

## ORIGINAL RESEARCH

---

# Cross-sectional Survey to Assess Prevalence of Disability and Access to Services in Albay Province, The Philippines

Marcus Hodge<sup>1\*</sup>, Amable Bolinas<sup>2</sup>, Erlynn Jaucian<sup>2</sup>, Rebecca Boneo<sup>3</sup>,  
Allan Schapira<sup>1</sup>, Mary Mediatrix V. Villanueva<sup>2</sup>

1. Independent Consultant in Public Health, The Philippines

2. Simon of Cyrene Community Rehabilitation and Development Foundation Inc., Daraga, The Philippines

3. Dios Mabalos Po Foundation Inc., Daraga, The Philippines

### ABSTRACT

**Purpose:** *A cluster randomized cross-sectional survey to assess the prevalence of disability and access to support services was conducted in Albay Province, the Philippines in April 2016.*

**Method:** *The population-based survey methodologies developed by the Washington Group of the United Nations Statistical Commission and UNICEF were utilized. A sample of 70 barangays (the 3rd level administrative division in the Philippines) was selected as clusters, with probability proportional to size, and 30 households were selected randomly in each barangay to be surveyed.*

**Results:** *The estimated prevalence of disability using the standard criteria of the Washington Group and UNICEF among children (2-17 years old) was 2.0% and for adults ( $\geq 18$  years old) it was 6.5%. The estimated prevalence of disability was higher in rural than in urban areas. Deficiencies in the performance of existing services were identified; access by children with disabilities to support services was lowest in rural highland and rural plain barangays.*

**Conclusions:** *There was a large unmet demand for support services addressing the needs of persons with disabilities in Albay Province, especially in rural highland areas. Persons with disabilities were disadvantaged in access to education and employment; many had not been educated in their basic rights.*

**Implications:** *To identify, educate and fully support persons with disabilities, community-based rehabilitation (CBR), health and other rehabilitation services must communicate effectively with each other, their current work should be mapped and analysed, their comparative strengths identified, and their future*

---

\* **Corresponding Author:** Marcus Hodge, Independent Consultant in Public Health, The Philippines. Email: mrcs@fastmail.com

*work coordinated. It is a priority to educate persons with disabilities and their families about their rights, and facilitate their access to support services; this requires increased investment in communication targeting persons with disabilities and the communities, especially rural. Providers caring for persons with disabilities need to work in partnership to identify unreached persons with disabilities. Prevalence surveys, with stronger focus on the profiles and performance of CBR and related services, would add to the evidence-base to improve the quality and coverage of services for persons with disabilities.*

**Keywords:** *Rights, rural, community-based rehabilitation (CBR), inclusion.*

## INTRODUCTION

Under Republic Act (RA) 7277, the Philippine Department of Health (DoH) has set up a national health programme and registry for persons with disabilities and established provincial rehabilitation centres, with the aim of making essential health services available and affordable to them (DoH, 2009 and 2017a). The National Council on Disability Affairs (NCDA) is the government agency mandated to coordinate policies and activities related to disabilities (NCDA, 2017a) and to monitor implementation of RA 7277. The Department of Social Welfare and Development (DSWD) and Local Government Units (LGUs) provide social welfare services for persons with disabilities. The rehabilitation and health services of LGUs are delivered through Barangay Health Centers (at the third level administrative division in the Philippines, below province and city/municipality), Rural Health Units (at municipality level) and hospitals.

The national health programme for persons with disabilities is aligned with the goal and objectives of the World Health Organization (WHO) global disability action plan 2014-2021 (Department of Health, 2017b). WHO's plan calls for enhanced collection of internationally comparable data on disability and related services; removal of barriers and improved access to health services and programmes; strengthened and extended rehabilitation support services and community-based rehabilitation (CBR) (WHO, 2015).

The Simon of Cyrene Community Rehabilitation and Development Foundation, Inc. (SCCRDFI) is a non-governmental organization (NGO), which supports persons with disabilities, partly through direct service provision, but mainly and increasingly by promoting awareness on rights and service availability through community-based approaches and inter-sectoral action (SCCRDFI, 2017). Working

since 1982, the Foundation has mainly targeted Albay Province, but is expanding to neighbouring provinces in the Bicol Region of southern Luzon. CBR has been the major strategy for the rehabilitation, equalization of opportunities, poverty reduction and social inclusion for persons with disabilities, especially among children and youth 0-25 years old (SCCRDFI, 2017). Its activities have targeted persons with disabilities, their families and communities, with services covering rehabilitation, health, nutrition and education, as well as disability prevention campaigns and livelihood projects.

CBR was progressively expanded to ten of the eighteen municipalities and cities of Albay Province (SCCRDFI, 2017), through partnership between the SCCRDFI, LGUs and disabled people's organizations (DPOs). From June to August 2016 (after this survey), CBR was introduced to the remaining eight municipalities of Albay. In each barangay, DPOs are expected to identify needs, evaluate services and raise community awareness on disabilities. Recent monitoring and evaluation exercises have highlighted a need for representative data on disability prevalence and service access.

