.44, 9.80)
	Yes	13	72%	1.52 (0.48, 2.56)	12	67%	0.97 (0.00, 2.01)
Highest level completed	Preschool	3	23%	1.89 (0.05, 3.73)	2	17%	1.02 (0.00, 2.54)
	Some Primary	7	54%	1.70 (0.44, 2.95)	5	42%	1.06 (0.00, 2.39)
	Primary learning certificate	3	23%	1.43 (0.00, 3.12)	5	42%	1.67 (0.16, 3.17)
Days missed school in last 1 month	None	4	36%	1.20 (0.00 (2.51)	6	50%	1.13 (0.00, 2.34)
	1 day	3	27%	1.04 (0.00, 2.35)	2	17%	0.99 (0.00, 3.06)
	>1 day	4	36%	2.83 (0.84, 4.82)	4	33%	0.88 (0.00, 2.47)
General Health	Very bad	4	19%	66.67 (58.81, 74.52)	2	10%	100 (86.44, 114.02)
	Bad	9	43%	75.01 (69.46, 80.56)	6	30%	65.30 (58.75, 71.85)
	Moderate	1	5%	2.69 (0.00, 5.86)	4	20%	22.29 (17.67, 26.93)
	Good	4	19%	0.54 (0.00, 1.24)	8	40%	0.87 (0.86, 1.66)
	Very good	3	14%	0.76 (0.00, 1.72)	0	0%	0
Injuries	No	15	71%	1.36 (0.46, 2.26)	19	95%	1.44 (0.49, 2.39)
	Yes	6	29%	10.02 (6.63, 13.40)	1	5%	2.68 (0.00, 6.78)
Socioeconomic status	Poor	8	40%	1.95 (0.59, 3.31)	6	46%	1.28 (0.31, 2.26)
	Middle	9	45%	1.93 (0.57, 3.28)	3	23%	0.63 (0.00, 1.61)
	Rich	3	15%	1.13 (0.00, 2.95)	4	31%	1.76 (0.39, 3.14)

4.4 Case-control study

A total of 99 adults with disabilities (cases) were matched with 67 adults without disabilities (controls) in Kurigram and 112 cases were matched with 79 controls in Narsingdi. The matching of cases and controls was not complete in adults and children, due to the availability of eligible controls in each cluster; however, both groups were similar in age, sex, education and income type in both districts. Adult cases were less likely to be married and unemployed compared to their controls in both districts (Table 5). While children with disabilities (cases) were similar in age to children without disabilities (cases), they were significantly different in sex distribution in both districts (Table 6).

4.4.1 Wellbeing

Adults with disabilities reported significantly lower wellbeing than adults without disabilities in Kurigram. An adjusted wellbeing score of 0-100, based on wellbeing scale with 16 items, showed that adults with disabilities had a mean ± SD wellbeing score of 47.4 ± 16.7, which was lower (worse) than the mean ± SD of 59.1 ± 12.8 for adults without disabilities. These differences were statistically significant, even after adjusting for age and sex ($p<0.05$). The mean ± SD wellbeing score was 37.6 ± 17.3 and 60.1 ± 11.8 for children (5-17y) with and without disabilities respectively on 9 items of wellbeing scale.

In Narsingdi, adults with disabilities had wellbeing score of 51.6 ± 13.5, which was similar to adults without disabilities (51.9 ± 13.7). However, children with disabilities had a mean ± SD wellbeing score of 45.9 ± 22.3, which was significantly lower than the mean ± SD of 81.7 ± 14.5 for children without disabilities. This difference persisted after adjusting for age and sex ($p<0.001$).

Table 5. Socio-demographic characteristics of cases and controls among adults

		Kurigram					Narsingdi				
		Case (99)		Control (67)		p value	Case (112)		Control (79)		p value
		n	%	n	%		n	%	n	%	
Sex	Male	50	51%	30	45%	0.469	48	43%	32	41%	0.746
	Female	49	49%	37	55%		64	67%	47	59%	
Age groups	18-24	7	7%	7	10%	0.052	4	4%	3	4%	0.753
	25-34	8	8%	11	16%		15	13%	15	19%	
	35-44	14	14%	15	22%		8	7%	11	14%	
	45-54	16	16%	11	16%		17	15%	15	19%	
	>=55	54	55%	23	34%		68	61%	35	44%	
Religion	Islam	95	96%	65	97%	0.039	111	99%	79	100%	0.246
	Hindu	4	4%	2	3%		1	1%	0	0%	
	Christian	0	0%	0	0%		0	0%	0	0%	
Marital status	Unmarried/never married	11	11%	2	3%	0.000	13	12%	2	3%	0.000
	Currently married	73	74%	59	88%		73	65%	64	81%	
	Separated/divorced/widowed	15	15%	6	9%		26	23%	13	16%	
Any children	No	7	8%	6	9%	0.031	2	2%	0	0%	0.803
	Yes	81	92%	59	91%		97	98%	77	100%	
Ever attend school/madrasa	No	69	70%	31	46%	0.213	60	54%	32	41%	0.029
	Yes	30	30%	36	54%		52	46%	47	59%	
Level of education	<1	4	4%	0	0%	0.622	5	4%	1	1%	0.069
	1-5	14	14%	22	33%		20	18%	23	29%	
	6-10	7	7%	5	7%		25	22%	15	19%	
	10-12	1	1%	5	7%		1	1%	6	8%	
	12+	2	2%	4	6%		1	1%	2	3%	
	Other	0	0%	0	0%		0	0%	0	0%	

