Disability Inclusion in Disaster Risk Reduction:

Experiences of people with disabilities in Vanuatu during and after Tropical Cyclone Pam and recommendations for humanitarian agencies

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CBM - Nossal Institute Partnership for Disability Inclusive Development
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This study drew on the experiences of people with disabilities and their families and communities across the island of Tanna, for which the research team is immensely grateful.

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Research Team

Sally Baker[a], Tarryn Brown[b], Nelly Caleb[c], Judith Iakavai[d], Dr Manjula Marella[a], Knox Morris[e], Maxwell Nasak[d], Dr Matthew Reeve[a] and Danielle Roubin[f] and Wesley Pryor[a].

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a Nossal Institute for Global Health
b CBM Australia
c Disability Promotion and Advocacy Association Vanuatu
d Vanuatu Society for People with Disability
e Ministry of Justice and Community Services (Disability Desk), Government of Vanuatu
f Oxfam in Vanuatu

Contents


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Executive Summary

The Convention on the Rights of Persons with Disabilities, and the Sendai Framework for Disaster Risk Reduction, both lay out expectations regarding the inclusion of the rights of people with disabilities in situations of risk and humanitarian emergencies. Tropical Cyclone Pam hit Vanuatu in March 2015 as the Sendai Framework was being agreed; nevertheless, people with disabilities were noticeably absent from response and recovery decision making and activities.

Disability stakeholders in Vanuatu and Australia collaborated to implement a research project which would identify the consequences of this absence. A critical objective of this study was to make recommendations to enable agencies and communities across Vanuatu to learn from the lessons of Tropical Cyclone Pam to improve disability inclusion in future disaster risk reduction efforts with a focus on preparedness for response.

This research project utilised the Rapid Assessment of Disability (RAD) tool to collect quantitative data from people with disabilities and people without disabilities and to compare their situation and experiences prior to and after Tropical Cyclone Pam. A total of 1836 adults and 1330 children (aged 5-17) were interviewed. Major findings included:

- Disability prevalence using the RAD definition was 4.6% amongst adults and 1.8% amongst children, giving a population (aged 5+) prevalence of 3.4%. The adult prevalence using the Washington Group Short Set of Questions on disability, which provides a narrower measure of disability prevalence than the RAD, was 3.6%. These estimates are comparable to or higher than previous national estimates of disability prevalence in Vanuatu.
- Most people with disabilities were in older age groups, and disability was more common with increasing age.
- People with disabilities were 2.45 times more likely to have been injured during Tropical Cyclone Pam. Men were about twice as likely to have been injured as women.
- Very few people with disabilities had assistive devices, and some devices were lost during Tropical Cyclone Pam.
- Adults with disabilities had poorer access to disaster risk reduction efforts compared to adults without disabilities.

- Being female and having a disability created a double disadvantage. Women with disabilities had less access to disaster risk reduction, response and recovery efforts compared to men with disabilities. Women with disabilities were also less likely to have ever attended school than men with disabilities.
- Access to services before, immediately after and in the months following the cyclone was poor for the whole population.
- Disability-specific services (rehabilitation, assistive devices, Disabled People's Organisations) were the least available, increasing the disadvantage for people with disabilities.
- Adults and children with disabilities reported worse wellbeing than people without disabilities.

This research project found that while people with disabilities lacked access to some services such as food distribution and shelter in similar degrees to people without disabilities, they experienced worse access to particular resources, such as safe evacuation information and facilities. This may have resulted in the considerably higher degree of cyclone-related injuries they experienced.

Women with disabilities were found to have limited access to evacuation information, training and buildings, and experienced higher unmet need in accessing sanitation facilities, post-disaster education, skill development and legal assistance. Children with disabilities were generally found to have lower wellbeing than their peers without disabilities.

Analysis of study findings with ni-Vanuatu stakeholders with and without disabilities in Port Vila and Tanna, and in Melbourne through an Australian Award Fellowship sponsored by the Australian government, found that assessments conducted immediately following Tropical Cyclone Pam did not reliably collect information about the unmet needs of people with disabilities and their families. This may have skewed the way humanitarian response agencies planned, implemented and monitored their post-cyclone response activities such that they often excluded people with disabilities.

These findings informed the development of a set of recommendations. These aim to advance disaster risk reduction activities such that people with disabilities are identified and their inclusion ensured by government and non-government agencies prior to and following future disasters in Vanuatu and across the Pacific, in line with the Convention on the Rights of People with Disabilities, and the Sendai Framework. These are presented as follows:

1. **Mainstream disability inclusion across DRR and response policies and practices:**
    a. Consult with men, women and children with a diverse range of disabilities and their representative organisations to identify differential risk and develop strategies which address barriers to meaningful participation in disaster risk reduction initiatives. Particular attention must be paid to preparedness and the provision of accessible evacuation information, infrastructure built in accordance with design for all (universal design) principles, and strategies which ensure people evacuate safely with their assistive devices.
    b. Strengthen Community Disaster Committees so that:
        i. Men and women with diverse disabilities are active participants, with opportunities to assume leadership roles in times of disaster preparedness, evacuation and disaster response.
        ii. Households and communities take responsibility for the identification and inclusion of people with disabilities in disaster preparedness activities, and safe evacuation of all men, women and children with diverse disabilities during times of disaster to ensure no one is left behind.

   c. Prepare for disability inclusive disaster response by strengthening organizational capacity of all actors to work in a disability inclusive way, by training staff, consulting with people with disabilities, developing plans and tools and forming formal relationships with Disabled People's Organisations before a disaster.

2. **Develop questions and methodologies which enable reliable identification of people with disabilities and their needs immediately following a disaster.**

3. **Identify and address the disability-specific needs of men, women and children with disabilities prior to and after disasters:**

   a. Prepare communities to enable safe evacuation of people with disabilities and their assistive devices.

   b. Facilitate access to replacement assistive devices following a disaster by developing partnerships with government and non-government service providers.

4. **Work in partnership with Disabled People's Organisations to prepare and implement disability inclusive disaster risk reduction and response activities, in accordance with the Convention on the Rights of Persons with Disabilities, and the Sendai Framework.**

5. **Acknowledging the specific challenges faced by women with disabilities following disasters, collaborate with women with diverse disabilities to develop and implement disaster risk reduction strategies which support their safety and inclusion:**

   a. Develop accessible, safe and private sanitation and accommodation facilities in evacuation shelters and buildings constructed following a disaster;

   b. Implement education and skills development opportunities which include women with diverse disabilities;

   c. Improve access to legal assistance and support from Disabled People's Organisations and women's rights organisations; and

   d. Undertake further exploration of the gender based violence experiences of women with disabilities following disasters, and mainstream strategies to prevent and respond to these.

6. **Ensure child-friendly disaster risk reduction, response and recovery initiatives are inclusive of children with diverse disabilities and their families.**

Abbreviations

CASPER	Community Assessment for Public Health Emergency Response
DHS	Demographic and Health Survey
DPA	Disability Promotion and Advocacy Association
DPO	Disabled People's Organisation
DRR	Disaster Risk Reduction
ICF	International Classification of Functioning, Disability and Health
RAD	Rapid Assessment of Disability
TC Pam	Tropical Cyclone Pam
UNICEF	United Nations Children's Fund
VDHS	Vanuatu Demographic and Health Survey
VSPD	Vanuatu Society for People with Disability
WG	Washington Group


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1 Introduction

The United Nations Convention on the Rights of Persons with Disabilities promotes, protects and ensures the full and equal enjoyment of all human rights and fundamental freedoms by all people with disabilities, and promotes respect for their inherent dignity. Article 11 promotes the importance of equitable approaches to inclusion in situations of risk and humanitarian emergencies.[1]

In recognition of this, the Sendai Framework calls for a disability perspective in all policies and practices, including the collection and disaggregation of disability data to enable analysis and monitoring of disability inclusion within disaster risk reduction (DRR) efforts. DRR can be defined as the reduction of disaster risks through systematic efforts to analyse and reduce the causal factors of disasters. Reducing exposure to hazards, lessening risks to people and property, wise management of land and the environment, and improving preparedness and early warning for adverse events are all examples of disaster risk reduction.[2]

Disasters affect people with disabilities in different ways. Inaccessible early warnings and evacuation shelters, and response efforts which are not inclusive can affect the health, safety and recovery of people with disabilities and their families. The loss of assistive devices during a disaster can compromise mobility and independence. People both with and without disabilities are at risk of hazard-related injuries which can create disability, or compound existing functional difficulties.

Available evidence indicates that people with disabilities are disproportionately at risk, due to general marginalisation from their communities. This often results from stigma which underlies pre-existing inequities in accessing education, health care, employment and sustainable livelihoods, asset accumulation, and opportunities for social, civic, and community participation.[3, 4]

A 2013 survey of over 5000 informants with disabilities from 137 countries found that over 85% had never participated in community disaster management and risk reduction processes.[5] Given approximately a billion people, fifteen percent of the world's population, are people with disabilities,[6] this represents a large proportion of people who have most likely not been included in disaster risk reduction efforts.

Formal global recognition of the particular situation of people with disabilities and the need for intentional efforts to enable their inclusion in DRR strategies occurred in 2015, with the endorsement of the Sendai Framework for Disaster Risk Reduction.[7] The Sendai Framework promotes disability inclusive DRR practices and approaches, and aims to put an end to exclusionary practices of the past.

While there is limited statistical data regarding the impact of disasters on people with disabilities, there is increasing global awareness and political commitment to implement DRR and emergency response activities in a disability inclusive way.

Tropical Cyclone Pam (TC Pam) hit Vanuatu on the 13th of March, 2015. A category five cyclone, and at that time the strongest storm to ever reach Pacific shores, its winds of up to 250 kilometres per hour caused widespread destruction across Vanuatu with the greatest impact in Shefa Province (Efate, Epi and Shepherd Islands), Tafea Province (Erromango and Tanna islands) and Malampa Province.

Over half the population of Vanuatu, an estimated 188,000 people, were affected and eleven people died.[8] Few life-threatening injuries were recorded. In the hardest hit provinces of Shefa and Tafea, severe winds destroyed up to 90% of shelters in some communities and badly damaged schools and health facilities. Water sources in many communities in both rural and urban areas were damaged or contaminated.[9] Immediately after TC Pam, an El Nino event hit Vanuatu, resulting in widespread drought.

The situation and needs of people with disabilities following TC Pam were generally not captured in formal mainstream assessments led by the National Disaster Management Office. This situation arose despite the development and testing of a disability inclusive assessment form by Vanuatu's Gender and Protection Cluster prior to TC Pam; and advocacy efforts of Vanuatu's Disabled People's Organisation.

Where the needs of people with disabilities were identified, these were not prioritised during the response;[10] and some people with disabilities missed out on distributions altogether. Reflections on the response hypothesized that mainstream assessment methodologies and tools generally missed people with disabilities, and that agencies tended not to automatically include them in their efforts.[11] These lessons suggested that knowledge and understanding of the mandate and processes for disability inclusive disaster risk reduction and response required strengthening at multiple levels.

More detailed information regarding the situation and needs of people with disabilities was required to support effective inclusion of people with disabilities in recovery activities. Vanuatu does not currently have reliable quantitative data on the prevalence, location and experiences of people with disabilities. In response, Oxfam in Vanuatu, Vanuatu Society for People with Disability (VSPD), Disability Promotion and Advocacy Association (DPA), the Ministry of Justice and Community Services (MoJCS), Nossal Institute for Global Health and CBM Australia worked with key government organisations to undertake a disability situation and needs assessment in one affected island (Tanna), in order to meet this data gap.

The relevance and applicability of this study was further enhanced through an Australian Award Fellowship, which was funded by the Australian government and sought to strengthen capacity of key ni-Vanuatu personnel from government and non-government organisation in disability inclusive disaster risk reduction and response through workshops held in Melbourne, Tanna and Port Vila.

By disaggregating disability data, and analysing findings in conjunction with people with and without disabilities in Vanuatu, this report illustrates the comparative experiences of people with and without disabilities following TC Pam, and provides recommendations to promote future disability inclusive DRR policies and practices in Vanuatu and beyond.

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2 Methods

2.1 Survey

This survey collected data on all people aged five years or older in randomly chosen households within 61 randomly selected clusters across Tanna, making up a representative sample of the population of Tanna. All adults were interviewed directly (where possible), and the parent/guardian of each child (aged 5-17) was interviewed on their behalf.

The survey questionnaire was a locally adapted version of the Rapid Assessment of Disability (RAD) questionnaire, originally developed by the University of Melbourne's Nossal Institute for Global Health and the Centre for Eye Research Australia.[18] The RAD questionnaire asked about household and individual demographic information (including questions on disaster impact), then used a standard set of questions to identify people with disabilities.

Disability questions were different for adults and children. For adults, the RAD questionnaire contained the Washington Group (WG) Short Set of Questions on Disability, which asked respondents how much difficulty they have in six different areas of functioning (seeing, hearing, walking, self-care, remembering/concentrating and communication). Anyone responding that they had 'a lot of difficulty' or 'cannot do at all' to any one question was considered to have disability. In addition to the WG questions, the RAD adult questionnaire used additional questions on depression, anxiety, use of hands and fingers, learning and appearance to identify people with difficulties in these domains that were also considered to have a disability. The RAD is therefore likely to identify more people with a wider range of disabilities than the WG short set questions alone.