From 1990 to 2010, the primary source of information on disability in the Philippines has been the national census. In 2010, the population of Albay Province was 1,233,695 (Philippine Statistics Authority - PSA, 2010) with about one third living in three cities. The prevalence of disabilities in the province in the household population  $\geq 5$  years old was reported to be 1.7% (PSA, 2015), somewhat higher than the national prevalence of 1.57% (PSA, 2013).

Most countries have collected data on disability through censuses (WHO, 2011). Many developing countries have reported disability prevalence rates below those in developed countries, because they have collected data on a narrow set of impairments (WHO, 2011). Compared to a census, sample surveys can include more detailed questions to ensure that more persons with disabilities are identified and so they tend to report higher rates of disability (Mont, 2007). Data on disabilities were not collected in the Philippine 2015 Census of Population (Soriano, 2016), in recognition of the limitations of disability reporting based on census data.

The Washington Group on Disability Statistics (WG) of the United Nations Statistical Commission has worked to develop a short set of questions in six functional domains for use in censuses and surveys consistent with WHO's International Classification of Functioning, Disability and Health (ICF) (WHO,

2010). The work has aimed to improve international comparability on disabilities (Mont, 2007; WHO, 2011). Prevalence rates using the Washington Group Short Set Questions (WGSSQ) have been generally higher than those from censuses, and ranged from less than 5% to greater than 10% (Loeb, 2014).

Together with the United Nations Children's Fund (UNICEF), the WG has also developed a Module on Child Functioning and Disability (MCFD) covering children 2-17 years old. Validation of the MCFD began in September 2012 (WG, UNICEF, 2013), and was finalised in 2016, after our survey was implemented (UNICEF, 2016; UNICEF, 2017).

The WG/UNICEF tools assess whether a respondent has a disability based on their responses to questions that determine difficulties in functioning in basic actions (Madans et al., 2011) rather than by asking them to identify whether they have a disability. For all age-groups above two years, the survey tools describe functioning in basic actions on a continuum from 'no difficulty' to 'some difficulty', 'a lot of difficulty' and 'unable to do it'. If an individual answers 'a lot of difficulty' or 'unable to do it', s/he is considered as a person with a disability for the purpose of disaggregation of other information, such as access to education and employment (WG, 2017a). Functioning in basic actions forms the building blocks for more complex activities (Madans et al., 2011).

## **AIM**

With the purpose of generating representative data for local programme development, we carried out a cross-sectional survey with the WG/UNICEF methodology to examine the prevalence of disabilities, and the accessibility and coverage of relevant services. Our aim is for this information to be used for public policy formulation at all levels, as well as to improve communication and advocacy on disabilities.

## **METHOD**

### **Study setting and design**

The study was a cluster randomized survey of a sample of households. Barangays were used as clusters and 30 households were selected in each cluster (the number of households that could be interviewed by a team of two surveyors over two days).

### Sample size calculation

The sample size of randomly selected clusters, needed to achieve a degree of precision sufficient to determine the overall prevalence of disability in Albay Province, was calculated as:

$$n = \frac{1.96^2 p(1-p)(DEFF)}{d^2},$$

where  $p$  is the expected prevalence,  $d$  the desired level of absolute precision and  $DEFF$  the design effect (Bennett et al, 1991; Milligan et al., 2004). The least prevalent functional disability in Albay Province, in the 2007 Census of Population and Housing (PSA, 2015), was difficulty in self-caring, with a reported prevalence of 0.38%. This figure was used as an estimate of the expected prevalence ( $p$ ). The desired level of absolute precision ( $d$ ) used was 0.0285, which is a level suitable for less common events (<20%). The design effect in this cluster survey was estimated as:

$$DEFF = 1 + (b-1) \times roh,$$

where  $b$  is the average number of responses to the item per cluster/barangay (30) and  $roh$  is the measure of variability between clusters as compared to variation within clusters. Assuming  $roh = 0.1$ ,  $DEFF$  was 3.9. Thus, a sample size of 70 clusters/barangays was needed with a total of 2,100 households.

### Systematic random sampling

Barangays were sampled with probability proportional to size (PPS) (Bennett et al., 1991) and all the 18 municipalities and cities of Albay Province were represented. In each barangay, the 30 households were chosen by systematic random sampling, using a sampling frame of barangay household lists. Staying for two days made it possible for surveyors to return to houses which were closed on the first day. If it was not possible to survey a selected household, the next nearest household was selected. In barangays where a household list was unavailable, the 'Expanded Programme on Immunization (EPI) method' (Kok, 1986) was used for household sampling. Barangays were classified according to geography: 'urban' barangays were city and town areas with no agriculture, 'rural coastal' barangays were fishing areas, 'rural plain' barangays had irrigated rice, and 'rural highland' barangays were hilly areas with no irrigated rice.