		Kurigram					Narsingdi				
		Case (99)		Control (67)		p value	Case (112)		Control (79)		p value
		n	%	n	%		n	%	n	%	
Employment	Paid work	19	19%	18	27%	0.001	12	11%	14	18%	0.000
	Unpaid work/Student/too old	61	62%	45	67%		81	72%	60	76%	
	Unemployed	16	16%	3	4%		17	15%	3	4%	
	Other	3	3%	1	1%		2	2%	2	3%	
Income type	No income	21	44%	2	9%	0.378	34	65%	8	30%	0.095
	Cash only	18	38%	17	74%		4	8%	11	41%	
	Cash and in-kind	3	6%	1	4%		2	4%	0	0%	
	In-kind only	0	0%	2	9%		0	0%	0	0%	
	Fixed Salary	0	0%	0	0%		0	0%	4	15%	
	Not paid	2	4%	1	4%		8	15%	4	15%	
	Other	4	8%	0	0%		4	8%	0	0%	
Read newspaper	No	83	84%	40	60%	0.295	82	73%	47	59%	0.175
	Yes	16	16%	27	40%		30	27%	32	41%	
General Health	Very good	1	1%	9	13%	0.383	0	0%	11	14%	0.013
	Good	23	23%	38	57%		18	16%	47	59%	
	Moderate	20	20%	19	28%		39	35%	20	25%	
	Bad	30	30%	1	1%		49	44%	1	1%	
	Very Bad	25	25%	0	0%		6	5%	0	0%	
Socioeconomic status	Poor	38	41%	19	33%	0.173	53	54%	29	41%	0.141
	Middle	41	45%	23	40%		29	30%	31	44%	
	Rich	13	14%	15	26%		16	16%	10	14%	

Table 6. Socio-demographic characteristics of cases and controls among children

		Kurigram					Narsingdi				
		Case (21)		Control (13)		p value	Case (20)		Control (12)		p value
		n	%	n	%		n	%	n	%	
Age groups	2-4	4	19%	0	0%	0.996	3	15%	0	0%	0.181
	5-10	9	43%	6	46%		4	20%	7	58%	
	11-15	6	29%	6	46%		13	65%	5	42%	
	16-17	2	10%	1	8%		0	0%	0	0%	
Sex	Male	10	48%	6	46%	0.000	15	75%	9	75%	0.000
	Female	11	52%	7	54%		5	25%	3	25%	
Religion	Islam	20	95%	13	100%	0.329	20	100%	12	100%	0.000
	Hindu	1	5%	0	0%		0	0%	0	0%	
Married	No	6	100%	2	67%	0.000	5	100%	1	100%	0.000
	Yes	0	0%	1	33%		0	0%	0	0%	
Ever attended school	No	5	28%	3	23%	0.814	6	33%	0	0%	0.045
	Yes	13	72%	10	77%		12	67%	12	100%	
Highest level completed	Preschool	3	23%	0	0%	0.102	2	17%	2	17%	0.065
	Some Primary	7	54%	9	90%		5	42%	6	50%	
	Primary learning certificate	3	23%	1	10%		5	42%	4	33%	
Days missed school in last 1 month	None	4	36%	7	78%	0.323	6	50%	7	64%	0.580
	1 day	3	27%	1	11%		2	17%	2	18%	
	>1 day	4	36%	1	11%		4	33%	2	18%	
General Health	Very bad	4	19%	0	0%	0.280	2	10%	0	0%	0.670
	Bad	9	43%	0	0%		6	30%	0	0%	
	Moderate	1	5%	0	0%		4	20%	0	0%	
	Good	4	19%	8	62%		8	40%	9	75%	
	Very good	3	14%	5	38%		0	0%	3	25%	
Injuries	No	15	71%	12	92%	0.407	19	95%	11	92%	0.554
	Yes	6	29%	1	8%		1	5%	1	8%	

4.4.2 Access to the community

Responses to the access to the community section of RAD were dichotomised with categories 'as much as needed' and 'most of the time' coded as 'met need' and 'some times' and 'not at all' were coded as 'unmet need'. As seen in Figure 1, all people with disabilities had lower access to services and participation in the community compared to people without disabilities. The difference was statistically significant ($p<0.05$) for accessing health, work, toilet facilities, community consultations and social activities for adults in Kurigram. In Narsingdi, the difference was statistically significant ($p<0.05$) for accessing health, work, community consultations, social activities, religious activities, and education/skills training.

The number of participants who reported unmet need for accessing safe drinking water and toilet facilities was low in both districts. Fifteen adults and two children with disabilities reported unmet need for accessing safe drinking water in Kurigram. Three adults with disabilities reported unmet need for accessing safe drinking water in Narsingdi but none of the children with disabilities reported unmet need. The unmet need for independently accessing toilet facilities was reported by 17 adults and four children with disabilities in Kurigram and eight adults and one child with disability in Narsingdi.

The most commonly reported barriers among adults with disabilities are reported in Table 7. Lack of services and lack of information were the most frequently reported barrier for most domains in both districts. Cost of services was reported as a barrier for health services, assistive devices and rehabilitation. The barriers reported among children with disabilities are similar to adults (Table 8). Negative attitudes were reported as a barrier for participating in social activities in Kurigram and in religious activities in Narsingdi for children with disabilities. Barriers reported by the controls are similar to those of cases in both districts (data not shown).