For children, the RAD questionnaire used the draft UNICEF/WG Module on Child Functioning and Disability. As in the adult version of the WG questions, any child who had 'a lot of difficulty' or 'cannot do at all' to any one question was considered to have a disability.

Adults and children who were identified as having

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g. DRR services included: access to information about the cyclone, what to do in an emergency, and regarding evacuation shelters; participation in trainings/information sessions on disaster preparedness; access to evacuation shelters;

h. Response services included: access to emergency shelter materials, food distribution, health services, drinking water, toilet facilities, daily living items, women's health products and services

i. Community activities and general services included: access to paid work, medication, health services, safe drinking water, toilet facilities, education and training, rehabilitation, assistive devices, Disabled People's Organisations, community consultations, social activities, religious activities, legal assistance and transport.

a disability were then asked a further series of questions about their wellbeing, rights, and access to services. This latter category included items which explored access to DRR activities prior to the cyclone[g], access to response activities in the four weeks following Tropical Cyclone Pam[h], general services and community activities during the six months following the cyclone[i]. If respondents reported any difficulty accessing any of these services, they were asked a follow-up question regarding the reasons for this.

For each adult and child with disabilities, another person living in the same community who was the same sex and approximate age – but did not have a disability – was also asked the same questions on wellbeing and access to services, to enable comparison of the experiences of people with and without disabilities.

The questionnaire was adapted, reviewed for cultural and technical appropriateness, piloted and translated in partnership with local stakeholders, including people with disabilities and people from Tanna. Interviewers were also selected from among people with disabilities, people from Tanna and people with links to local stakeholders. This strategy maximised the inclusive and relevant nature of the survey. Interviewers visited households personally, gained consent from participants and entered data onto digital tablets, using KoboToolbox software to collect data and upload it a database for monitoring and analysis.

For a more detailed technical discussion of the sampling, questionnaire and analysis, please refer to Appendix A.

2.2 Stakeholder engagement and application of findings

This study was accompanied by a number of activities which sought to strengthen capacity of stakeholders to plan and implement disability inclusive DRR policies and practices in an evidence-based way. These three activities included a training workshop focussed on measuring disability (held in Melbourne), three review workshops of interim results for stakeholder feedback and interpretation (held in Tanna, Port Vila and Melbourne), and two training workshops on disability inclusive DRR, utilising findings from the survey (in Tanna and Port Vila).

A key output of these processes was the development of a proposed question for use during rapid or first response assessment following a disaster (see Appendix B). The question was based

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on a screening question for disability used in the Vanuatu Demographic and Health Survey (VDHS) in 2013, which in turn was based on the Washington Group short set questions which were also used in this RAD survey.

The WG questions are designed for use with individual respondents, however post-disaster assessments generally seek information at the household level. Thus, this proposed question aims to determine the presence of people with disabilities when relying on key informants at the household level. Further discussion of the adapted screening tool used in the workshop can be found in Appendix B.

Data analysis workshops drew together local stakeholders to present interim findings from the survey. Trends that appeared to be emerging from the data were presented to stakeholders and their interpretation and responses to these results were derived in a participatory workshop. The feedback and interpretations, as well as narratives recording personal experiences, were transcribed and used to guide some aspects of the final analysis of the data, as well as the discussion and recommendations in this report.

Capacity development workshops in Tanna and Port Vila offered an opportunity for key stakeholders in the humanitarian and disability sectors in Vanuatu to learn how to strengthen disability inclusive DRR approaches, drawing on evidence from this study as well as observations and recommendations from the previous workshops. A key output from these workshops was a disability inclusive DRR training package that is being developed and published for use by other organisations.

2.3 Limitations and strengths

This survey was conducted in a post-disaster context. Limitations of the study include the following:

- Sampling and sampling weights were based on the most recent available census maps and data, which were produced in 2009. It is likely that population sizes and distributions have changed significantly since then. This may have resulted in oversampling in areas which had reduced in population since 2009, and under-sampling within areas which have experienced a relative increase in population. In particular, post-disaster migration may have had differential effects on population changes, although it is noted that the demographic distribution found in this survey closely matches that reported for Tanna/Tafea in the 2009 census.[11]
- Questionnaires were translated into Bislama but could not be translated into local Tanna languages. Interviewers from Tanna were permitted to implement the surveys in local languages where they were able, interpreting from the Bislama survey. Other interviewers who did not speak local languages used Bislama, sometimes with a family member providing interpretation. Interpretation of questions and responses may have introduced some errors.
- Data collector training and survey piloting was disrupted by Tropical Cyclone Winston. As such, interviewers began collecting data with less practice experience than planned. Due to the close level of data auditing enabled by digital data collection, data from the first five clusters was judged to be of insufficient quality and was discarded. Data was collected again, from a different segment within each of the five clusters following refresher training.
- Data quality audits undertaken throughout the fieldwork phase identified particular interviewers and clusters where data was of poor quality. This included interviews conducted over very short durations, and outlier results in primary outcomes concerning the number of people with disabilities identified, age and gender distributions. Concerns regarding data quality led the investigators to halt data collection and conduct a review of interviewing processes. Data from all interviews in 26 clusters where there were quality concerns – approximately 1200 interviews – was discarded. Some interviewers were removed from the field and all remaining interviewers were retrained. Data collection resumed, and in all clusters where data had been discarded, new segments

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were selected as per the original sampling procedure. Replacement interviews were completed with respondents in these new clusters. While this process delayed fieldwork and may have increased recall bias for those respondents interviewed at the end of fieldwork (some eleven months after the first respondents were interviewed), it provided strong assurance in the validity of the results.

- Prevalence estimates could not be adjusted using population age distribution projections, as these estimates had not been made for Tanna. However, the age distribution in the sample closely resembled that which was reported in the 2009 census, even when adjusting by five years.
- Many people with disabilities did not have suitable age and sex matched controls living in the same segment. This was found particularly among older people, who frequently did not have a matched control of suitable age, and who did not also have a disability. As such, paired analysis of case-control data was not possible, and regression analysis was conducted instead.
- Despite the large sample, many questions garnered a small number of positive responses. As a result, it was difficult to conduct statistical analysis, and the likelihood of finding statistically significant associations between variables was reduced.

Despite these limitations, the results presented here can be considered robust, given the stringent data quality controls employed, the rigorous sampling approach and the use of standardised, internationally tested tools and questions within the survey. Key strengths of this survey include the following:

- Collaboration between longstanding Vanuatu-based and international partners with expertise and experience in disability, disability inclusion and data collection in the local context was critical to the study's success. In particular, the engagement and involvement of ni-Vanuatu with disabilities (including people from Tanna), Vanuatu's Disabled People's Organisation and a local disability service provider in the planning, implementation and interpretation of results ensured that the research was relevant and respectful. This also strengthened the quality of data and usefulness of the findings. For example, the involvement of local people with disabilities in revising and translating the questionnaire, and in administering the surveys, is most likely partly responsible for the higher disability prevalence identified in this survey compared to previous surveys in Vanuatu. Engagement of people with disabilities in this process influenced the wording of questions, and may have increased the willingness of people with disabilities to respond.

- Engagement of people with disabilities throughout the survey strengthened their capacity to develop and undertake surveys, and improved their understanding of disability data collection, including the use of the Washington Group questions. This will support improved future disability data collection at the program, sectoral and national levels.
- Use of a digital platform (Kobo Toolbox) to collect data allowed investigators to monitor data in real time, and provide daily or weekly feedback on quality and progress, including monitoring and advice from Port Vila and Melbourne. Despite logistical challenges due to poor network coverage and power supply in some parts of Tanna, this digital platform ensured a high quality of data and allowed analysis to begin on the same day that data collection stopped. Had this project not used a digital platform for data collection, it is highly unlikely that poor data quality would have been identified at all. Digital data collection was approximately the same cost as using paper questionnaires, given the savings on paper and printing, data entry, transport and secure storage of completed questionnaires.
- Use of the standard Washington Group (adult) and Washington Group-UNICEF children's questions allowed for collection of disability data according to a standardized, internationally comparable definition. Collaboration with the Vanuatu National Statistics Office provided an opportunity to strengthen understanding and capacity regarding the use of this international measure for disability identification, which may support improved collection of reliable disability data in future national-level surveys.

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3 Results

The study surveyed respondents in 648 households across Tanna. A total of 1836 adults and 1330 children aged 5-17 were included in the final analysis.

3.1 Adults

3.1.1 Demographics

The adult population was young and mostly married. One in three adults had never attended school, and demonstrated low levels of literacy.

- Demographic trends amongst adults (aged 18 years and above) broadly reflected 2009 census data.
- More women than men (53.8% of all adults) were located, echoing findings in the 2009 national census (53%).
- The mean age of the adult population was 37.3, and 55% of the population was aged 18-35, indicating a young population.
- Nearly all respondents (96%) were born on Tanna, and all except three respondents identified as ni-Vanuatu.
- Three quarters of adults (74%) were currently married, 22% had never married, 4% were widowed, and a small number were divorced, separated or in a de facto relationship. Four out of five adults (80%) were parents.
- Three out of every ten adults (29%) had never attended school, and 43% of adults said they were unable to read an SMS message on a mobile phone - a simple test of literacy particularly relevant to early warning systems which employ text messages.
- Most adults were self-employed or employed, with 90% having worked in the previous seven days.

3.2 Adults with disabilities

About 1 out of every 21 adults (4.6%) had a disability, using the RAD definition. Using only the standard Washington Group short set questions as a definition for disability, the adult prevalence was 3.6%.

- The survey identified 85 adults with disabilities based on the RAD functional definition.
- After adjusting for clustering effects, the prevalence of disability among adults on Tanna using the RAD functional definition was 4.63% (with 95% confidence interval of 3.76–5.69%)[j].

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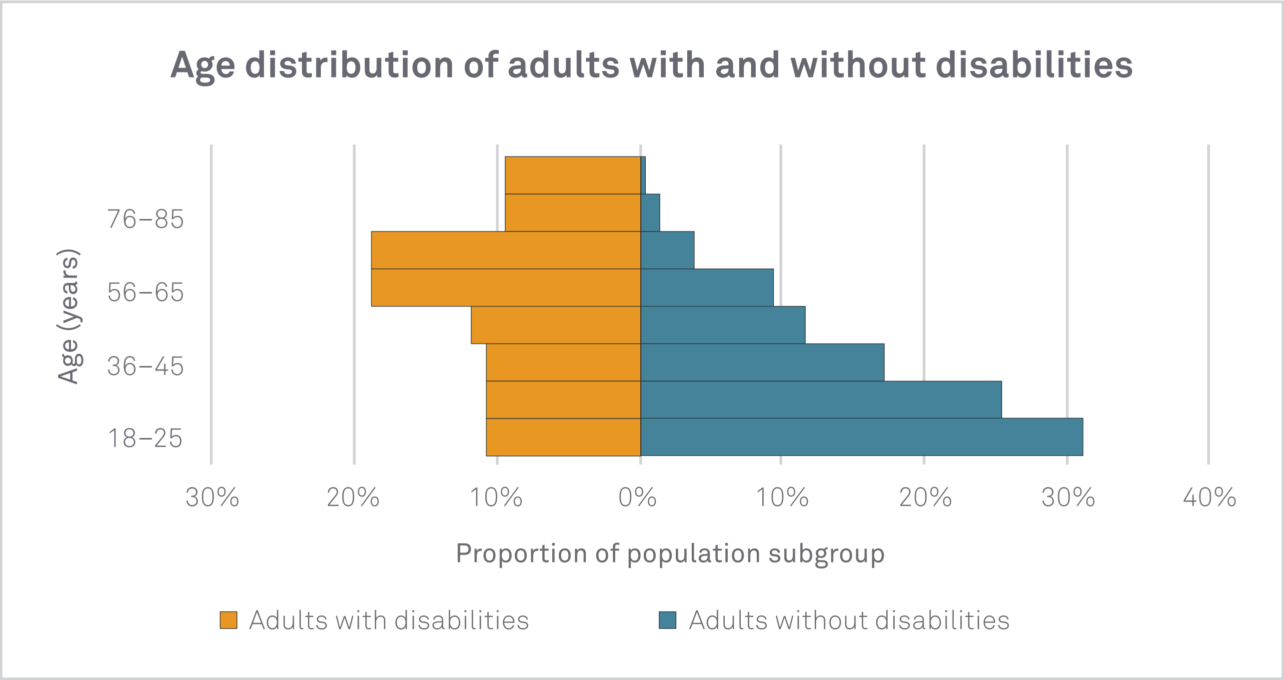
[j] Projected population age distribution data for Tanna could not be obtained, so this prevalence could not be weighted to current population structure. However, given the agreement between the population age distribution found in this survey and that found in Tafea Province in the 2009 census,[11] it is not expected that any such weighting would have had a significant impact on the calculated prevalence.

- Calculation of adult prevalence using the WG short set of questions alone gave an estimate of 3.6% (95% CI: 2.8% - 4.5%).

3.2.1 Demographics of adults with disabilities

Disability was equally common in men and women, but much more common in older people. Adults with disabilities were much older on average than people without disabilities. Disability was more commonly reported in wealthier households.

- There was no significant difference in disability prevalence between men and women.
- Disability prevalence increased significantly with age – it was 15.7% in people aged over 55, who were 11 times more likely to have a disability than adults aged 18-25.
- More than half of all adults with disabilities (57%) were aged over 55, and their average age was 56.7 years.