## Data collection

Twenty six recent graduates from the College of Social Sciences of Bicol University were recruited as surveyors, and two licensed social workers supervised their work. Surveyors collected data through three questionnaires.

The Household Questionnaire was completed with the household head for all selected households; it included information on environment and socio-economic conditions. If the household head was unavailable, the questionnaire was answered by the spouse of the household head or another responsible adult in the household. Persons with difficulties in functioning in basic actions were identified during enumeration of household members. These children and adults were targeted with two additional questionnaires on levels of functional activity limitation, demography, socio-economic conditions, education, employment and access to services.

For children aged 2-17 years old, the MCFD questions were asked of their parents/caregivers (WG, UNICEF, 2014). These were broader in scope than the WGSSQ and covered basic functional domains (seeing, hearing, walking, understanding/being understood, learning, remembering, self-care) and complex domains (controlling behaviour, playing, worry, completion of tasks, acceptance of change and getting along with other children). Children <2 years old were not included due to the variability of the development process in this age-group (WG, UNICEF, 2013). The questions on adult functioning and disability targeted adults, ≥18 years old or their caregiver. The level of functional limitation present (vision, hearing, mobility, cognition, self-care, and communication) followed the WGSSQ (WG, 2016).

## Data analysis

*EpiData Entry* ([www.epidata.dk](http://www.epidata.dk)) was used for data entry and data documentation. Double entry verification was used for error detection and random records were checked for data consistency. Data analyses were performed in *EpiInfo 7* ([www.cdc.gov/epiinfo](http://www.cdc.gov/epiinfo)). Excel 2016 (<http://products.office.com/en-gb/excel>) was used for data management, descriptive statistical analyses, and the preparation of charts.

## Ethical considerations

Clearance of the survey protocol and questionnaires was obtained from the Department of Health, Region V. Informed consent for data collection was obtained



by the surveyors from the Barangay Captains, staff of the Barangay Health Centres and household heads. Consent was also obtained for all participants in the survey. In cases where it was not possible to obtain direct consent, and for children <18 years old, consent was obtained from parents, caregivers or guardians. To ensure confidentiality, each household and all persons with disabilities were given unique anonymous identification numbers during data management.

## RESULTS

2,100 households in 70 barangays were surveyed, with a total household population of 11,104. Eighteen barangays did not have a complete household list and the 'EPI method' (Kok, 1986) was used for household selection. It was necessary to replace 1.7% (n=36) of the randomly selected households because no responsible adult was present.

Defining disability as at least one functional domain 'a lot of difficulty' or 'unable to do it' on the MCFD (children, 2-17 years old) or the WGSSQ (adults, ≥18 years old), 79 children with disabilities and 429 adults with disabilities were identified.

In children (2-17 years old) the estimated prevalence of disability was 2.0% (95% CI 1.6-2.4). The most prevalent functional disabilities were being understood/understanding, playing, worry, and learning (Table 1). Disabilities among children were most commonly reported to be related to complications of pregnancy and inherited conditions 59.5% (n=47), spine and nervous system disorders (8.9%, n=7), accidents and injuries (7.6%, n=6), and difficult birth deliveries (7.6%, n=6).

**Table 1: Percentage of children with disabilities (2-17 years old) where ‘a lot of difficulty’ or ‘unable to do it’ was reported by functional domain**

Domain type	Age-group	Functional domain	Number of children with disabilities with ‘a lot of difficulty’ or ‘unable to do it’ functional limitation	Percentage of children with disabilities with ‘a lot of difficulty’ or ‘unable to do it’ by functional domain
Basic functional domains	2-17 (n=79)	Seeing	7	8.9%
		Hearing	13	16.5%
		Walking	16 (2-4 years old – 1; 5-17 years old – 15)	19.8%
		Understanding	19 (2-4 years old – 2; 5-17 years old – 17)	25.2%
		Being Understood	23 (2-4 years old – 1; 5-17 years old – 22)	27.6%
		Learning	24 (all ≥4 years old)	30.4%
	5-17 (n=73)	Remembering	13	17.8%
		Self-care	17	23.3%
Complex functional domains	2-4 (n=6)	Playing	3	50.0%
	2-17 (n=79)	Controlling behaviour	13 (all ≥5 years old)	16.5%
		Worry	23	31.5%
	5-17 (n=73)	Completion of tasks	14	19.2%
		Acceptance of change	11	15.1%
		Getting along with other children	15	20.5%

NB: Persons with disabilities were classified according their most severe functional limitation.