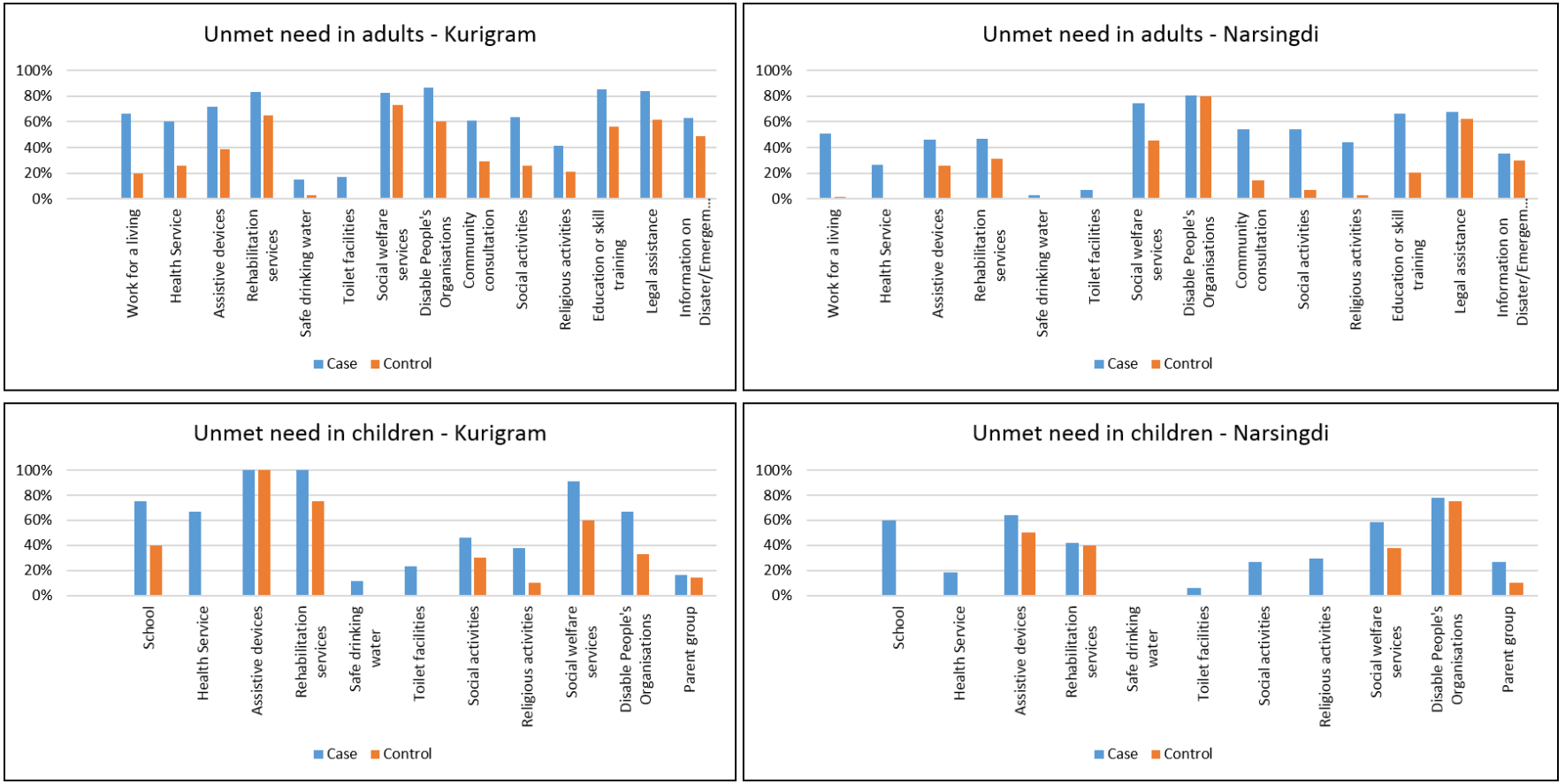
Table 7. The most limiting barriers among adults with disabilities

	Kurigram (n, %)	Narsingdi (n, %)
Work	No services/information (19, 33.9%) Physical accessibility (11, 19.6%))	No services/information (23, 46.9%) Physical accessibility (9, 18.4%)
Health services	No services/information (17, 30.4%) Cost of services (8, 14.3%)	Cost of services (12, 42.9%) No services/information (5, 17.9%)
Assistive devices	No services/information (21, 38.9%) Cost of services (11, 20.4%))	Cost of services (14, 34.2%) No services/information (12, 29.3%)
Rehabilitation	No services (24, 44.4%) Physical accessibility (7, 13.0%)	No services (13, 41.9%)
Safe drinking water	No services (9, 60.0%)	Cost of services (2, 66.7%)
Toilet facilities	No services/facilities (9, 52.4%)	No services/facilities (4, 50%)
Government social welfare	No services/information (19, (30.2%)	No services/information (22, 36.0%) No accessible information (10, 16.4%)
Disabled People's Organisations	No services/information (15, 28.3%)	No services/information (27, 50%) No accessible information (10, 18.5%)
Community consultations	No services/information (7, 17.1%)	No accessible information (21, 43.8%) No services/information (9, 18.8%)
Social activities	No services/information (7, 16.7%) Physical accessibility (6, 14.3%)	No accessible information (19, 39.6%) No services/information (9, 18.8%)
Religious activities	No services/information (10, 28.6%)	No accessible information (23, 50.0%) Physical accessibility (9, 19.6%)
Education/skills training	No services/information (10, 28.6%)	No accessible information (26, 55.3%) No services/information (9, 19.2%)
Legal services	No services/information (10, 31.3%)	No accessible information (9, 31.0%) No services/information (9, 31.0%)
Information on Disaster/emergency	No services/information (18, 47.4%)	No services/information (9, 45.0%)