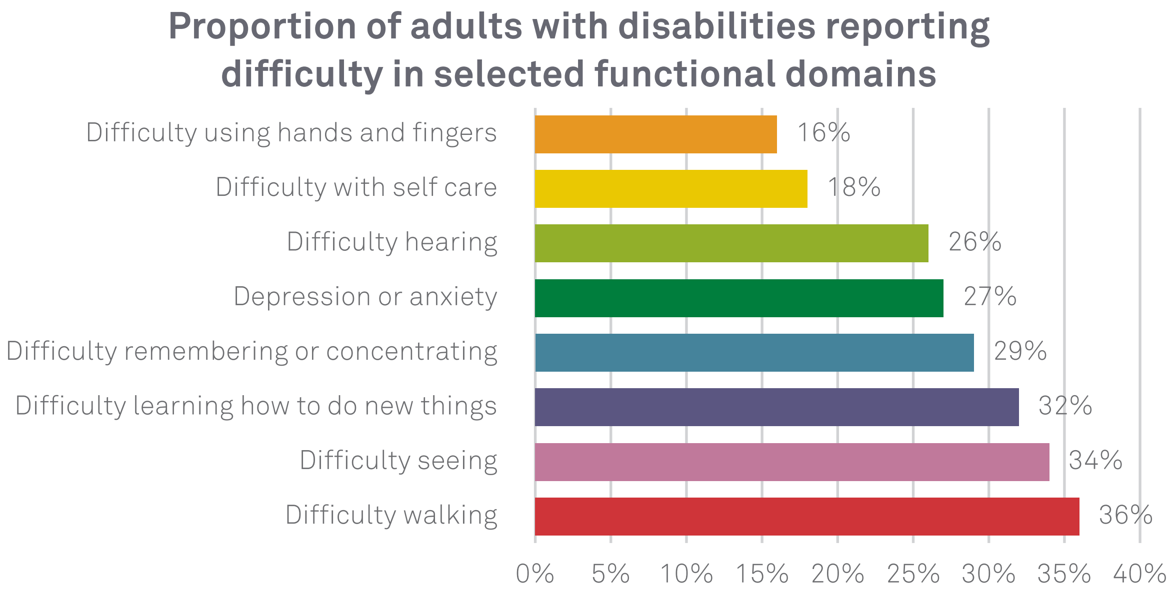


- Adults with disabilities had similar marital status to those without disabilities (68% married, 13% never married) and 84% were parents.
- Only 48% of adults with disabilities had ever attended school. This was significantly lower than for adults without disabilities (72%, p<0.001) but after adjusting for age and sex it was not statistically significant.
- Only 38% of adults with disabilities could read an SMS message (used as a proxy for functional literacy in the RAD survey), which was significantly lower than for adults without disabilities (58%, p<0.001) but not significantly different if age and sex differences were taken into account.
- Adults with disabilities were as likely to have worked in the previous seven days, and were significantly more likely to be in the richest 20% of households than the poorest 40% of households, even when adjusting for age and sex (adjusted OR 1.89, 95% CI 1.01-3.51). This may be due to under-reporting of functional difficulties in poorer households.

3.2.2 Functional difficulties in adults

The most common difficulties among adults with disabilities were walking, seeing, learning how to do new things, remembering or concentrating, and hearing. Approximately half of all adults with disabilities had difficulties in more than one area of functioning. One in five adults with disabilities had an assistive device, mostly glasses or a walking stick.

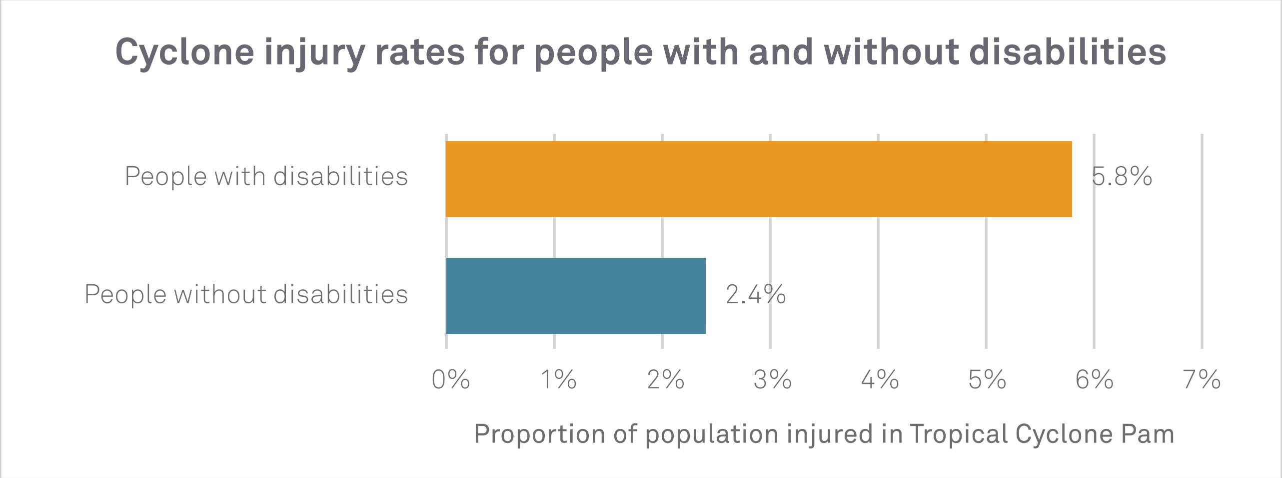
- Among adults with disabilities, the most common functional difficulty was walking (36% of adults with disabilities), followed by difficulty seeing (34%), difficulty learning how to do new things (32%), difficulty remembering or concentrating (29%) and difficulty hearing (26%).
- Depression/anxiety symptoms were present in 27% of adults with disabilities; 6% of adults with disabilities had depression or anxiety alone, with no functional difficulty.
- Nearly half of all people with disabilities (47%) had functional difficulty in more than one domain, with 16% having four or more domains of functional difficulty.
- Two thirds of all adults (65%) ascribed their functional difficulty to a health condition or disease, 10% to an accident and 10% to a birth or congenital problem.
- One in five adults with disabilities (21%) had an assistive device; these were mostly glasses and walking sticks, but three respondents had crutches and three had wheelchairs.



3.2.3 Direct impact of TC Pam

Nine out of ten households said their house was damaged during TC Pam, and eight out of ten households evacuated during the cyclone. People with disabilities were 2.45 times more likely to have been injured during the cyclone than people without disabilities. Two people said their disability occurred due to injury from the cyclone. Thirteen adults lost their assistive devices during the cyclone.

- Almost all household representatives (92%) reported that their house was damaged during TC Pam, and 77% of households were self-assessed as uninhabitable.
- At the time of survey (12-18 months post-cyclone), only 21% of households self-assessed their house as safe to live in – however, self-assessment of household structural integrity needs to be interpreted with caution.
- 79% of households evacuated during the cyclone; of those who didn't evacuate, 64% said they had no need to evacuate and 29% said they had nowhere to go. This concurs with the poor access to evacuation shelters reported elsewhere in this survey.
- TC Pam resulted in a number of deaths and injuries on Tanna. This survey was not designed to record deaths on the island, but 47 adults and 23 children without disabilities, and 5 adults and 1 child with disabilities were injured during or in the immediate aftermath of the cyclone. The most common injuries were cuts and broken bones, and two respondents had sustained burns.
- The injury rate among people with disabilities was 5.8%, which was significantly higher than the injury rate of 2.4% for people without disabilities. People with disabilities were 2.45 times more likely to have been injured in the cyclone than people without disabilities (95% CI: 1.04 – 5.77, p=0.040). This difference was not significant when adjusted for age and sex. However, given the generally older cohort of people with disabilities, this does point to an increased risk of injury for people with disabilities during cyclones, most likely due to the disproportionate risk experienced by people with disabilities[k].



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[k] Differences in cyclone injury rates were not significant for adults only, or children only, but because of the small numbers who were injured the adult and child populations were combined for this analysis. Two adults who ascribed their disability to the cyclone were excluded from the analysis.

- TC Pam was also responsible for disabilities: two adults with disabilities attributed their disability to the cyclone. In both cases the disabilities were due to vision problems caused by flying debris.
- Thirteen adults (including six with disabilities by the RAD measure) lost their assistive devices during the cyclone, including glasses, walking sticks, crutches and a wheelchair.

3.2.4 Rights of adults with disabilities

Adults in the community reported that people with disabilities had a wide range of. One in ten adults without disabilities said that people with disabilities had 'no rights' in their community.

Adults with and without disabilities were asked via an open-ended question to describe the rights that people with disabilities had in their community. The most frequently mentioned rights were to be treated the same way as anyone else; to access health care; to have safe home living conditions; to access assistive devices; to access the information they need, and to have their opinion count in family discussions. This last right was mentioned significantly more frequently by people with disabilities themselves, but other rights were mentioned in similar frequencies by adults with and without disabilities. Some 12% of adults without disabilities and 8% of adults with disabilities responded that people with disabilities had 'no rights' in their community.

3.2.5 Access to services and community activities – comparison of adults with and without disabilities

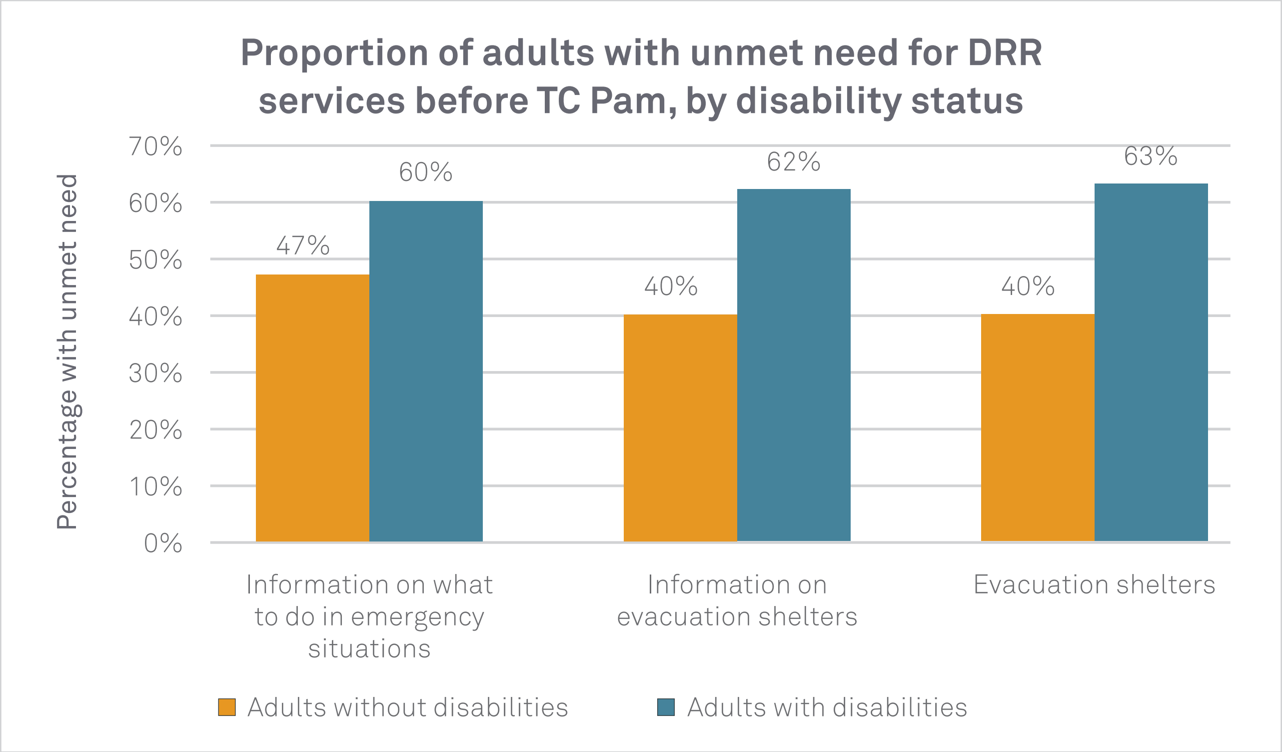
Adults with disabilities (cases) were each matched with an adult from the same community who did not have a disability (control), but who was the same sex and age (within 2 years for those under 50, and within 5 years for those 50 or older). Controls were identified for only 30 of the 85 people with disabilities. This difficulty arose primarily because for many elderly people with disabilities, there simply was no one of a similar age without disability within their community. As such, cases (including those who were not matched with a control) and controls were compared using logistic regression analysis.

There was no statistically significant difference found between cases and controls on common demographic variables such as age, sex, socioeconomic status education and literacy. There were generally high levels of unmet need in accessing most services and community activities.

3.2.5.1 Access to disaster risk reduction services prior to TC Pam

Adults with disabilities experienced poorer access to information on evacuation shelters, and to evacuation shelters themselves, than adults without disabilities. This suggests that disability inclusion across DRR activities implemented prior to TC Pam was limited. It is important to note that access to all DRR efforts was found to be poor for most people.