In adults (≥18 years old), the estimated prevalence of disability was 6.5% (95% CI 5.9-7.1%); functional disability in mobility was most prevalent, followed by vision and cognition (Table 2). Most disabilities were related to accidents (15.6%, n=67), hypertension complicated by cerebrovascular accidents (12.4%, n=53), muscle, back and joint disorders (11.9%, n=51), spine and nervous system disorders (8.6%, n=37) and diabetes (6.3%, n=27).



**Table 2: Prevalence of functional disability in Albay Province, persons with disabilities  $\geq 18$  years old (survey population  $\geq 18$  years old = 6,579)**

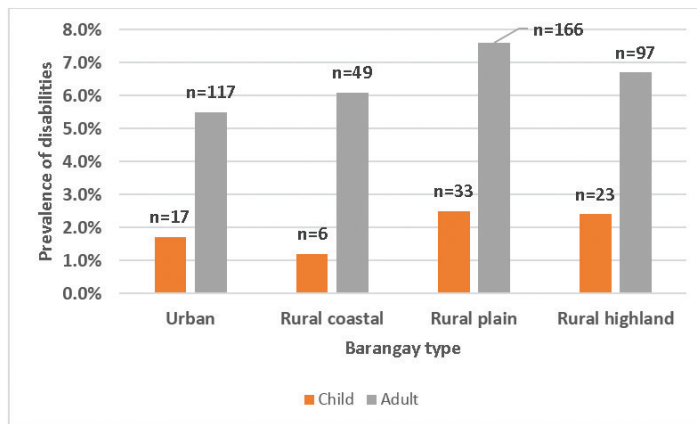
Functional disability	Frequency (n)	Prevalence (%)	95% CI
Difficulty in seeing, even if wearing eyeglasses	111	1.7%	1.3-2.1%
Difficulty in hearing, even if using a hearing aid	56	0.9%	0.6-1.2%
Difficulty in walking or climbing stairs	214	3.3%	2.8-3.8%
Difficulty in cognition	109	1.7%	1.3-2.1%
Difficulty in self-care	77	1.2%	0.9-1.6%
Difficulty in communicating	74	1.1%	0.8-1.5%

Pooling of the estimated prevalence results for children and adults gave an estimated prevalence of disability in the population  $\geq 2$  years old of 4.9% (95% CI 4.5-5.3).

The mean age at onset of disability among children (2-17 years old) was 2.4 years (SD 3.3 years) and the mean age was 10.2 years (SD 4.0 years). For adults ( $\geq 18$  years old), the mean age at onset of disability was 40.9 years (SD 27.1 years) and the mean age was 56.0 years (SD 19.1 years). The rate of disabilities increased with age; 59.4% (n=255) of persons with disabilities  $\geq 18$  years old were 46-65 years old. Most children with disabilities aged 2-17 years, were male (68.4%, n=54), whereas 52.9% (n=227) of adults with disabilities ( $\geq 18$  years old) were female.

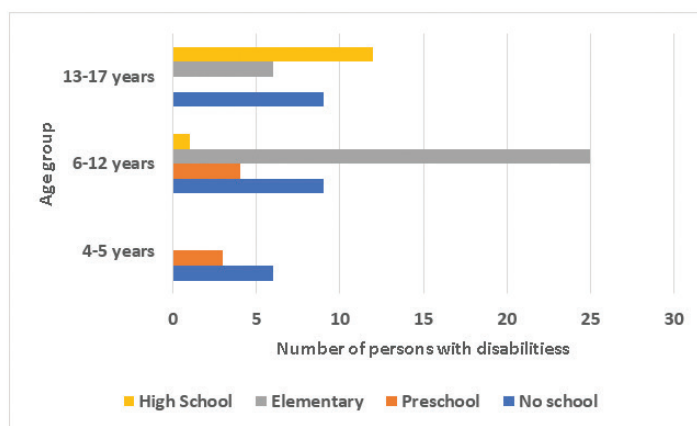
The estimated prevalence of disability by barangay type/age group was determined by dividing the number of cases of functional disability identified in each barangay type/age category by the total survey household population for the barangay type/age category. The estimated prevalence of disabilities among children (2-17 years old) was higher in rural (2.2%, 95% CI 1.9-2.4%) than in urban barangays (1.7%, 95% CI 1.0-2.5%). The estimated prevalence of disabilities among adults ( $\geq 18$  years old) was also higher in rural (7.0%, 95% CI: 6.6-7.4%) than in urban barangays (5.5%, CI 4.6-6.4%). The estimated prevalence of disabilities was highest in rural plain and rural highland barangays for both groups (Figure 1).

**Figure 1: Prevalence of disabilities among children with disabilities (2-17 years old) and adults with disabilities (≥18 years old) by barangay type**



Among school-aged children with disabilities (4-17 years old, n=75), 32.0% (n=24) had never attended school (Figure 2). Among high school-aged persons with disabilities, 13–17 years old (n=27), 55.6% (n=15) had not studied beyond elementary school. Children from 6 to 12 years old are usually enrolled in elementary school.