Table 8. The most limiting barriers among children with disabilities

	Kurigram (n, %)	Narsingdi (n, %)
School	Physical accessibility (3, 33.3%)	Physical accessibility (2, 25.0%)
Health services	No health centre (2, 20.0%) Physical accessibility (2, 20.0%)	Cost of health care (2, 66.7%)
Assistive devices	Lack of information (5, 41.7%) Cost of devices (3, 25.0%)	Lack of information (4, 44.4%)
Rehabilitation	Lack of information (7, 58.3%)	Lack of information (3, 60.0%)
Toilet facilities	Physical accessibility (3, 75.0%)	Physical accessibility (1, 100%)
Social activities	Physical access to the venue (2, 33.3%) Negative attitudes (2, 33.3%)	Physical access to the venue (3, 75.0%)
Religious activities	Physical access to the venue (2, 50.0%)	Physical access to the venue (1, 50.0%) Negative attitudes (1, 50.0%)
Government social welfare	Lack of information (5, 50.0%)	Lack of information (5, 71.4%)
Disabled People's Organisations	Lack of information (1, 25.0%) Physical accessibility (1, 25.0%)	Lack of information (6, 85.7%)
Parents groups	Lack of information (1, 25.0%) Negative attitudes (1, 25.0%)	Lack of information (2, 66.7%)

Figure 1 Unmet need between cases and controls in Kurigram and Narsingdi



5 Discussion

5.1 Prevalence of disability

This survey estimated the prevalence of disability at 5.0% in Kurigram and Narsingdi among adults in the sample aged 18 years and over. Using WG Short Set questions the disability prevalence among adults was estimated at 4.4% in Kurigram and 4.0% in Narsingdi. These estimates are lower than that of HIES 2010 estimate (9.1%) [9] using WG Short Set questions and the RAD survey in Bogra district (8.9%) in 2010 [4] using similar methodology as the current survey. They are also much lower than the estimates based on the WHS 2002-2004 [2, 8].

The difference in the estimates using the RAD definition and the WG definition is because of including additional domains in the former. In both study sites, psychological distress was the most commonly reported functional domain which is often not measured in disability surveys. This is the advantage of using the RAD survey that identifies people with psychological distress related to anxiety and depression. Further, most of the people who reported psychological distress had comorbid limitations on other functional domains which highlights the significant need for addressing mental health needs of people with sensory/physical/cognitive/communication impairments.

The prevalence estimates are similar in both study sites probably due to similar socio-demographic profiles. In both districts the prevalence increased significantly with age from 2.1% and 1.5% in 2-4 years age group to 16.4% and 13.6% in Kurigram and Narsingdi respectively. This finding is consistent with other studies from Bangladesh [4, 14]. Population projections suggest that the elderly population will double from 8 million in 2001 to 16 million in 2025 [15]. Chronic diseases are likely to be more prevalent in older age groups. Kabir et al. reported that people in older age are likely to have five diseases at any given point in time in Bangladesh [15]. While this survey did not collect information on the causes of disability, poor health was independently associated with disability even after adjusting for other socio-demographic variables. Traditional family structures and culture are changing in Bangladesh similar to other countries in the region due to migration and socioeconomic transitions. These changes are expected to increase the burden on health care systems because older people are receiving less support from families [15]. Health and rehabilitation systems are primarily located in urban areas which limits the access to services for

the elderly in rural areas. There is a significant need to strengthen primary health and rehabilitation services for older people in rural areas.

People with disabilities were less likely to go school than people without disabilities in this survey. However, schooling was not a significantly correlated with disability when adjusted for other factors – age, sex, employment, socioeconomic status, general health and marital status. This finding is contradictory to the evidence on the association between poor education and disability [3, 9]. This survey did not collect information on the onset of disability, which could have provided information on whether the onset of disability had any influence of access to education. This survey included people aged more than 50 years, who may not have had disabilities in their younger age, less likely to have schooling and may be more likely to be unemployed at the time of the survey. Therefore, interactions between lack of schooling and other socio-demographic factors might have influenced this finding in our survey. The sample size was insufficient to exclude older age groups and undertake further analysis to explore further on the association between disability and schooling.

In this survey, socioeconomic status was not associated with disability in either districts. This finding contradicts the established theory of poverty disability vicious cycle [3, 16] and also the previous findings of RAD survey in Bogra district [4] using similar methodology. However, studies conducted in the Philippines[17], Afghanistan and Zambia [18], have shown that poverty is not associated with disability. These studies have used similar methodology for assessing socioeconomic status using wealth index as a proxy. Trani & Loeb argue that wealth index based estimates using household characteristics and asset ownership do not capture different dimensions of poverty. The reason for not finding associations between disability and poverty in this survey is probably due to similar household characteristics and assets among the sampled households.

Unemployment was associated with disability in both districts, which is similar to previous findings in Bogra [4] and Jessore districts [19] in Bangladesh. In this survey, women with disabilities were more likely to be separated, widowed or divorced, and perform unpaid work or be unemployed compared to men without disabilities. Women are more likely to live longer and are at risk of health issues [20]. Evidence on the associations between disability and ageing and unemployment

highlights the need for women empowerment and strengthening policies and programs for access to health, education and employment.