- 69% of people with disabilities and 63% of those without had an unmet need for disaster preparedness training, while 60% of people with disabilities and 47% of those without had an unmet need for information on what to do in emergency situations. Neither difference in unmet needs was statistically significant.
- Fewer people (29% of cases and 23% of controls) had an unmet need for information on the cyclone itself, possibly indicating that formal and informal early warning systems were the most effective DRR activity on Tanna.
- Adults with disabilities were significantly more likely to have an unmet need for information on evacuation shelters (62% for cases vs 40% for controls, $p=0.039$) and unmet need regarding access to evacuation shelters (63% vs 40%, $p=0.032$).
- These results imply that DRR coverage on Tanna prior to TC Pam was generally limited, and that evacuation shelters and activities promoting them were not adequately inclusive of adults with disabilities.



3.2.5.2 Access to services in the four weeks after the cyclone (response phase)

Access to services immediately after the cyclone was poor for most people.

- There was a high level of unmet need across most services for both people with and without disabilities in the first four weeks after TC Pam.
- Services with the highest level of unmet need for people with disabilities were health services (51%), women's health services and products (65%), drinking water (42%) and emergency shelter materials (42%).
- Food distribution was the service with lowest unmet need, but even so, 29% of people with disabilities and 20% of those without reported unmet need for food within the first four weeks.

3.2.5.3 Access to services and community activities since the cyclone up until the time of survey

In the months following the cyclone, all adults on Tanna continued to experience limited access to services. Access to disability specific services was particularly poor.

- Access to services and community activities continued to be poor for all adults in the 12-18 month period following the cyclone. This may partly reflect pre-existing availability of these services prior to the cyclone, but may also reflect longer-term impact of the cyclone.
- There was no significant difference in access to services and community activities between adults with and without disabilities.
- Levels of unmet need for medication (51% of cases, 59% of controls), health services (44% and 62%), safe drinking water (39% and 33%) and toilet facilities (33% for both) were particularly high.
- Unmet need for disability-specific services, including rehabilitation services (60% of adults with disabilities), assistive devices (78% of adults with disabilities) and access to Disabled People's Organisations (82% of adults with disabilities) reflect the generally poor access to these services in most islands of Vanuatu.

3.2.5.4 Barriers to accessing services and community activities

Compared to their non-disabled peers, adults with disabilities more frequently reported that physical accessibility was a barrier to most services. The most common reasons for poor access to services for all adults was the absence of the service, or lack of information about the service.

- Barriers limiting access were generally similar for most services and community activities. Frequently mentioned barriers to accessing most services and activities were the absence of the service, absence of information about the service, and physical inaccessibility of the service infrastructure.
- The El Nino/dry time was mentioned by a small number of respondents as a barrier to paid work by both people with and without disabilities. This was identified as a barrier to participation in religious and social activities by respondents without disabilities.

While the number of respondents with unmet need were too small to allow statistical analysis of the differences between adults with and without disabilities, there were some clear qualitative differences in barriers reported by adults with disabilities and those reported by adults without disabilities. These include:

- Adults with disabilities reported that accessibility of the built environment was a barrier to almost all services and activities, and for many services (shelter materials, food distribution, safe drinking water, toilet facilities, rehabilitation services, community consultations, social and religious activities, transport), it was the most frequently mentioned barrier.
- Adults without disabilities mentioned physical accessibility as a barrier for only a third of services, and it was only the most frequently mentioned barrier for one service (safe drinking water in the recovery phase).
- While interviewers were trained to distinguish 'physical accessibility' from other physical barriers such as geographical distance or travel time, it is likely that there may have been some conflation of these concepts in the responses of interviewees. However, the prominence of physical accessibility as a barrier to disaster risk reduction, response and recovery activities points to an ongoing need to integrate inclusive approaches into every aspect of service planning and delivery.

3.2.6 Wellbeing of adults with disabilities

Adults with disabilities reported significantly lower wellbeing compared to adults without disabilities.

An adjusted wellbeing score of 0-100, based on wellbeing scale with nine domains, showed that adults with disabilities had a mean wellbeing score of 39.9, which was lower (worse) than the mean of 49.9 for adults without disabilities. This difference was statistically significant, even after adjusting for age and sex ($p=0.008$).

3.3 Children

3.3.1 Demographics

Nine out of ten children had attended school, and approximately eight out of ten were currently attending school.

- The child population surveyed (aged 5 – 17 years) was 51.8% male, and had a mean age of 10.2 years. About half of the children (47%) were in the 5-9 age group.
- Nearly all children (89%) had attended school at some point, and of those children, 92% were currently attending school at the time of the survey, while 8% had left school. This means that 82% of the overall child population were currently attending school.
- Of those currently attending school, 42% had missed more than one day of school in the previous month, while 39% had not missed a day of school in that time.
- 18% of children were in preschool/nursery, two thirds (66%) had completed some primary school, 4% had their primary certificate, 7% had a Form 3 certificate, and 2% had a year 10 leaving certificate.

Photo credit: Vlad Sokhin/Panos/OxfamAUS

3.3.2 Children with disabilities

One in every 55 children (1.8%) had a disability.

The survey identified 24 children with disabilities, based on the RAD functional definition of disability. When adjusting for clustering effects, this gave a prevalence of disability among children aged 5-17 years of 1.8% (95% CI 1.21-2.68%).

3.3.3 Demographics of children with disabilities

Disability was equally common amongst boys and girls. Children with disabilities were less likely to have ever attended school than children without disabilities; but they were more likely to have attended school than adults with disabilities.

- Children with disabilities were 54% boys, which was not significantly different to children without disabilities.
- Two thirds of children with disabilities (67%) had attended school at some point. This was significantly lower than children without disabilities, 89% of whom had ever attended school.
- Children who had never attended school were five times more likely to have a disability than those who had attended school, even after adjusting for age, sex and socioeconomic status.
- Children with disabilities were more likely to have attended school at some point compared to adults with disabilities (48% school attendance).
- Among children with disabilities who had attended school, 19% were no longer attending school, which was similar to children without disabilities.
- Among children with disabilities who were currently attending school, the highest level of education attained was a Form 3 certificate; distribution of children with and without disabilities among the various school levels was similar.
- Two thirds of children with disabilities in school (69%) had missed more than one day of school in the last month, compared to 41% of children without disabilities, but this difference was not statistically significant.

- As with adults with disabilities, there were proportionally more children with disabilities in the richest 20% of households, but the difference was not large enough to be statistically significant in this sample size.

3.3.4 Functional difficulties in children

Intellectual and behavioural difficulties were the most commonly reported disabilities amongst children.

- The most commonly reported functional difficulties among children with disabilities were difficulty remembering or concentrating (46%), difficulty controlling behaviour (42%), difficulty walking (29%), difficulty learning how to do new things (29%), difficulty hearing (29%), difficulty communicating (29%), difficulty with self-care (21%) and difficulty accepting change (17%).
- Half of the children with disabilities (50%) had only one type of functional difficulty, while 29% had four or more functional difficulties.

3.3.5 Assistive devices for children

Only one child with disabilities had an assistive device (a wheelchair), which was lost/damaged during the cyclone. As with adults, the low prevalence of assistive device use reflects the general absence of rehabilitation services and assistive devices on Tanna.

3.3.6 Access to community and services

Children with disabilities (cases) were each matched with a child without disability (controls) by age (within 2 years), sex and location. Suitable controls could be found for only 13 of the 24 children with disabilities. As with adults, children with disabilities (including those that had no matched control) and controls were compared using logistic regression.

There was no significant difference on key demographic indicators between children with and without disabilities, including age, sex, socioeconomic status, school attendance and educational attainment. There were generally high levels of unmet need for access to community and services, both in cases (children with disabilities) and controls (children without disabilities).

3.3.6.1 Access to disaster risk reduction services and activities

Access to DRR efforts was poor for both children with and without disabilities.

- 82% of children with disabilities and 67% of those without experienced an unmet need for access to training or information sessions on disaster preparedness.
- 56% of children with disabilities and 42% of those without reported unmet need for information on what to do in emergency situations. There was little difference in the proportions of children with and without disabilities who experienced an unmet need for information on TC Pam before it arrived.
- 59% of children with disabilities were found to experience unmet need for information on evacuation shelters and 56% had an unmet need for access to evacuation shelters.
- Due to the small sample size, no statistically significant difference between children with and without disabilities was identified regarding access to any disaster risk reduction activity.

3.3.6.2 Access to services in the four weeks following the cyclone

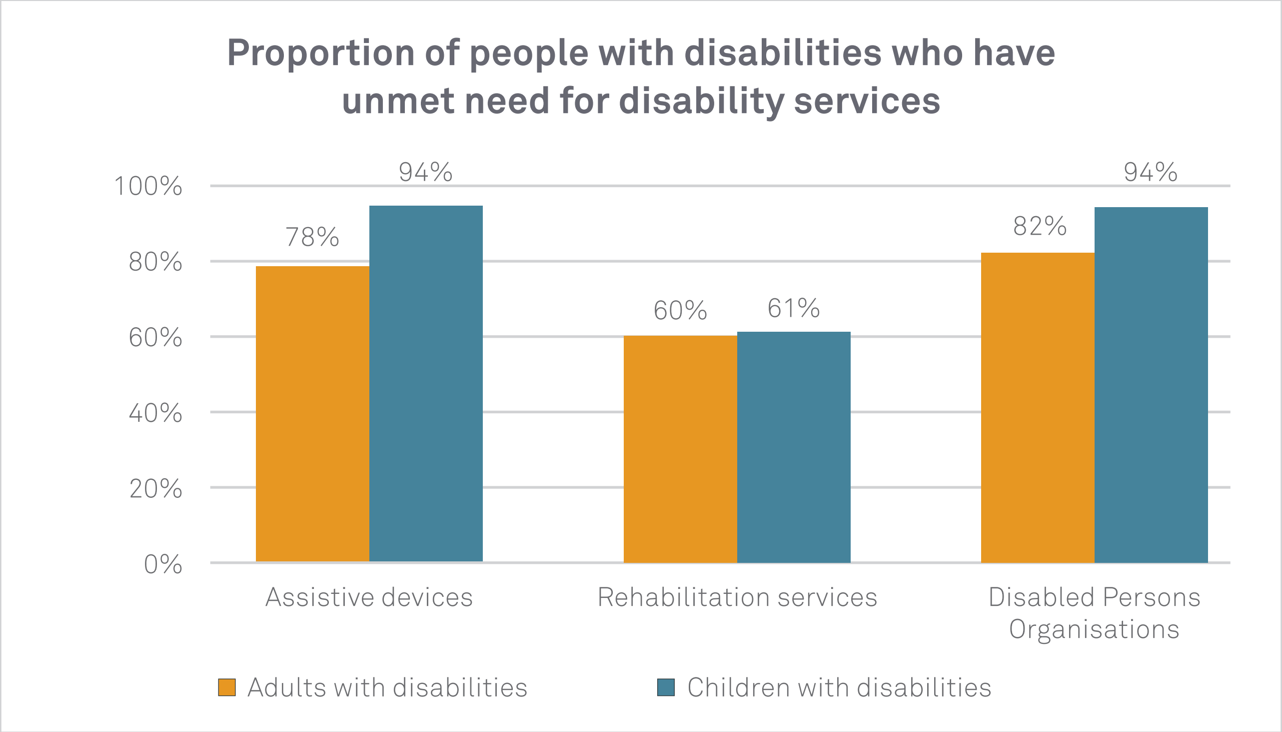
Access to services immediately after the cyclone was poor for children with and without disabilities; there was no significant difference in access between the two groups.

- 56% of children with disabilities and 50% of those without reported an unmet need for access to emergency shelter materials following the cyclone.
- 33% of children with disabilities and 42% of those without had an unmet need for access to food distribution.
- Very similar numbers of children with and without disabilities experienced unmet needs for health services and access to safe drinking water.

3.3.6.3 Access to services and community since the cyclone, up to the present day

Access to services in the months following the cyclone was poor for children with and without disabilities, and there was no significant difference in access between the two groups. Children with disabilities had very poor access to disability-specific services.

- Unmet need for services and community activities was generally above 50% among children with disabilities.
- Particularly concerning were the poor levels of access to medication, health services, and (for children with disabilities) assistive devices and access to Disabled People's Organisations: all vital services for improving the status of children with disabilities.
- There was no statistically significant difference between children with and without disabilities in regard to access to services following the cyclone, possibly due to the low sample sizes in each group.
- Children with disabilities reported greater unmet need regarding access to assistive devices and access to Disabled People's Organisations compared to adults with disabilities.



3.3.6.4 Barriers to accessing services and community activities

Barriers to services for children followed a similar pattern to those in adults. Major barriers were absence of services, lack of information about services and physical inaccessibility.

- For each service and community activity described above, respondents with unmet need were asked to nominate barriers that prevented their access. In these subgroups with unmet need, sample sizes were too small to allow statistical analysis. However, physical accessibility featured much more prominently as a barrier for children with disabilities than it did for children without disabilities, appearing as the most commonly mentioned barrier for almost all services.

- The absence of a service, or lack of information about the service, were barriers commonly cited by both groups, indicating the generally poor coverage of many services in some parts of Tanna.
- Interestingly, El Nino was cited a barrier to accessing rehabilitation services, social activities and religious activities by children with disabilities, and a barrier to accessing social activities, religious activities and school activities for children without disabilities. This may primarily be through reduced family income, and/or increased family workloads leaving little time to engage in these activities.

3.3.7 Wellbeing of children with disabilities

Children with disabilities had lower wellbeing scores on average than children without disabilities.