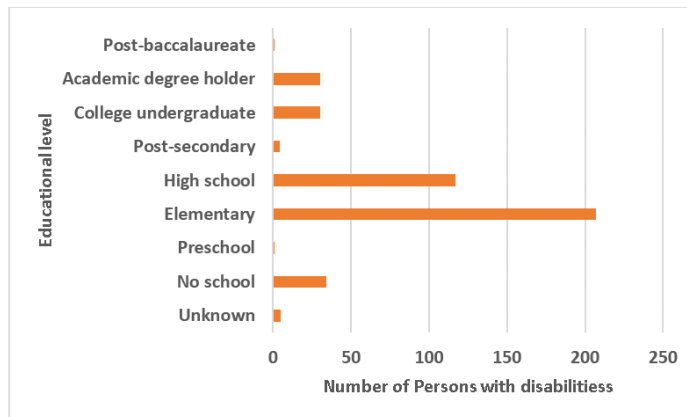
**Figure 2: Highest educational grade of school-aged persons with disabilities, 4-17 years old (n=75)**



The proportion of persons with disabilities, ≥5 years old (n=500), with no school attendance was 11.0% (n=55). Among persons with disabilities ≥18 years old

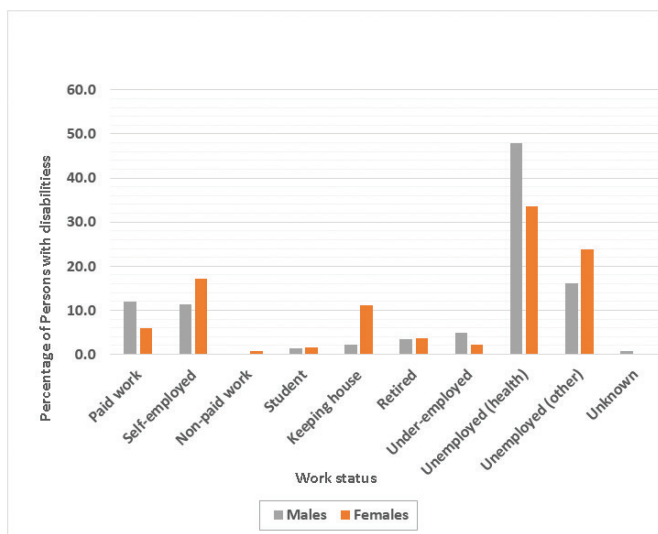
(n=429), 7.9% (n= 34) had never attended school (Figure 3). Most persons with disabilities  $\geq 18$  years of age 56.4% (n=242) had not studied beyond elementary school.

**Figure 3: Highest educational grade of persons with disabilities,  $\geq 18$  years old (n=429)**



64.1% (n=91) of working-age males with disabilities (n=142) and 57.5% (n=77) of working-age females with disabilities (n=134), 18-65 years old, reported their work status as unemployed (Figure 4) and health reasons were reported to be the major cause of unemployment. Among women, higher proportions than men reported being self-employed or keeping house. The most common occupations among working-age persons with disabilities were lower-skilled/unskilled jobs: among males, 11.3% (n=16) were farmers, 4.9% (n=7) were artisans/handicraft workers and 4.9% (n=7) were labourers/unskilled workers. Among females, 12.7% (n=17) were service/shop and market sales workers, 3.0% (n=4) were artisans/handicraft workers and 3.0% (n=4) were unskilled workers.

**Figure 4: Work status of working-aged persons with disabilities, 18-65 years old (males n=142; females n=134)**

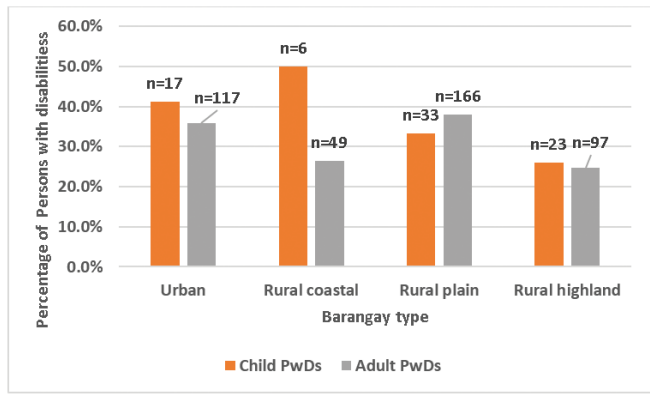


Overall, 34.2% (n=27) of persons with disabilities 2-17 years old and 33.1% (n=142) of persons with disabilities  $\geq 18$  years old reported receiving care from a support service. Of persons with disabilities accessing care from a support service, most received care from government services, including government social welfare services (children 70.4%, n=19; adults 52.8%, n=75), Barangay Health Centres (children 55.6%, n=15; adults 36.6%, n=52), Rural Health Units (children 44.4%, n=12; adults 31.0%, n=44) - health facilities providing a wide range of health care services, including a main health centre operated by the municipal-level - and hospitals (children 44.4%, n=12; adults 36.6%, n=52). NGOs provided support for five children and nineteen adults with disabilities, almost exclusively in areas covered by CBR (two persons with disabilities received care from NGOs in barangays without CBR).