The earlier estimates of children with disabilities in Bangladesh ranged from 1.4% in population census 2011 [6] to 17.5% in UNICEF multiple indicator cluster survey 2006 [21]. These estimates are varied due to difference in the methodologies used to define disability. This survey used the UNICEF/WG Module for Child Functioning and Disability in its draft version. The module is now finalised and is recommended by the UN Statistics Division as a tool for measuring disability in children aged 2-17 years in disability surveys. The final version of this module does not contain any differences that are likely to affect the overall prevalence or other findings compared with the draft version used in this survey. As such, findings from this survey will be comparable with future surveys using the final version. This is the first time the Module has been used in Bangladesh in a population based survey. Using this Module, the estimated disability prevalence was 2.1% and 1.5% in 2-4 years age group and 1.7% and 1.6% in 5-17 age group in Kurigram and Narsingdi respectively.

The number of children with disabilities identified in the sample in this survey was small. Therefore, independent associations between disability and socioeconomic factors were not assessed. However, children with disabilities were more likely to have poor health or injuries, and were less likely to have attended school. Poor pre and post-natal care were identified as major problems for causing disabilities in children in a situation analysis conducted by UNICEF Bangladesh [22]. The Bangladesh Health and Injury Survey identified injury as a leading cause of morbidity and one of the major causes of disability among children [23]. A study conducted by the Ministry of Education showed 11% of children with disabilities are enrolled at school. Further, the study found that the enrolment rate was 18% in the areas where development agencies were active as opposed to 4% in the areas that do not have disability activities [24]. In this survey, children with disabilities were less likely to ever attend school compared to children without disabilities. The findings from this survey along with the evidence from other studies in Bangladesh highlights the need for strengthening preventive measures for disability and promoting disability inclusive health and education systems for children with disabilities.

The Government of Bangladesh and the Jatiyo Protibondhi Unnayan Foundation (JPUF) are running several services for children with disabilities as part of their mandate, such as schools for

children with disabilities, and autism resource centres hosted in some district-based rehabilitation centres called PSOSKs (Protibondhi Sheba O Sahajjyo Kendra – or disability service and support centres). PSOSKs can access mobile vans to do outreach in the communities to help raise awareness about disability and identify people who might benefit from rehabilitation. However, the coverage of such services is still limited, and disconnected from the health system and mother and child health programs.

While prevention programs and management of some diseases that might increase the risk of impairments in children are implemented at the district level as part of primary health care programs, mechanisms for early detection of impairments are still missing. Some reasons for this gap include that health staff are not aware of all types of impairments, developmental disabilities or the existence of rehabilitation services. Further, there is no national strategy for strengthening and extending rehabilitation services within the health system.

The Rights and Protection of Persons with Disabilities Act (2013)[5], Neuro-Developmental Disability Protection Trust Act (2013)[6] and Education Policy (2010)[7] mention the need for access of children with mild disabilities in mainstream schools, and provisions for special education for children with moderate to severe disabilities. There are 64 integrated schools in Bangladesh for children with vision impairment run by the Department of Social Services (DSS), and 85 integrated schools run by a non-government organisation with government fund for children with autism and intellectual disability at district and sub districts level. DSS has residential special schools at some divisional cities and in the capital Dhaka. There were no integrated or special schools in the two sampled unions that indicated lower enrolment of children with disabilities at school. To ensure the access to education of children with moderate and severe disabilities, solutions for inclusive education will need to be strengthened and scaled.

5.2 Participation in the community

People with disabilities in both districts generally experienced participation restrictions in the community compared to their age and sex matched controls. These findings are consistent with

[5] http://bdlaws.minlaw.gov.bd/bangla_all_sections.php?id=1126
[6] https://goo.gl/xU3oBL
[7] https://goo.gl/8fKGzn

other studies [2, 10, 17, 18]. People with disabilities in both districts experienced higher unmet need for health care services in all age groups, which again highlighted a need for strengthening primary care and preventive services in rural areas. Adults with disabilities experienced higher unmet need to access work and participating in social and community activities in both districts compared to their age and sex matched controls.

Although there is at least one community clinic for primary health care for every six thousand people, people with disabilities have less access to health care. The Rights and Protection of Persons with Disabilities Act (2013) promotes access to employment for people with disabilities in government and private sectors. Bangladesh government declared 1% employment quota in public service in 2012. A special section is dedicated for women with disabilities in the National Women Development Policy (2011)[8]. DSS and the Department of Woman Affairs provide vocational training courses for women development but there are few courses/programmes organised for women with disabilities. Some national and international organisations' poverty reduction initiatives do consider women with disabilities in their programs.

People with disabilities also had poor access to disability-specific services such as rehabilitation and assistive devices. For many people with disabilities, access to rehabilitation and assistive devices can improve functioning and participation in the community. Unmet needs are currently high, which is a missed opportunity to support reasonable accommodations, independence and inclusion. People with disabilities also reported poor access to DPOs which limits awareness on their rights and the local activities for people with disabilities. The current situation on the availability of assistive devices and rehabilitation services in Bangladesh does not meet the needs of people with disabilities. JPUF is the only government organisation that provides cost-free centre-based rehabilitation services through 103 Integrated Disability Service Centres (IDSCs) and outreach services through 32 mobile rehabilitation vans across the country. These IDSCs are located at 64 district cities and 39 sub-district towns. However, most people with disabilities living in villages or far from the centres cannot access rehabilitation services due to their economic and

[8] https://www.unescogym.org/wp-content/uploads/2017/05/Bangladesh-National-Women-Policy-2011English.pdf

social situations. DSS and JPUF provide a small range of assistive products to people with disabilities, but these devices are not customised and they are sometimes out of stock.