Children with disabilities had an average wellbeing score of 47.6, compared to 70.4 for children without disabilities. This was statistically significant even after adjusting for age and sex (p=0.036).

3.4 Gender and disability

A gender analysis was conducted to identify the separate and intersecting influences of gender and disability.

3.4.1 Women and men

Women were less likely to have ever attended school than men, and were less likely to be able to read.

- In the general adult population, women were significantly more likely to be younger than men: 58% of women were aged 18-35, compared to 52% of men, while 15% of women were aged over 55, compared to 19% of men (p=0.029).
- The larger male population in the older age group reflects what was found at the national level in the 2009 census (although the reverse was true for the Tafea data in the census), and does not fit with known demographic trends regarding the general lower life expectancy of men. The census report theorised that their result was due to under-enumeration of older females, and/or age misreporting - old men reported to be even older than they really were, or older women reported to be younger than they really were, and these factors may be at play here too.[11]
- Women were significantly less likely to have ever attended school: two thirds of women had ever attended school, compared to three-quarters of all men (75%, p<0.001). This is particularly notable given that women were on average younger than men and would be expected to have had, on average, better access to opportunities for schooling as access has improved in recent years. This finding is probably due to the very poor rates of school attendance among older women.
- In keeping with this finding, women were also less likely to be able to read an SMS message, with 54% of women being able to read a message compared with 62% of men (p=0.001).
- There were no significant differences between women and men in regard to having worked in the previous 7 days, or in the socio-economic status of their household.
- Women on average reported lower wellbeing scores than men. The average wellbeing score for women was 40.2, compared to 45.7 for men. However, this difference was not statistically significant.

3.4.2 Women and men with disabilities – educational disparities

Women with disabilities were about half as likely to have ever attended school than men with disabilities.

- Men and women were equally likely to have disabilities.
- Among adults with disabilities, there were no significant differences between men and women in terms of age, literacy, employment and household socio-economic status.
- Women with disabilities were significantly less likely to have ever attended school. One third of women with disabilities (33%) had attended school at some point, compared to two thirds of men with disabilities (65%, p=0.004). This is a far greater gender disparity than in the general population.

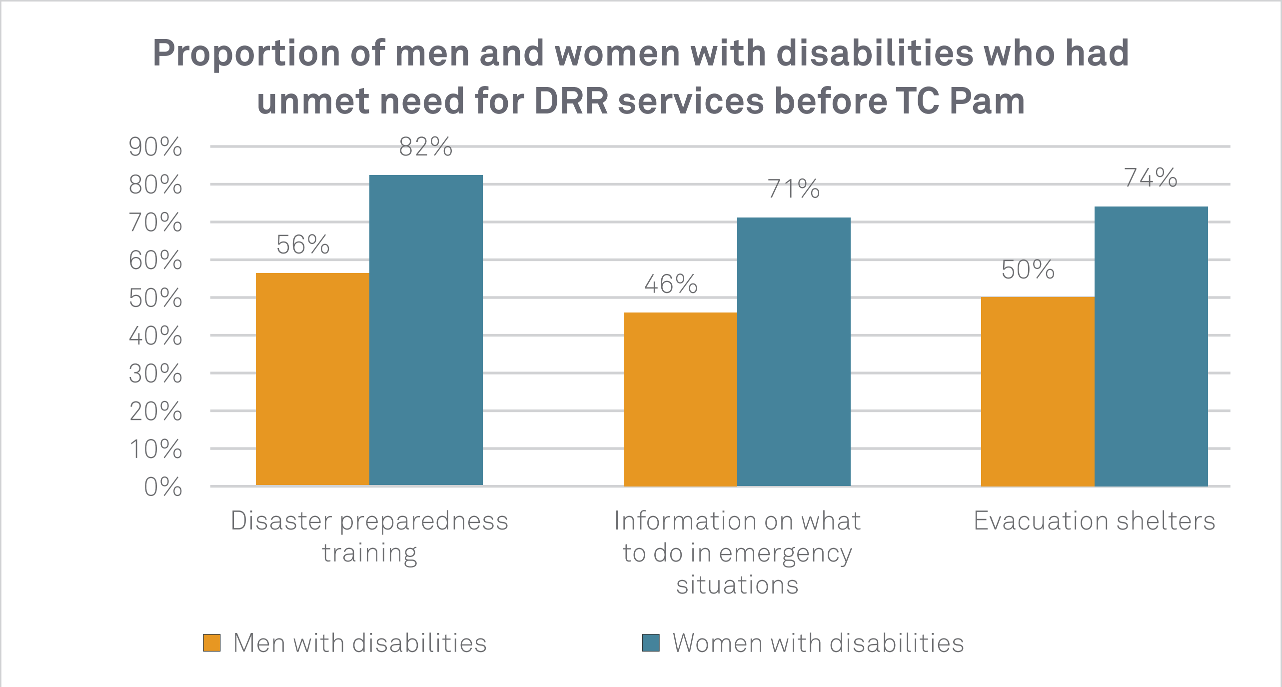
This is clear evidence of strong intersectionality between gender and disability. When the adult survey respondents were young, girls with disabilities were less likely to attend school compared to boys with disabilities. This result was only seen in adults, and no such gender disparity was evident in the current generation of children. This may indicate that barriers to education as experienced by girls with disabilities were more pronounced in the past than they are today.

3.4.3 Women and men with disabilities – disparities in access to services

Women with disabilities reported significantly less access to many DRR and response efforts compared to men with disabilities; however, men were nearly twice as likely to have been injured during the cyclone.

In comparison to men with disabilities, women with disabilities were significantly more likely to report unmet need for participation in DRR information/training sessions (82% vs 56% unmet need, p=0.013), information on what to do in emergencies (71% vs 46% unmet need, p=0.021), and access to evacuation shelters (74% vs 50%, p=0.030). The disparities in access to information and training may partly relate to lower levels of literacy among women, and decisions about who is invited or allowed to attend training sessions.

The lower levels of access to evacuation shelters experienced by women with disabilities is very concerning, and requires further investigation to explore reasons behind this result. There was no statistically significant difference between men and women with disabilities in accessing information about evacuation shelters; this suggests that the problem may relate more directly to shelter accessibility, or women's confidence in the privacy and dignity they would be afforded whilst in the shelters.



Despite this disparity in DRR services, women were less likely than men to have been injured in the cyclone. The injury rate among men was 3.8%, compared to 2% among women, meaning men were 1.9 times more likely to have been injured in the cyclone (95% CI: 1.07 – 3.34, p=0.027, adjusted for age). This may be due to gender roles leading to differences in where men and women were located when the cyclone hit, and in the activities they led during and in the immediate aftermath of the cyclone, leading to differential risk of injury.

After the cyclone, women with disabilities had higher unmet need than men with disabilities for access to toilet facilities (43% vs 22%, p=0.045), education or skills training (84% vs 62%, p=0.036), Disabled People's Organisations (90% vs 72%, p=0.046) and legal assistance (78% vs 55%, p=0.050). Further investigation is required to identify possible reasons behind these disparities. However, there were no statistically significant gender differences in accessing key response and recovery services such as emergency shelter materials, food distribution, clean water, medication and health services, although in most of the services unmet need among women appeared to be higher than men, and gender disparities in access to food distribution and transport both approached statistically significant levels.

Evidence indicates that gender-based violence increases after a disaster. Impoverishment is thought to be a major contributing factor. Gender-based violence experiences of women with disabilities following disasters are not well understood. However, in general circumstances, women with disabilities have been found to be three times more likely to experience physical, sexual and emotional abuse compared to their non-disabled peers. Thus, it is reasonable to conclude that women with disabilities probably experience heightened levels of violence following a disaster. While this was not explored by this study, violence limits safety and security of women including those with disabilities, and is likely to impact on their wellbeing and advancement. This is an area that requires further investigation.

3.4.4 Girls and boys

The gender disparities found amongst adults were not seen in children. This may indicate that gender inequity may be changing amongst children in these communities.

In the general population of children, there were no statistically significant differences between boys and girls in age, having ever attended school, current school attendance, educational attainment, days missed at school, socioeconomic status, wellbeing or any other measure analysed, despite a large, representative sample being taken.

Among children with disabilities, sample sizes were too small to test whether there were gender disparities in any measure. However, given the lack of gender disparity in the general child population in the measures assessed, and the similarity in most measures between children with and without disabilities, there may be a lower likelihood that gender disparities would exist only within the population of children with disabilities, should a larger group have been studied.

Photo credit: Arlene Bax/OxfamAUS

4 Discussion

4.1 Demographics and disability prevalence

This survey found that approximately 3.6% of adults in the survey area experienced disability, based on the WG definition of disability, but that the adult prevalence was 4.63% when using the RAD definition of disability, which captures a broader range of functional difficulties. Demographic trends mirrored those found in the 2009 census, which found that there were more women with disabilities than men, and that disability prevalence increases with age.[11]

The disability prevalence estimates from this study cannot be directly compared to previous estimates of disability in the 2009 Vanuatu Census or the 2013 Vanuatu Demographic and Health Survey (VDHS). This is because neither the Census nor VDHS used the standard WG question format and cutoffs for measurement of disability – and utilised adult questions for the whole population. In addition, the RAD was only conducted on Tanna and findings cannot be directly extrapolated to Vanuatu as a whole. Nevertheless, analysis of the RAD data using the closest possible approximation to the non-standard cut-offs used in the Census and VDHS yielded prevalence estimates that were mostly much higher than the equivalent Census/DHS estimates. For more detailed discussion of disability measures in Vanuatu and comparisons of estimates, please see Appendix D.

4.2 Before the cyclone

4.2.1 Access to information about disasters and evacuation

The survey indicates that compared to their peers without disabilities, adults with disabilities had a markedly higher unmet need for information about the cyclone and evacuation options. This was particularly the case for women with disabilities, who reported less access to information and training regarding emergencies and evacuation procedures.

Limited access to information may be underpinned by the levels of literacy identified amongst adults with disabilities, in particular amongst women with disabilities, which were found to be lower than that of adults without disabilities. Lower literacy levels are, in turn, likely due to lower school attendance rates identified amongst adults with disabilities compared to similarly-aged people without disabilities. School attendance was found to be significantly lower for women with disabilities compared to their male counterparts.

This corresponds with international evidence, which indicates that children with disabilities represent a disproportionate number amongst all out-of-school children. A 2016 study found that of out-of-school primary-aged children with disabilities in eighteen countries, 85% had never been to school.[14] Where children with disabilities are enrolled in school, studies indicate that they are approximately 30% less likely to attend school compared to children without disabilities. While there is strong global will for disability inclusive education, the reality is that in many countries, many children with disabilities remain excluded from school.

Inclusive education is a relatively recent approach, and global adoption is taking time. Inclusive education is unlikely to have been an option for today's ni-Vanuatu adults with disabilities when they were school-aged. As such, in order to reach everyone, agencies which support communities to understand how to mitigate and prepare for disasters, including evacuation, must review their strategies and develop approaches which account for the education and literacy levels of men and women with different types of disabilities, and utilise these to ensure no one is left behind when a disaster strikes.

This finding also highlights that disability inclusive DRR is dependent on disability inclusion across other sectors such as education; mainstreaming the rights and needs of people with disabilities must occur in a cross-sectoral, integrated fashion.

4.3 During the cyclone

4.3.1 Access to evacuation shelters

Adults with disabilities indicated higher unmet need regarding access to evacuation shelters during the cyclone compared to those without disabilities. This was particularly true for women with disabilities. As well as resulting from limited access to information regarding evacuation options and processes as described earlier, this may also be due to inaccessible evacuation shelter infrastructure. This can prevent access to people with disabilities if there are steps, narrow doorways, or toilets which are not large enough to accommodate a person with disability, their assistive device and their carer. It could also be related to women's concerns regarding their dignity, privacy and safety when being accommodated in unfamiliar surroundings with people other than their immediate family.

This survey found that 13 adults and one child with disabilities lost their assistive devices as a result of the cyclone. These included glasses, walking sticks, crutches and a wheelchair. Devices such as these can mean the difference between function and dependency, and the loss of such essential tools could limit the ability to get to evacuation shelters safely.

This finding indicates the importance of DRR efforts utilising a disability inclusive approach. Incorporating accessible and gender-sensitive design principles in the construction of buildings which will be used as evacuation shelters creates an accessible, safe environment for everyone during future disasters. Consulting with local people with disabilities through their representative groups, Disabled People's Organisations, is widely recognised as best practice to ensure evacuation shelters are inclusive of the accessibility requirements of people with a range of different functioning difficulties within the given context.

4.3.2 Injuries

This study found that people with disabilities were up to 2.45 times more likely to experience injury as a result of the cyclone compared to those without disabilities. This may be due to a number of factors, including poor knowledge of how to evacuate safely, and lack of accessible evacuation shelters resulting from community disaster risk reduction capacity development efforts which excluded people with disabilities; difficulty evacuating quickly due to mobility, vision or other functional difficulties; loss of assistive devices; and differential treatment by people assisting with evacuation or sheltering. This finding points to an increased risk of injury for people with disabilities during cyclones, and further highlights the importance of disaster risk reduction efforts which include people with disabilities.