Figure 5 shows that the lowest rates of access to a support service for children with disabilities were in rural highland and rural plain barangays and that the highest rates of access were in rural coastal followed by urban barangays. With this variation in access to services, the odds ratio (OR) was calculated to compare the odds of access to care in urban barangays compared with rural barangays: children with disabilities in urban barangays had greater access to care, although the difference did not reach statistical significance (OR 1.46, 95% CI 0.47-4.23).

Among adult with disabilities, there was only slightly higher (not significant) access to care from a support service in urban barangays compared with rural barangays (OR 1.18, 95% CI 0.76-1.85), and the access was higher in rural plain barangays than in urban barangays (Figure 5).

**Figure 5: Percentage of children with disabilities (2-17 years old) and adults with disabilities (≥18 years old) receiving care from a support service by barangay type (n=total number of persons with disabilities in each barangay type)**



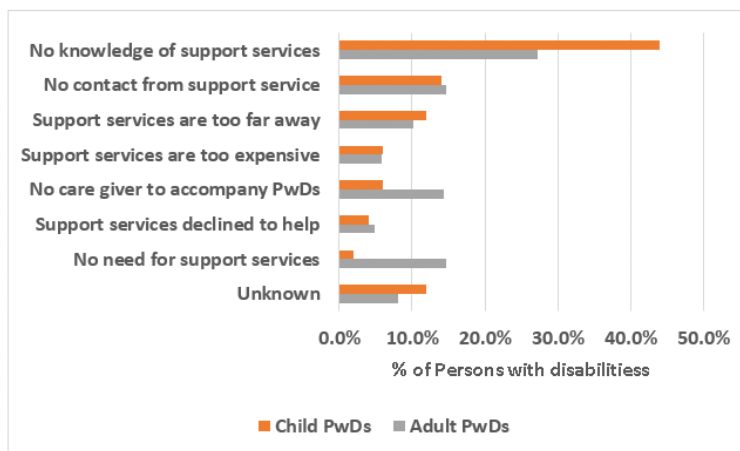
As shown in Table 3, activity limitation in more than one functional domain was more prevalent among children with disabilities than among adults, including those not receiving care from a support service.

**Table 3: Number of functional domains ‘a lot of difficulty’ or ‘unable to do it’ among children with disabilities (2-17 years old) and adults with disabilities (≥18 years old)**

	Children		Adults	
	1 domain	>1 domain	1 domain	>1 domain
Persons with disabilities not receiving care from a support service	48.0% (n=24)	52.0% (n=26)	65.4% (n=187)	34.6% (n=99)
All persons with disabilities	46.8% (n=37)	53.2% (n=42)	64.8% (n=278)	35.2% (n=151)

Overall, 63.2% (n=50) of persons with disabilities 2-17 years old were not receiving care from a support service; 66.7% (n=286) of persons with disabilities  $\geq 18$  years old reported not receiving care. 'No knowledge of the support services which are available', was the major reason given for not receiving care from a support service (Figure 6). 'No contact from a support service' and support services being 'too far away' were the next most common reasons for not accessing care. Only 2.0% (n=1) of the parents/caregivers of children with disabilities not receiving care from a support service and 14.7% (n=42) of adults not receiving care from a support service, reported 'no need for support services'.

**Figure 6: Reported reasons why persons with disabilities do not receive care from a support service - children (2-17 years old) n=50; adults ( $\geq 18$  years old) n=286**



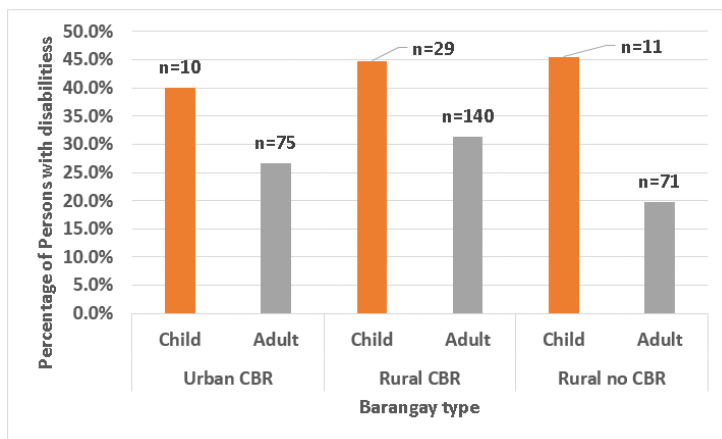
CBR covered all 20 urban barangays and 29 out of 50 rural barangays. Overall, children with disabilities in barangays with CBR had lower access to care from a support service than those in areas without CBR (Table 4), but the difference was not statistically significant (OR 0.85, 95% CI 0.36-2.00). Among adults, the presence of CBR did not appear to be related to the likelihood of access to services (Table 4).