In Kurigram, adults with disabilities had higher unmet need for toilet facilities, whereas there was no difference in Narsingdi. This difference between districts is probably attributable to poorer WASH infrastructure in general, and disability inclusive toilets specifically, in Kurigram. However, only a small number of participants reported unmet need for access to safe drinking water and toilet facilities in both districts. It may be due to not understanding the questions that were intending to ask whether the respondent could access safe drinking water and toilet facilities 'independently'. People with disabilities could be accessing water and toilet with support from family or others and might have only reflected on general access to these questions. Although the survey tools were pretested and piloted, reliability of responses to these domains is questionable.

Lack of services or limited information was reported as the most limiting barrier for most domains. The reported barriers to access services and participating in the community are similar for cases and controls because controls were selected from the same area as the cases. Negative attitudes were reported as the most limiting barrier among children to participate in community activities and parent groups. The situation analysis on children with disabilities undertaken by UNICEF Bangladesh highlighted stigma and discrimination were important factors for limiting participation of families of children with disabilities in the communities. Further, the situation analysis also reported a lack of opportunities for children with disabilities in participating in play and social activities [21].

5.3 Strengths and limitations

There are several strengths to this survey. Firstly, this survey used reliable data collection methods for identifying people with at risk of disability using questions based on the ICF framework [1]. Further, the survey has used the UNICEF/WG Module on child functioning and disability, which is the recommended tool for identifying children with disabilities for international comparability. The survey captured different dimensions of disability – activities, participation and contextual factors – as defined by the ICF framework. The RAD survey was designed to provide a quick snapshot of the situation of people with disabilities to support disability inclusive development programs.

Second, the survey is directly administered to each individual unlike most population based surveys where the head of the household responds as a proxy for all household members. The RAD methodology captures more reliable information on the difficulties in functioning including participation restrictions and barriers directly from the individual respondent. Although it takes about 45 min to 1 hour to complete all sections of the RAD survey, not all sections are administered to all participants. The first and second sections of the individual questionnaire on demographics and functioning is administered to all participants which takes about 20 min. The third and fourth section on well-being participation to only those who are identified at risk of disability and their age and sex matched controls. Therefore, 50 surveys in each cluster can be completed in a day or two including follow-up visits with a team of four in each area.

Third, the survey was conducted in partnership with BBS and local DPOs who have participated in refining the survey tools and methodology, and participated in data collection. Partnering with these organisations not only supported better implementation of the survey in the selected communities but also promoted local capacity building for undertaking disability surveys using reliable methods. Further, having people with disabilities and their families in the data collection teams demonstrates their capabilities in the communities.

Fourth, the survey incorporated a WHO tool (in final draft version at the time of implementation) to estimate unmet needs for assistive products. This allowed piloting and refinement of the draft tool, a comprehensive estimate of unmet and met needs for assistive products, and a snapshot of current sources of assistive products in the surveyed communities. The findings from the tool will be reported separately.

Finally, the survey identified psychological distress which is often not captured in disability surveys. As indicated earlier, psychological distress exists as a comorbid condition in people reporting other difficulties. Data from this survey and other RAD surveys demonstrates the potential value for mental health services for people with disabilities.

This survey has some limitations. One of the limitations of this survey is that the study areas (Bhogdanga Union of Kurigram Sadar Upazila in Kurigram, and the Sukundi Union of Monohordi Upazila in Narsingdi) were selected because they were target areas for Handicap International Bangladesh's and their partners' programs. Therefore, the results cannot be generalised to district

level. However, given the similarities in socio-demographics the findings may apply to respective upazilas. Another limitation of the study was that the causes of disability were not collected and people who were identified to be at risk of disability were not tested further clinically. However, people identified to be at risk of disability were offered information or referral to local services. The survey also does not capture details and specifics on the barriers to participation. As indicated earlier, the survey was conducted to rapidly assess different dimensions of disability in a quantitative survey. Programs requiring further details may need to conduct further research on a sub-sample of the survey and by designing sector specific questions.

6 Conclusion

Even though the prevalence of disability estimated in the RAD survey in two unions of Kurigram and Narsingdi is lower than the other estimates in Bangladesh using similar methodologies, disability was associated with poorer community participation in both areas. People with disabilities were more likely to be older, unemployed and had poor health. Psychological distress was commonly reported among adults with disabilities. Children with disabilities were less likely to attend school in both areas. People with disabilities have lower well-being and higher unmet needs for participation in their communities than people without disabilities. Lack of services and information were reported to be the main barriers for participation of people with disabilities in their communities.