4.4 After the cyclone

4.4.1 Access to mainstream services

This study found that access to essential services such as health services, women's health services and products, water, emergency shelter and food was similarly limited for people with and without disabilities, both immediately after the cyclone, and in period between the cyclone and the survey. This finding indicates that people experienced generally poor access to services.

Women with disabilities reported higher unmet needs in accessing toilets, education and skills development, Disabled People's Organisations and legal assistance. These may represent the particular needs experienced by women with disabilities, and indicate additional barriers to service provision which further restrict their wellbeing compared to women without disabilities. Another study completed following TC Pam found that where women had been involved in disaster risk reduction activities prior to the cyclone, they were more likely to be engaged in response and recovery activities which benefited themselves and their communities; this is another lesson regarding the importance of including the concerns and particular needs of women with disabilities in disaster risk reduction activities.

The gender-based violence experiences of women with disabilities were not explored by this study. However, given the likelihood of women with disabilities experiencing violence following a disaster,[12 13] and the impact of this on the safety, wellbeing and advancement of women with disabilities, this is an area that requires further exploration.

4.4.2 Access to disability-specific services

Both adults and children with disabilities experienced high levels of unmet need for disability-specific services, including rehabilitation services (60% of adults with disabilities), assistive devices (78% of adults with disabilities) and access to Disabled People's Organisations (82% of adults with disabilities). This is consistent with conclusions within the World Report on Disability, which found that in many countries, access to such services does not meet demand.[6]

Photo credit: Groovy Banana/OxfamAUS

Limited access to services such as these can be further disabling, as lack of rehabilitation services and assistive devices when needed can limit function, and cause additional health problems which exacerbate or create new disability. This is likely to have been a critical issue for the 13 adults and one child who reportedly lost their assistive devices during the cyclone, as their ability to replace these devices was restricted by the lack of available services. Similarly, limited access to Disabled People's Organisations can limit local awareness and individual activation of rights according to the Convention on the Rights of Persons with Disabilities, which Vanuatu ratified in 2008.[1] These findings reflect the generally poor access to disability services which are experienced by people with disabilities across many islands of Vanuatu.

4.5 Wellbeing

Adults with disabilities reported significantly lower wellbeing than adults without disabilities, and children with disabilities experienced particularly low levels of wellbeing compared to children without disabilities. This is consistent with the few other studies investigating quality of life of people with disabilities from other parts of the globe, and may be linked to limited access to services reported previously.


Photo credit: Arlene Bax/OxfamAUS

5 Conclusion and Recommendations

In addition to experiencing similar limitations in access to services in the aftermath of TC Pam as everyone else, this study demonstrates that people with disabilities experienced pronounced effects in particular areas. These included limited access to information about evacuation, reduced access to evacuation centres themselves, and increased risk of injury. On top of difficulty accessing mainstream disaster preparedness and response services, people with disabilities also reported additional losses and unmet needs, including the loss of assistive devices, and minimal access to disability-specific supports such as rehabilitation services, assistive devices and Disabled People's Organisations.

This study indicates that in order for people with disabilities at the community level to have equitable access to safe evacuation shelters and services after a disaster, DRR processes need to be inclusive. This means that the particular diverse accessibility needs of people with different kinds of disabilities need to be taken into account, as well as lower literacy levels caused by limited access to education which was found to be commonly experienced by people with disabilities.

This research demonstrates that women with disabilities experienced particular exclusionary effects, including reduced access to DRR information and education sessions and evacuation shelters, as well as access to toilets, education, skills development, Disabled People's Organisations and legal assistance after the cyclone. Women with disabilities experience the burden of double exclusion related to their gender and their disability; their inclusion requires DRR programs to be intentionally geared to identify and address the barriers they experience. This study did not examine the gender-based violence experiences of women with disabilities; this is recommended for further investigation.

This study found that children with disabilities experienced much lower wellbeing than for their non-disabled peers. This provides an imperative for child-friendly DRR programming which identifies and addresses the particular barriers to participation experienced by children with disabilities before and after a disaster.

This project concludes that in order to reach everyone, DRR efforts led by Government and Non-Government Organisations cannot be "one size fits all". DRR programs need to take into account individual community members and their particular strengths and needs, and tailor activities so that everyone is included. Efforts must be made prior to disasters occurring, to ensure that people with disabilities know where to go, how to get there, and how to access services, and so that all community members have the knowledge and skills to take responsibility for inclusive preparedness, evacuation and response before, during and following a disaster.

The twin track approach provides a useful framework for planning and implementing disability inclusive DRR strategies. It guides the mainstreaming of disability inclusion across existing DRR programs, while also acknowledging and addressing the particular needs people with disabilities have, for example rehabilitation, assistive devices and sign language.

Disaster responses are often planned based on information collected during assessments immediately following the event. Assessments following TC Pam did not systematically include questions or methodologies which collected reliable information about the particular needs of people with disabilities. This may be a causal factor for the exclusion found through this study. The identification of men, women and children with disabilities and investigation of their needs must be driven through stronger disability inclusive post-disaster assessment processes. This study found that the use of individual-level data collection may not be feasible in an assessment process which collects data at the household level; alternative, household level methodologies and tools must be tested for application following future disasters. This report provides an option for further exploration.

Since TC Pam, other disasters including cyclones have battered Pacific countries, making the recommendations arising from this study particularly important for all humanitarian stakeholders to consider and implement in the context of their disaster risk reduction programs.

Evidence from this study underpins the following recommendations, which are targeted at government and non-government humanitarian agencies in Vanuatu and other Pacific Island Countries.

1. Mainstream disability inclusion across DRR and response policies and practices:
    a. Consult with men, women and children with a diverse range of disabilities and their representative organisations to identify differential risk and develop strategies which address barriers to meaningful participation in disaster risk reduction initiatives. Particular attention must be paid to preparedness and the provision of accessible evacuation information, infrastructure built in accordance with design for all (universal design) principles, and strategies which ensure people evacuate safely with their assistive devices.
    b. Strengthen Community Disaster Committees so that:
        i. men and women with diverse disabilities are active participants, with opportunities to assume leadership roles in times of disaster preparedness, evacuation and disaster response.
        ii. Households and communities take responsibility for the identification and inclusion of people with disabilities in disaster preparedness activities, and safe evacuation of all men, women and children with diverse disabilities during times of disaster to ensure no one is left behind.
    c. Prepare for disability inclusive disaster response by strengthening organizational capacity of all actors to work in a disability inclusive way, by training staff, consulting with people with disabilities, developing plans and tools and forming formal relationships with Disabled People's Organisations before a disaster.
2. Develop questions and methodologies which enable reliable identification of people with disabilities and their needs immediately following a disaster.

3. Identify and address the disability-specific needs of men, women and children with disabilities prior to and after disasters:
    a. Prepare communities to enable safe evacuation of people with disabilities and their assistive devices.
    b. Facilitate access to replacement assistive devices following a disaster by developing partnerships with government and non-government service providers.
4. Work in partnership with Disabled People's Organisations to prepare and implement disability inclusive disaster risk reduction and response activities, in accordance with the Convention on the Rights of Persons with Disabilities, and the Sendai Framework.
5. Acknowledging the specific challenges faced by women with disabilities following disasters, collaborate with women with diverse disabilities to develop and implement disaster risk reduction strategies which support their safety and inclusion:
    a. Develop accessible, safe and private sanitation and accommodation facilities in evacuation shelters and buildings constructed following a disaster;
    b. Implement education and skills development opportunities which include women with diverse disabilities;
    c. Improve access to legal assistance and support from Disabled People's Organisations and women's rights organisations; and
    d. Undertake further exploration of the gender based violence experiences of women with disabilities following disasters, and mainstream strategies to prevent and respond to these.
6. Ensure child-friendly disaster risk reduction, response and recovery initiatives are inclusive of children with diverse disabilities and their families.

Photo credit: Vlad Sokhin/Panos/OxfamAUS

Appendix A

Detailed survey methodology

Study design and sampling

This study was a cross-sectional population survey with a nested case control design. It surveyed all people aged five years or older in the study areas. All adults capable of consenting and responding to the survey were interviewed individually, and responses regarding children (aged 5-17 years) were collected by interviewing their parent or guardian.

The survey was conducted in two staged cluster random sampling. In the first stage, clusters (the smallest administrative units/enumerating areas for census surveys) were selected across Tanna through probability-proportional-to-size sampling using the latest (2009) census as the sampling frame,[11] and with assistance from the Vanuatu National Statistics Office.

The second sampling stage selected households within clusters through compact segment sampling. Each cluster was divided into equal segments through mapping of the sites, so that each segment comprised approximately 50 people. Segments to be included in the study were selected by randomly drawing lots. All households in the segment were included in the sample sequentially until 50 people were recruited. If fewer than 50 participants were recruited in a given segment, sampling continued in the nearest segment until 50 people were recruited in a cluster. At least two return visits were made to absentee households and individuals.

Questionnaire

The research team worked with local key stakeholders to develop and pilot a contextualised survey tool drawing on the Rapid Assessment of Disability (RAD) Questionnaire, the Washington Group (WG) Short Set of questions on Disability, and the UNICEF/Washington Group Module for Child Functioning and Disability.

The RAD 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. It has been used in a number of countries across the Asia-Pacific region.[21,22,23,24] The RAD questionnaire was interviewer administered and had two parts: the first part contained questions about the socio-economic characteristics of the household, which were administered to the household representative; the second part was a questionnaire designed for each individual in the household and comprised four sections: (1) *demographic information*, (2) *self-assessment of functioning*, (3) *well-being* and (4) *access to the community*.

The *demographic section* included items related to age, gender, ethnicity, religion, marital status, education, occupation, health conditions and information on any assistive devices used. Selected questions from Center for Disease Control and Prevention's Community Assessment for Public Health Emergency Response (CASPER) were included in the household questionnaire and the demographics section.

The second section identified people with disabilities based on the activity limitations component of the International Classification of Functioning, Disability and Health (ICF) framework. It contained the Short Set questionnaire developed by the Washington Group on Disability Statistics as a measure of disability for adults aged 18 years and above. The WG Short Set comprises six questions used to identify people at risk of disability, based on measuring functioning on the most basic actions or functions: seeing, hearing, walking, remembering, self-care, and communication. Each question asks about difficulties in doing the activity due to a health problem using 4-point

Likert scale: 'no difficulty,' 'some difficulty,' 'a lot of difficulty,' and 'cannot do it at all.' Responses to having 'a lot of difficulty' or 'cannot do at all' to at least one domain were considered as disability. These questions are recommended for census level surveys and a version of these was used in the Vanuatu 2009 Census.[11]

In addition, questions on psychological distress from the RAD that were adapted from the Kessler-6 scale were used to identify adults with depression and anxiety. The responses to difficulty were rated as 'never,' 'some of the time,' 'most of the time,' and 'all of the time.' Those who self-reported having difficulty 'most' or 'all of the time' to at least two out of six items on this domain were considered to have a disability.

Three additional questions asked whether respondents had experienced difficulties due to a problem with their appearance, had difficulty using their hands and fingers, and had difficulty learning new things. The appearance question was included because RAD researchers had identified in previous settings that certain skin conditions (eg albinism) or dysmorphic features can result in extreme stigma and discrimination in some communities. The questions on hands and fingers, and on learning new things, were included because the RAD team had identified these as key functional domains that were not adequately picked up by the WG short set questions. Responses to these questions reporting having 'a lot of difficulty' or 'cannot do at all' were considered as disability.

In the case of children (5-17 years), the latest draft UNICEF/WG Module on Child Functioning and Disability was used in the second section. This Module has been tested in several countries and the research team gained permission to use it in its current format from the UNICEF/WG team before its release. It comprises items on seeing, hearing, walking, self-care, understanding, communication, cognition, worry/feel sad, behaviour and social. Each item measures 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.' Similar to WG Short Set, responses to having 'a lot of difficulty' or 'cannot do at all' to at least one domain were considered as 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 "all of the time" to "never".

The *access to the community section* comprised questions on the level of access and inclusion in different services before and after TC Pam. The domains included health, rehabilitation, assistive devices, water and sanitation, education, employment, community consultations, social activities and disaster preparedness and response 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 asks 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 only administered to those who were identified to have disability, and their age and sex matched controls. For each participant identified to have disability an age (±2 years if aged under 50, ±5 years if aged 50 or over) and sex matched control who had been screened not to have disability was identified. The matched control was selected from a neighbouring household from the same segment and they were selected after finding cases. This allowed a case-control comparison of people with and without disability in relation to their well-being and access to services.

In addition to being developed in partnership with local stakeholders, particularly people with disabilities, people from Tanna and representatives of organisations with long experience in development work in Vanuatu, the questionnaires were reviewed locally for cultural appropriateness and relevance by local stakeholders before piloting. The questionnaires were translated into Bislama and back translated by independent translators.

Survey administration

Within the selected segment, the survey team visited all households door-to-door. Where possible, survey teams were accompanied by a local community liaison officer (e.g. village leader or community health worker). The household representative was informed about the study and invited to complete the first part of the survey (about household socio-economic characteristics). All individuals living in the household and aged 18 years and above were provided with translated information about the project in the form of a plain language statement, and invited to complete the individual questionnaire.

People were asked to provide informed consent (written or verbal, as appropriate). Parents or carers was asked to complete the survey on behalf of children aged 5-17, yet all participants between the age of 9 and 17 were informed about the study and asked to give their assent for parents or carers to complete the survey on their behalf.