**Table 4: Percentage of children with disabilities (2-17 years old) and adults with disabilities (≥18 years old) receiving care from a support service, by barangay type and CBR coverage**

Barangay type	Persons with disabilities	Percentage receiving care from a support service	95% CI
Urban with CBR (n=20)	Child (n=17)	41.2% (n=7)	18.4-67.1%
	Adult (n=117)	35.9% (n=42)	27.2-45.3%
Rural with CBR (n=29)	Child (n=43)	27.9% (n=12)	15.3-43.7%
	Adult (n=207)	31.9% (n=66)	25.6-38.7%
Rural without CBR (n=21)	Child (n=19)	42.1% (n=8)	20.3-66.5%
	Adult (n=105)	32.4% (n=34)	23.6-42.2%

Parents/caregivers of children with disabilities, not receiving care from a support service, reported high rates of ‘no knowledge of the support services which are available’, especially in rural areas (Figure 7). Among adults with disabilities, reports of ‘no knowledge of the support services which are available’ were lower than for children, and highest in rural areas with CBR.

**Figure 7: Percentage of children with disabilities (2-17 years old) and adults with disabilities (≥18 years old) not receiving care from a support service with ‘no knowledge of the support services which are available’, by barangay type**





## DISCUSSION

The estimated prevalence of disability based on the MCFD questions among children 2-17 years old in Albay Province was 2.0%. The primary purpose of the MCFD is to identify children with functional difficulties (UNICEF, 2017) by measuring functioning in a set of relevant domains; the questions would not be expected to identify all children with disabilities. The Global Burden of Disease estimated that 5.1% of children aged 0–14 years globally have “moderate or severe disability” with 0.7% having severe difficulties (WHO, 2008).

The estimated prevalence of disability based on the WGSSQ questions among adults  $\geq 18$  years old in Albay Province was 6.5%. Globally, based on 2010 population estimates and 2004 disability prevalence estimates from the World Health Survey (WHO, 2017a) and the Global Burden of Disease (WHO, 2008), 15.6% to 19.4% of persons 15 years and older would be “living with disability” (WHO, 2011). Our findings were lower than the global estimates of persons “living with disability”, and this would be expected as the WGSSQ questions only focus on six functional domains. The World Health Survey gave the prevalence of adults with very significant difficulties in functioning at 2.2% (WHO, 2017a), while the Global Burden of Disease data indicated that 3.8% of the adult population were estimated to have “severe disability” – the equivalent of disability inferred for conditions such as quadriplegia, severe depression, or blindness (WHO, 2008).

A cross-sectional population based survey undertaken in Quezon City (Metro Manila) and Ligao City (Albay Province) found the prevalence of disability among adults  $\geq 18$  years old to be 6.8% and 13.6% respectively (Marella et al., 2016). Persons with disabilities were identified based on their responses to questions on activity limitations using the Rapid Assessment of Disability (RAD) survey. Use of the same tool in Uttarakhand, India found the prevalence of disability among adults to be 6.8% (Grills et al., 2017). Disability prevalence estimates with RAD are comparable to the WGSSQ, however RAD also identifies respondents with psychological distress (Marella et al., 2015) which would be a factor contributing to the lower estimated prevalence of disability found in our survey.

Pooling the data from the MCFD and the WGSSQ, suggests a prevalence of disability in the population  $\geq 2$  years old of 4.9%. However, this pooling is questionable, as the MCFD has broader scope (fourteen functional domains) than the WGSSQ (six domains) and would be expected to identify a greater proportion of persons with disabilities.

In children, the major functional disabilities in Albay were in intellectual functioning, behaviour and affect (Table 1). The mean age of onset of disability (or when it was first identified) among children (2-17 years old) was 2.4 years of age. This is consistent with the findings that health conditions such as complications of pregnancy (WHO, 2008), inherited conditions (Vorstman, Ophoff, 2013) and difficult birth deliveries (Gonzales, Miller, 2006) were likely related to many of the disabilities; highlighting a need for improved perinatal care (WHO, 1981). A study of prenatal and perinatal risk factors for disability in rural Nepal has also emphasised the relationship between early marriage, poverty, malnutrition and poor developmental outcomes (Haworth et al., 2017). Disabilities affecting infants and children are major causes of lifelong disability; the greatest impact of disability prevention measures can be expected among children (WHO, 1981).