7 Annex 1 Socio-demographic profile of adults (18 years and older) in Kurigram and Narsingdi

		Kurigram							Narshingdi						
		Total (1985)		Male (905)		Female (1075)		p value	Total (2274)		Male (901)		Female (1372)		p value
		n	%	n	%	n	%		n	%	n	%	n	%	
Age groups	18-24	423	21%	178	20%	245	23%	0.000	479	21%	170	19%	309	23%	0.000
	25-34	507	26%	214	24%	293	27%		497	22%	169	19%	327	24%	
	35-44	396	20%	191	21%	205	19%		427	19%	160	18%	267	19%	
	45-54	329	17%	138	15%	191	18%		369	16%	150	17%	219	16%	
	>=55	325	16%	184	20%	141	13%		502	22%	252	28%	250	18%	
Religion	Islam	1897	96%	867	96%	1030	96%	0.652	2245	99%	891	99%	1354	99%	0.669
	Hindu	82	4%	38	4%	44	4%		28	1%	10	1%	18	1%	
	Christian	1	0%	0	0%	1	0%		0	0%	0	0%	0	0%	
Marital status	Unmarried/never married	167	8%	144	16%	23	2%	0.000	278	12%	186	21%	92	7%	0.000
	Currently married	1682	85%	755	83%	927	86%		1755	77%	698	77%	1057	77%	
	Separated/divorced/widowed	131	7%	6	1%	125	12%		238	10%	15	2%	223	16%	
Any children	No	161	9%	69	9%	92	9%	0.812	157	8%	52	7%	105	8%	0.459
	Yes	1652	91%	692	91%	960	91%		1838	92%	663	93%	1175	92%	
Ever attend school/ madrasa	No	919	46%	392	43%	527	49%	0.011	581	26%	209	23%	372	27%	0.036
	Yes	1061	54%	513	57%	548	51%		1692	74%	692	77%	1000	73%	
Level of education	<1	27	1%	16	2%	11	1%	0.000	34	2%	20	2%	14	1%	0.000
	1-5	539	28%	234	26%	305	29%		566	25%	232	27%	334	25%	
	6-10	268	14%	121	14%	147	14%		702	31%	239	27%	463	34%	
	10-12	94	5%	65	7%	29	3%		231	10%	108	12%	123	9%	
	12+	88	5%	59	7%	29	3%		115	5%	61	7%	54	4%	
	Other	2	0%	2	0%	0	0%		1	0%	1	0%	0	0%	

		Kurigram							Narshingdi						
		Total (1985)		Male (905)		Female (1075)		p value	Total (2274)		Male (901)		Female (1372)		p value
		n	%	n	%	n	%		n	%	n	%	n	%	
Employment	Paid work	630	32%	561	62%	69	6%	0.000	495	22%	450	50%	45	3%	0.000
	Unpaid work/Student/too old	1222	62%	239	26%	983	91%		1619	71%	328	36%	1291	94%	
	Unemployed	66	3%	45	5%	21	2%		97	4%	70	8%	27	2%	
	Other	62	3%	60	7%	2	0%		62	3%	53	6%	9	1%	
Income *type*	No income	66	9%	39	6%	27	26%	0.000	187	28%	121	22%	66	51%	0.000
	Cash only	612	82%	557	86%	55	53%		353	53%	331	62%	22	17%	
	Cash and in-kind	25	3%	15	2%	10	10%		11	2%	10	2%	1	1%	
	In-kind only	4	1%	1	0%	3	3%		2	0%	1	0%	1	1%	
	Fixed Salary	23	3%	21	3%	2	2%		66	10%	47	9%	19	15%	
	Not paid	9	1%	5	1%	4	4%		40	6%	23	4%	17	13%	
	Other	11	1%	9	1%	2	2%		9	1%	5	1%	4	3%	
Read newspaper	No	1171	59%	496	55%	675	63%	0.000	956	42%	373	41%	583	42%	0.605
	Yes	809	41%	409	45%	400	37%		1317	58%	528	59%	789	58%	
Read letters	No	43	5%	24	6%	19	5%	0.479	61	5%	20	4%	41	5%	0.233
	Yes	766	95%	385	94%	381	95%		1256	95%	508	96%	748	95%	
General Health	Very good	441	22%	218	24%	223	21%	0.143	328	14%	140	16%	188	14%	0.028
	Good	1186	60%	532	59%	654	61%		1537	68%	603	67%	934	68%	
	Moderate	265	13%	110	12%	155	14%		319	14%	116	13%	203	15%	
	Bad	60	3%	33	4%	27	3%		81	4%	35	4%	46	3%	
	Very Bad	28	1%	12	1%	16	1%		8	0%	7	1%	1	0%	
Socioeconomic status	Poor	750	41%	325	39%	425	43%	0.207	782	40.73	317	42%	465	40%	0.120
	Middle	718	39%	342	41%	376	38%		767	39.95	307	41%	460	39%	
	Rich	357	20%	169	20%	188	19%		371	19.32	128	17%	243	21%	