In case of adult participants who were deaf, home-sign language facilitated by family members or a proxy respondent was considered as there is no official sign language in Vanuatu and thus no sign language interpreters. In case of individuals with intellectual disabilities who could not provide consent, a proxy respondent was considered.

If an eligible household member was absent, at least two return visits was made to the household. If the eligible member of the household was absent even after two return visits, details about their functioning was collected from the household representative. Door-to-door visits continued in each segment until 50 people aged 5 years and above had been recruited.

Data from the household survey were entered directly by interviewers into a custom built database on the Kobo Toolbox platform (www.kobotoolbox.org) using handheld devices (tablets) in the field. This greatly improved data quality by allowing real-time data monitoring, auditing and analysis, and by guiding interviewers and constraining response entry and questionnaire logic. An additional advantage in using the RAD on a digital platform was that calculation of whether a respondent met the operational criteria for disability was done automatically during the interview, reducing classification errors and allowing for automatic prompts for interviewers to refer respondents to services as needed.

Training

The survey was coordinated by Oxfam in Vanuatu and conducted in collaboration with a disability service provider (Vanuatu Society for Disabled People), Vanuatu's Disabled People's Organisation (Disability Promotion and Advocacy association), the Government of Vanuatu's disability focal point (Ministry of Justice and Community Services) and the Vanuatu National Statistics Office. The Nossal Institute for Global Health developed the survey in collaboration with the above organisations and provided technical input to the survey process.

Four survey teams, each comprising three surveyors and one field supervisor (16 in total) were recruited through these partner entities. All project team members were trained for 10 days on disability inclusion, study design, recruitment of participants, administration of the RAD questionnaire, ethics in research and collecting survey data, data storage and referral mechanisms for participants. Supervised field practice sessions were conducted as part of the training.

Data Analysis

Statistical analyses were performed using SPSS. Confidence intervals (CI) for prevalence estimates were calculated with adjustment for clustering effects in the study design using the generalised estimating equation approach.

Rasch analysis was performed 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. The Andrich rating scale model was used with Winsteps (Ver 3.80) to perform Rasch analysis. For ease of interpretation the scores was rescaled to range from 0 to 100, where a high score represents 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.

Photo credit: Oxfam in Vanuatu

Appendix B

Draft tool for measuring disability in disaster response

As noted in the methodology, an outcome of this project was the development of a draft tool and methodology for measuring disability and disability inclusion in disaster response settings. The need for this was identified by representatives of partner agencies after undertaking training on disability measurement, which led them to review the first responder community assessment tool which had been used in the response to TC Pam.

This tool included a place for the responder to enter 'number of people with disabilities' and additional spaces to disaggregate this number by sex and whether adult or child. However, it did not provide any definition of disability, and anecdotal reports indicate that first responders to disaster affected communities simply asked "Do you have any people with disabilities in this community?", a question form that has been well established to severely underestimate disability prevalence.

The best way to ensure disability inclusion in disaster response is to have already identified and mapped all people with disabilities in each community before a disaster strikes, so that high-quality data is already available to guide the response. Recognising that community mapping may not always occur, and that where it does people with disabilities might be excluded, migrate or evacuate before a disaster, and that some people receive disabling injuries during disasters, there is a need for tools which can more accurately identify people with disabilities during a disaster response. The following draft tools were subsequently developed; these are recommended for further testing and piloting.

Step 1: Tool for use in first assessment (first few days after disaster)

Wanem blong mekem

1. Yu askem ol kwestin ia long tri ki infomen. Tu ki infomen hem i mas wan long olketa ia Jif, tija, helt woka, wan Komuniti Disasta Komiti memba mo wan bae hem i mas wan man wetem disabiliti.
2. Afta lo intaviu yu mas karem trifala ki infomen i kam wanples blong diskas mo akri lo wan stret namba

Hamas man long komuniti blong yu i gat bigfala problem long saed blong:	Namba blo fes ki infomen	Namba blo seken ki infomen	Namba blo namba tri ki infomen	Wanem stret namba we trifala i akri lo hem
1 – Lukluk?				
2 – Harem?				
3 – Toktok wetem nara man?				
4 – Wokabaot mo climb lo step?				
5 – Lukaotem olgeta wan? (swim mo werem klos hem wan)				
6 – Tinkabaot mo rimembarem samting?				

Step 1: Tool for use in first assessment (first few days after disaster)

What to do:

1. Ask the following questions from three key informants. Two of these key informants should be a chief, a teacher, a health worker, or a CDCCC member; and another key informant must be a person with a disability.
2. After the interviews, all three key informants have to discuss together and agree on only one valid number of people with a disability.

How many people in the community are having a lot of difficulty in:	Number provided by the first key informant	Number provided by the second key informant	Number provided by the third key informant	Number that the three key informants agreed on
1 –Seeing? Male: Female:				
2 –Hearing? Male: Female:				
3 – Communicating with others (understanding or being understood)? Male: Female:				
4 – Walking or climbing steps? Male: Female:				
5 – Self-care such as washing all over or dressing? Male: Female:				
6 – Remembering or concentrating? Male: Female:				

Step 2: Tool for use in later assessment (cluster or household assessment – first few weeks)

Ask for either:

1. The names of all the people identified (for a comprehensive survey of all identified people with disabilities – recommended approach) OR
2. The name of one person with each type of disability (for a short survey which gives you a general sense of the issues facing people with different types of disabilities).

Find the people with disabilities and ask questions regarding their experiences following the disaster, in accordance with the particular assessment tool developed following the disaster. These may include:

Protection:

- Do you normally need someone to help you do every day activities? Do you still have that help now?
- Have you experienced any kind of violence since the disaster?
- Have you experienced any kind of sexual abuse or violence since the disaster?
- Are you missing any device (such as glasses, hearing aids, crutches, wheelchairs) to help you carry out daily activities in the same way as other people?

Shelter :

- Have you been able to access shelter and distributed shelter materials as much as others in your community?

Water, Sanitation and Hygiene:

- Have you been able to access safe water as much as others in your community?
- Have you been able to access toilets as much as others in your community?

Food:

- Have you been able to access food supplies as much as others in your community?

Health:

- Have you been able to access health services as much as others in your community?

Education:

- (for children 4-17) Have you been able to access school as much as others in your community?

Monitoring:

- Have you been able to access disaster recovery services/distribution as much as others in your community?
- Have you been included or consulted in recovery planning?

Appendix C
Survey results tables

Table 1: Adult disability prevalence in selected demographic groups, with odds ratios

	All adults (n= 1836) n (%)	Adults with disabilities (n=85) n (%)	Prevalence of disability (95% CI)	Age-sex adjusted OR (95% CI)
Gender				
Male	849 (46.2%)	40 (47.1%)	3.61% (2.52%, 5.15%)	1
Female	987 (53.8%)	45 (52.9%)	3.91% (2.83%, 5.39%)	1.08 (0.69, 1.72)
Age (years)				
18-25	554 (30.2%)	9 (10.6%)	1.61% (0.83%, 3.10%)	1
26-35	455 (24.8%)	9 (10.6%)	1.97% (1.03%, 3.74%)	1.23 (0.48, 3.13)
36-45	309 (16.8%)	9 (10.6%)	2.91% (1.52%, 5.49%)	1.83 (0.71, 4.72)
46-55	212 (11.5%)	10 (11.8%)	4.70% (2.54%, 8.52%)	**3.01 (1.21, 7.53)**
≥56	306 (16.7%)	48 (56.5%)	15.69% (12.03%, 20.21%)	**11.36 (5.44, 23.74)**
Ever attended school	1301 (70.9%)	41 (48.2%)	3.45% (2.52%, 0.47%)	0.78 (0.45, 1.33)
Able to read SMS	1055 (57.5%)	53 (62.4%)	3.43% (2.39%, 4.90%)	0.82 (0.49, 1.38)
Worked in the last 7 days	914 (90.0%)	29 (34.1%)	2.58% (1.63%, 4.06%)	0.42 (0.16, 1.07)
Socio-economic status				
Poor	782 (39.7%)	24 (28.2%)	2.67% (1.73%, 4.09%)	1
Middle	780 (39.6%)	40 (47.1%)	4.33% (3.04%, 6.13%)	1.65 (0.97, 2.83)
Rich	**389 (19.7%)**	**21 (24.7%)**	**4.91% (3.09%, 7.73%)**	**1.89 (1.01, 3.51)**

Table 2: Selected demographic indicators of adults, disaggregated by gender (for whole population and for adults with disabilities)

	All adults					Adults with disabilities				
	Men (n=849)		Women (n=987)		p value	Men (n=40)		Women (n=45)		p value
	n	%	n	%		n	%	n	%	
Age (years)										
18-25	230	27.1	324	32.8	**0.029**	6	15	3	6.7	0.449
26-35	209	24.6	246	24.9		4	10	5	11.1	
36-45	157	18.5	152	15.4		2	5	7	15.6	
46-55	96	11.3	116	11.8		5	12.5	5	11.1	
≥56	157	18.5	149	15.1		23	57.5	25	55.6	
Ever attended school	639	75.3	662	67.1	**>0.001**	26	65	15	33.3	**0.004**
Able to read SMS	524	61.7	531	53.8	**0.001**	20	50	12	26.7	0.27
Worked in the last 7 days	450	91.1	464	88.9	0.243	14	82.4	15	83.3	0.939
Socio-economic status										
Poor	336	39.8	385	39.3	0.862	10	25	14	31.1	0.636
Middle	334	39.5	399	40.7		21	52.5	19	42.2	
Rich	175	20.7	196	20		9	22.5	12	26.7	

Table 3: Unmet need for access to services prior to TC Pam (adults with and without disabilities) and reported barriers to accessing those services

	Unmet need (%)			Most common reasons for poor access	
	People without disabilities	People with disabilities	P value	People without disabilities	People with disabilities
Information on the cyclone	23%	29%	0.546	No services/ information (30%) No accessible information (23%)	Physical accessibility (32%) No services/ information (24%) No accessible information (17%)
Disaster preparedness training	63%	69%	0.553	No services/ information (53%)	No services/ information (22%) No accessible information (22%) Physical accessibility (22%)
Information on what to do in emergency situations	47%	60%	0.228	No services/ information (37%) No accessible information (20%)	No services/ information (25%) Physical accessibility (23%) No accessible information (22%)
Information on evacuation shelters	**40%**	**62%**	**0.039**	**No accessible information (30%)** **No services/ information (27%)**	**No services/ information (30%)** **No accessible information (18%)** **Physical accessibility (18%)**
Evacuation shelters	**40%**	**63%**	**0.032**	**No services/ information (30%)** **Physical accessibility (17%)** **No accessible information (10%)**	**No services/ information (28%)** **Physical accessibility (18%)**

Table 4: Unmet need for access to services in the first four weeks after TC Pam (adults with and without disabilities) and reported barriers to accessing those services

	Unmet need (%)			Most common reasons for poor access	
	People without disabilities	People with disabilities	P value	People without disabilities	People with disabilities
Emergency shelter materials	27%	42%	0.146	No services/facility (27%) Lack of information (23%)	Physical accessibility (25%) No services/facility (17%) Lack of information (10%)
Food distribution	20%	29%	0.336	Lack of information (20%) Physical accessibility (17%) No services/facility (13%)	Physical accessibility (25%) No services/facility (15%) Lack of information (14%)
Health services	52%	51%	0.92	No services/facility (33%) Lack of information (27%)	No services/facility (32%) Physical accessibility (24%) Lack of information (14%)
Drinking water	37%	42%	0.628	No services/facility (20%) Lack of information (17%)	No services/facility (20%) Physical accessibility (20%) Difficulty getting to services/facility from home (13%)
Toilet facilities	33%	39%	0.621	Lack of information (17%) No services/facility (17%)	No services/facility (20%) Physical accessibility (19%)
Daily living items (materials for cooking, sleeping, bathing)	43%	39%	0.697	Lack of information (23%) No services/facility (20%)	No services/facility (20%) Physical accessibility (18%) Lack of information (11%)
Women's health services and products (women only)	44%	65%	0.144	No services/facility (33%) Lack of information (23%)	No services/facility (22%) Lack of information (20%)

Table 5: Unmet need for access to services since TC Pam (adults with and without disabilities) and reported barriers to accessing those services

	Unmet need (%)			Most common reasons for poor access	
	People without disabilities	People with disabilities	P value	People without disabilities	People with disabilities
Work for a living	41%	58%	0.14	El Nino/dry time (20%) No services/facility (17%) Physical accessibility (13%)	Physical accessibility (29%) El Nino/dry time (10%)
Medication	59%	51%	0.461	No services/facility (37%) Lack of information (13%)	No services/facility (28%) Physical accessibility (20%) Lack of information (11%)
Health services	62%	44%	0.102	No services/facility (40%) Lack of information (17%) Physical accessibility (10%)	No services/facility (28%) Physical accessibility (22%)
Safe drinking water	33%	39%	0.57	Physical accessibility (17%) No services/facility (13%) Difficulty getting to services/facility from home (13%)	Physical accessibility (23%) No services/facility (17%) Lack of information (10%) Difficulty getting to services/facility from home (10%)
Toilet facilities	33%	33%	0.967	No services/facility (20%) Physical accessibility (13%)	Physical accessibility (22%) No services/facility (18%)
Education or skill training	63%	73%	0.319	Lack of information (40%) No services/facility (20%)	Physical accessibility (20%) No services/facility (20%) Lack of information (17%)
Rehabilitation services	48%	60%	0.266	Lack of information (23%) No services/facility (17%) Physical accessibility (13%)	Physical accessibility (29%) Lack of information (13%) No services/facility (11%)
Assistive devices	77%	78%	0.916	Lack of information (33%) No services/facility (20%)	No services/facility (33%) Lack of information (23%)