8 Annex 2. Socio-demographic profile of children (aged 2-17 years) in Kurigram and Narsingdi

		Kurigram							Narsingdi						
		Total (n=1195)		Male (n=602)		Female (n=592)		p value	Total (n=1298)		Male (n=665)		Female (633)		p value
		N	%	n	%	n	%		n	%	n	%	n	%	
Age groups	2-4	192	16%	104	17%	88	15%	0.035	203	16%	109	16%	94	15%	0.869
	5-10	471	39%	230	38%	241	41%		535	41%	271	41%	264	42%	
	11-15	419	35%	199	33%	220	37%		426	33%	215	32%	211	33%	
	16-17	113	9%	69	11%	43	7%		134	10%	70	11%	64	10%	
Religion	Islam	1164	97%	584	97%	580	98%	0.288	1280	99%	655	98%	625	99%	0.712
	Hindu	30	3%	18	3%	12	2%		18	1%	10	2%	8	1%	
Married	No	344	97%	180	99%	164	95%	0.044	363	97%	193	100%	170	94%	0.001
	Yes	10	3%	2	1%	8	5%		11	3%	0	0%	11	6%	
Ever attended school	No	169	16%	80	15%	89	16%	0.534	83	7%	48	8%	35	6%	0.182
	Yes	901	84%	450	85%	451	84%		1097	93%	551	92%	546	94%	
Formal	Yes	827	92%	405	90%	422	94%	0.051	941	86%	452	82%	489	90%	0.000
Informal	Yes	26	3%	18	4%	8	2%	0.046	49	4%	28	5%	21	4%	0.322
College	Yes	8	1%	5	1%	3	1%	0.476	33	3%	15	3%	18	3%	0.578
Madrasa - Quomi	Yes	10	1%	6	1%	4	1%	0.522	13	1%	4	1%	9	2%	0.158
Madrasa - Alia	Yes	23	3%	9	2%	14	3%	0.293	29	3%	21	4%	8	1%	0.015
Madrasa - Hafezi	Yes	16	2%	14	3%	2	0%	0.002	32	3%	32	6%	0	0%	0.000
Other	Yes	6	1%	4	1%	2	0%	0.411	8	1%	5	1%	3	1%	0.486
Highest level completed	Preschool	178	20%	94	21%	84	19%	0.194	251	23%	137	25%	114	21%	0.143
	Some Primary	417	46%	207	46%	210	47%		372	34%	193	35%	179	33%	
	Primary learning certificate	209	23%	98	22%	111	25%		255	23%	121	22%	134	25%	
	Form 3 certificate	64	7%	28	6%	36	8%		108	10%	48	9%	60	11%	

		Kurigram							Narsingdi						
		Total (n=1195)		Male (n=602)		Female (n=592)		p value	Total (n=1298)		Male (n=665)		Female (633)		p value
		N	%	n	%	n	%		n	%	n	%	n	%	
	Year 10 leaving certificate	15	2%	11	2%	4	1%		61	6%	25	5%	36	7%	
	Senior secondary certificate	1	0%	1	0%	0	0%		19	2%	9	2%	10	2%	
	Some college but no degree	1	0%	0	0%	1	0%		5	0%	1	0%	4	1%	
	Other	16	2%	11	2%	5	1%		26	2%	17	3%	9	2%	
Days missed school in last 1 month	None	353	42%	166	41%	187	43%	0.146	670	65%	304	60%	366	69%	0.001
	1 day	348	42%	164	40%	184	43%		121	12%	57	11%	64	12%	
	>1 day	135	16%	76	19%	59	14%		246	24%	146	29%	100	19%	
General Health	Very bad	6	1%	3	0%	3	1%	0.873	2	0%	1	0%	1	0%	0.231
	Bad	12	1%	5	1%	7	1%		9	1%	5	1%	4	1%	
	Moderate	37	3%	17	3%	20	3%		18	1%	13	2%	5	1%	
	Good	744	62%	371	62%	373	63%		956	74%	475	71%	481	76%	
	Very good	395	33%	206	34%	189	32%		313	24%	171	26%	142	22%	
Injuries	No	1136	95%	567	94%	569	96%	0.121	1263	97%	644	97%	619	98%	0.293
	Yes	58	5%	35	6%	23	4%		35	3%	21	3%	14	2%	
Socioeconomic status	Poor	425	40%	212	39%	213	41%		439	41%	207	38%	232	43%	
	Middle	423	40%	219	40%	204	39%		424	39%	223	41%	201	38%	
	Rich	214	20%	113	21%	101	20%		214	20%	113	21%	101	19%	

9 Annex 3. Evidence Committee membership list

Name	**Designation**	**Organization**
Dr. Rajib Hasan	Deputy Director (Planning)	Jatiyo Protibondhi Unnayan Foundation (JPUF), Ministry of Social Welfare
Dr. Ayesha Afroz Chowdhury	Senior Assistant Chief, Gender NGO & Stakeholder Participation (GNSP) unit	Ministry of Health and Family Welfare (MoHFW)
Dr. Tanveer Ahmed Chowdhury	Program Manager, Non-Communicable Disease Control (NCDC) program	Directorate General of Health Services (DGHS), Ministry of Health and Family Welfare
S M Kamrul Islam	Deputy Director, Demography and Health Wing	Bangladesh Bureau of Statistics (BBS) Ministry of Planning
Dr. Moniruzzaman	Assistant Professor, Physical Medicine and Rehabilitation, Dhaka Medical College and Hospital	Bangladesh Association of Physical Medicine and Rehabilitation (BAPMR)
Khandaker Jahurul Alam	Executive Director	Centre for Services and Information on Disability (CSID)
Md. Sohrab Hossain	President, BPA	Bangladesh Physiotherapy Association (BPA)
Dr. Moniruzzaman	National Consultant-Injury and Disability Prevention, NCD Unit	WHO Country Office for Bangladesh
Mr. Shyfuddin Ahmed	Research Investigator	icddr,b
Md. Nazrul Islam	Course Coordinator	National Institute of Traumatology and Orthopedic Rehabilitation (NITOR)
Monjurul Habib Shagor	Program Development Manager	Centre for Disability and Development
Dr. Nafeesur Rahman	Director	National Forum of Organisations Working with the Disabled (NFOWD)
Mr. Sourov Kumer Paul	Research Manager	Disabled Rehabilitation & Research Association (DRRA)
Md. Shahidul Islam	Director	Tangail Disabled People's Organization to Development (Tangail DPOD)
Md. Sanaulla Shekh	Director	Narsingdi Disabled People's Organization to Development (Narsingdi DPOD)

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