Table 5 (continued)

	Unmet need (%)			Most common reasons for poor access	
	People without disabilities	People with disabilities	P value	People without disabilities	People with disabilities
Disabled People's Organisations	85%	82%	0.726	Lack of information (40%) No services/facility (27%)	Lack of information (34%) No services/facility (20%) Physical accessibility (14%)
Community consultations	63%	63%	0.996	Lack of information (27%) No services/facility (23%)	Physical accessibility (23%) Lack of information (13%) No services/facility (11%)
Social activities	40%	53%	0.239	Lack of information (27%) El Nino/dry time (17%)	Physical accessibility (34%) Lack of information (11%)
Religious activities	35%	55%	0.063	No services/facility (27%) El Nino/dry time (17%) Lack of information (13%)	Physical accessibility (25%)
Legal assistance	64%	67%	0.825	Lack of information (23%) No services/facility (10%)	Lack of information (17%) Physical accessibility (15%)
Transport	60%	60%	1	Cost of services/facility (27%) Physical accessibility (17%) Lack of information (13%)	Cost of services/facility (24%) Physical accessibility (24%) Lack of information (13%) No services/facility (13%)

Table 6: Unmet need for services and activities, for men and women with disabilities

Service or activity	**Unmet need for adults with disabilities**		
	Men n (%)	**Women n (%)**	**p value (significant in bold)**
Before the cyclone			
Information on the cyclone	7 (19%)	16 (38%)	0.061
Disaster preparedness training	20 (56%)	32 (82%)	**0.013**
Information on what to do in emergency situations	17 (46%)	30 (71%)	**0.021**
Information on evacuation shelters	20 (54%)	29 (69%)	0.171
Evacuation shelters	18 (50%)	31 (74%)	**0.030**
First four weeks after the cyclone			
Emergency shelter materials	12 (32%)	21 (50%)	0.114
Food distribution	7 (19%)	16 (38%)	0.061
Health services	18 (49%)	22 (52%)	0.741
Drinking water	14 (38%)	19 (45%)	0.506
Toilet facilities	11 (30%)	19 (46%)	0.132
Daily living items (materials for cooking, sleeping, bathing)	13 (35%)	18 (43%)	0.483
Since the cyclone			
Work for a living	19 (53%)	23 (62%)	0.417
Medication	17 (46%)	23 (55%)	0.434
Health services	15 (41%)	20 (48%)	0.527
Safe drinking water	11 (30%)	20 (48%)	0.104
Toilet facilities	8 (22%)	18 (43%)	**0.045**
Education or skill training	21 (62%)	31 (84%)	**0.036**
Rehabilitation services	22 (61%)	25 (60%)	0.886
Assistive devices	26 (70%)	34 (85%)	0.119
Disabled People's Organisations	**26 (72%)**	**36 (90%)**	**0.046**
Community consultations	21 (60%)	24 (67%)	0.560
Social activities	16 (46%)	21 (60%)	0.231
Religious activities	18 (53%)	21 (57%)	0.747
Legal assistance	**17 (55%)**	**25 (78%)**	**0.050**
Transport	17 (49%)	28 (70%)	0.059

*for difference between boys and girls on chi-squared test

Table 7: Selected demographic indicators for all children (aged 5-17), boys and girls, and children with disabilities

	All children (n=1330)		Boys (n=689)		Girls (n=641)		p value *	Children with disabilities (n=24)	
	n	%	n	%	n	%		n	%
Sex									
Male	689	51.8						13	54.2
Female	641	48.2						11	45.8
Age (years)									
5-9	621	46.7	311	45.1	310	48.4	0.491	12	50
10-14	473	35.6	251	36.4	222	34.6		11	45.8
15-17	236	17.1	127	18.4	109	17		1	4.2
Ever attended school	1178	88.6	6.7	88.1	571	89.1	0.574	16	66.7
Currently enrolled at school	1080	91.7	553	91.1	527	92.3	0.46	13	81.3
Highest level of education									
Preschool/nursery	217	18.4	116	19.1	101	17.7	0.373	2	12.5
Some primary	778	66	409	67.4	369	64.6		12	75
Primary learning certificate	48	4.1	25	4.1	23	4		1	6.3
Form 3 certificate	82	7	36	5.9	46	8.1		1	6.3
Year 10 leaving certificate	24	2	11	1.8	13	2.3		0	0
Senior secondary certificate	2	0.2	1	0.2	1	0.2		0	0
Other	27	2.3	9	1.5	18	3.2		0	0
Days missed school in the last month									
None	425	39.4	211	38.2	214	40.6	0.689	3	23.1
1 day	204	18.9	105	19	99	18.8		1	7.7
More than 1 day	451	41.8	237	42.9	214	40.6		9	69.2
Use assistive device	3	0.2	1	0.1	2	0.3	0.662	1	4.2
Socio-economic status									
Poor	528	40.4	282	41.8	246	39	0.497	9	37.5
Middle	517	39.6	265	39.3	252	39.9		8	33.3
Rich	261	20	128	19	133	21.1		7	29.2

Table 8: Child disability prevalence in selected demographic groups, with odds ratio adjusted for age, sex, SES and whether ever attended school

	Prevalence of disability (95% CI)	Odds ratio (adjusted for age, sex, SES and ever attended school) (95% CI)
Sex		
Male	1.89% (1.10%, 3.22%)	1
Female	1.72% (0.95%, 3.07%)	0.906 (0.407, 2.019)
Age (years)		
5-9	0.42% (0.06%, 2.94%)	1
10-14	2.33% (1.29%, 4.15%)	1.484 (0.622, 3.542)
15-17	1.93% (1.10%, 3.37%)	0.280 (0.036, 2.183)
Ever attended school		
No	5.26% (2.65%, 10.17%)	1
Yes	**1.36% (0.83%, 2.21%)**	**0.209 (0.080, 0.543)**
Currently enrolled at school		
Currently at school	3.06% (0.99%, 0.906%)	
Has left school	1.20% (0.70%, 2.06%)	
Days missed school in last month		
None	0.71% (0.23%, 2.17%)	
1 day	0.49% (0.07%, 3.39%)	
More than 1 day	2.00% (1.04%, 3.79%)	
Socio-economic status		
Poor	1.70% (0.89%, 3.24%)	1
Middle	1.55% (0.78%, 3.06%)	1.128 (0.424, 3.003)
Rich	2.68% (1.28%, 5.52%)	2.298 (0.797, 6.620)

Table 9: Functional difficulties in each domain in adult and children

Functional domain(s) with at least 'a lot of difficulty'	Adults with disabilities		Children with disabilities	
	n	%	n	%
Difficulty on WG short set	69	92%	24	100%
Difficulty walking	31	36%	7	29%
Difficulty seeing	29	34%	1	4%
Difficulty learning how to do new things	27	32%	7	29%
Difficulty remembering or concentrating	25	29%	11	46%
Depression or anxiety	23	27%	2	8%
Difficulty hearing	22	26%	7	29%
Difficulty with self care	15	18%	5	21%
Difficulty using hands and fingers	14	16%	Not asked	Not asked
Difficulty communicating	8	9%	7	29%
Problems due to appearance	8	9%	Not asked	Not asked
Only depression/anxiety (no other functional difficulty)	5	6%	1	4%
Difficulty controlling behaviour	Not asked	Not asked	10	42%
Difficulty accepting change	Not asked	Not asked	4	17%
Difficulty making friends	Not asked	Not asked	2	8%

Appendix D

Comparison of disability prevalence estimates

The UN Statistics Commission recommends the use of the Washington Group Short Set (WG) of Disability Questions (see Box 1) 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. A person is considered to have disability if he/she reports "a lot of difficulty" or "cannot do at all" for at least one of the six Washington Group questions.

Box 1: Short set of questions on disability endorsed by the Washington Group

1. Do you have difficulty seeing, even if wearing glasses?
2. Do you have difficulty hearing, even if using a hearing aid?
3. Do you have difficulty walking or climbing steps?
4. Do you have difficulty remembering or concentrating?
5. Do you have difficulty (with self-care such as) washing all over or dressing?
6. Using your usual (customary) language, do you have difficulty communicating, for example understanding or being understood?

Response categories to the questions above:

- a. No – no difficulty
- b. Yes – some difficulty
- c. Yes – a lot of difficulty
- d. Cannot do at all

Adapted versions of the WG questions were used in the National Population and Housing Census 2009 and the Demographic and Health Survey (DHS) 2013. Both surveys modified the questions and the criteria for disability, which affected their estimation of disability prevalence.[12]

National Population and Housing Census 2009

The Census 2009 modified the questions at two levels. Only four out of six questions (seeing, hearing, walking, and remembering and concentrating) and three out of four response categories ('no difficulty', 'some difficulty' and 'cannot do at all') were used. Further, 'some difficulty' was used as a cut off for determining disability, i.e. a person was considered to have disability if he/she reports at least 'some difficulty' on any one of four domains.

Using the modified questions and cut off value, the Census 2009 estimated disability prevalence at 12% (Table i). When only the response category 'a lot of difficulty', representing severe disability, is considered, the disability prevalence was 0.8%. These estimates suggest that people with mild and moderate difficulties might have chosen the 'some difficulty' category when only three response categories were provided. Therefore, the disability prevalence estimate in the Census could be an overestimate.

Given the challenges with the Census 2009 data, the UNICEF and Vanuatu National Statistics Office report (VNSO) redefined the cutoffs for disability and reported that the prevalence could range from 5% to 12%.

Vanuatu Demographic and Health Survey 2013

The DHS 2013 used the WG questions in the recommended format, but added a screening question that asked if the person, because of a health condition, has any difficulty with hearing, seeing, walking, or climbing steps, remembering or concentrating, self-care activities such as washing or dressing, or communicating and understanding or being understood. This screening question used yes/no response categories.

Persons who reported positively to this long screening question then responded to the level of difficulty for each domain using the same response categories recommended in Box 1. The disability prevalence reported in DHS 2013 report using 'at least some difficulty' as a cut off was 10.8%. However, this estimate was made by adding prevalence of difficulty under each domain, which assumed persons reporting difficulty on one domain do not have difficulty on any other domain. Because a significant number of people would have reported disabilities in multiple functional domains, this aggregate figure overestimates disability. Reading the appendices to the DHS report, the more reasonable estimate of 3.6% is given for this threshold (Table i).

Using the recommended definition of disability for WG questions for the DHS 2013 data, the UNICEF and VNSO report estimated a disability prevalence of 2.4% (Table i). This estimate is a possible underestimate because most persons who responded positively to the screening question could have been persons with a severe level of disability.

Rapid Assessment of Disability (RAD) Survey

Based on the WG questions used in the RAD survey, the adult disability prevalence on Tanna is estimated at 3.6% using the recommended definition in Box 1. Although the definitions used in the Census 2009 and DHS 2013 are untested and have unknown validity, when these same definitions are applied to the RAD survey data, the prevalence of disability is higher in the RAD than in the two earlier surveys (assuming that Tanna's disability prevalence is approximately comparable to these national estimates).

When children are included in the dataset, the RAD prevalence estimates are higher than equivalent Census/DHS estimates. RAD data shows that mild difficulties are more prevalent in the sample (21.2%) using the operational definition proposed in the UNICEF and VNSO report. However, it is evident that the ‘some difficulty’ response category is not a reliable cut off value, as it inflates disability prevalence. It may be possible that persons with no disabilities could have over reported their difficulties in the RAD, anticipating certain benefits following the survey, given the survey was conducted in a post disaster area. It may be also be possible that ‘some difficulty’ category was selected by people with moderate levels of difficulties, who underreported their difficulties.

Definition of disability (cutoff using WG questions)	**RAD (adults)**	**NPHS 2009[11] (all people aged 10+)**	**VDHS 2013[12, 25] (see notes)**
At least ‘some difficulty’ in one domain	51.3%	12%	3.6%a
‘Some difficulty’ in one domain and no difficulty in any other domain	26.5%	6.9%	NA
‘Some difficulty’ in more than one domain but not ‘a lot of difficulty’ or ‘cannot do at all’ in any domain[$]	21.2%	4.3%	0.9%b
*At least ‘a lot of difficulty’ in one domain**	3.6%	NA	2.1%[a] or 2.4%[b]
‘Cannot do at all’ in at least one domain	0.5%	0.8%	0.2%a
Any disability[#]	24.8%	5.1%	3.3%b

* WG recommended definition of disability
# Adding [$] to the more severe category
a All people aged 5 years and over[22]
b All people aged 10 years and over[12]

Conclusion and recommendations

Given that previous national estimates of disability prevalence have not yet utilised the standard form of the WG questions and applied standard criteria in analysis, and results obtained from the RAD survey using the standard form and criteria are much higher than those seen in the two national surveys, the national surveys have likely underestimated disability, or at least have not produced estimates that can be compared with other standard surveys. Utilising the standard WG questions and approach in future national surveys will allow a more standardised estimate of disability prevalence.

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