Functional disabilities in mobility, vision and cognition were most prevalent among adults (Table 2). Accidents and injuries were the health conditions most frequently related to disabilities among adults; road safety and accident prevention programmes, and better care, can help to prevent trauma-related disabilities (WHO, 1981; Peden et al., 2004; Peden, 2008). The mean age at onset of disability among adults ( $\geq 18$  years old) was 40.9 years and the mean age was 56.0 years, consistent with many disabilities likely being related to degenerative musculoskeletal disorders (Woolf, 2003; Taafe, Marcus, 2000), and the complications of chronic non-communicable diseases such as diabetes and hypertension (WHO, 2011; Richards et al. 2016). Early detection and treatment of chronic non-communicable diseases can help to prevent disabilities among the elderly (Richards et al., 2016). The higher prevalence of disabilities among the elderly underscores the need to prioritize older adults in reducing disability (Tareque et al., 2017).

Disabilities were more prevalent in rural barangays (Figure 1). Children had lower access to support services in rural highland and rural plain barangays compared with rural coastal and urban barangays (Figure 5). Among adults, the rural-urban divide was less marked, and the lowest access to support services was in rural highland and rural coastal barangays. World Health Survey data for the working-age Filipinos also identified a higher prevalence of disability in rural areas (Mitra et al., 2011). Fewer employment opportunities and migration of able-bodied adults to urban areas for work (Reichert, Myers, 2014; Marella et al., 2016), would contribute to this finding. The higher rate of disability in rural areas might

also be due to poorer living conditions, less education, poverty, fewer health care services and facilities (Tareque et al., 2017).

More than one functional disability was often present in a single individual (Table 3) and these cases may require management by multidisciplinary rehabilitation teams, involving physiotherapists, social workers, speech therapists and others (Short, 1981). Most of these services exist in Albay Province, especially in the three cities, but they are not accessed by most of the rural poor because of ignorance, geographic and financial barriers. Our data indicates that there are presently about 3,400 children and 12,500 adults in the province affected by more than one functional disability (by multiplying the estimated survey prevalence rates of more than one functional disability among children and adults by the total provincial population for these groups), but receiving no specialized care from a support service. Sufficient resources to expand access to services should be allocated and the use of the services should be promoted, especially in rural highland areas.

Extrapolating the study findings on school attendance to Albay Province as a whole, almost 3,000 school-aged persons with disabilities, 4-17 years old, may not have attended school. The proportion of persons with disabilities,  $\geq 5$  years old, with no school attendance was 11.0%, compared with 4.0% among the overall household population  $\geq 5$  years old in the 2010 census (PSA, 2016); recent studies using the RAD survey found that people with disabilities were significantly less likely to have schooling compared to people without disability (Marella et al., 2016; Grills et al., 2017). We found that most persons with disabilities do not study beyond elementary school (Figures 2 and 3); as of the school year 2012-2013, around 25% of students in the general population did not complete four years of high school (UNESCO, 2015).

Special education (SPED) centres can facilitate school attendance and learning for school-age persons with disabilities (UNESCO, 2009). There are SPED centres in the provincial capital, Legazpi City, and in eight other municipalities and cities of Albay Province. Under the guidelines of the Department of Education (DepEd, 2017), SPED teachers shall also implement integration and inclusion through enrolment of a child with special needs in a regular class with support services. Inclusion is consistent with the rights of children with disabilities and is generally more cost effective than special or separate schools (WHO, UNICEF, 2012). However, additional investments in educational resources are required,

including trained staff, flexible curricula and teaching methods, and accessible facilities (WHO, UNICEF, 2012; UNICEF 2013).

The SCCDRF implements local projects to improve the accessibility of transportation for persons with disabilities (Embassy of Canada, 2016). With limited access to education, persons with disabilities are not supported to become aware of their basic rights (United Nations, 2006), including access to care and most remain unemployed (Figure 4). The unemployment rate among working age persons with disabilities was 60.9%; the comparable rate for the overall Filipino population, was estimated to be 5.7% in April 2017 (PSA 2017). This level of reduced access to work is consistent with the findings of other international studies on employment among persons with disabilities (Grills et al., 2017; WHO, 2011). Employed persons with disabilities generally occupied lower-skilled and unskilled jobs. Limited income compounds the barriers persons with disabilities face in receiving support from health and rehabilitation services (World Bank, 2017).

There were deficiencies in the accessibility of support services for persons with disabilities (Figure 5). Only a small proportion of persons with disabilities not receiving external support, reported 'no need for care from a support service' (Figure 6). The CBR strategy intends to address these concerns, by taking rehabilitation services to the barangay-level (Periquet, 1981), where CBR volunteers should identify, educate and support persons with disabilities, to promote their registration and access to care. Registration in the Philippine Registry for Persons with Disabilities provides greater access to services in the public and private sectors, financial help, and educational assistance to pursue study at all levels of the education system (NCDA, 2017b). However, we observed that support services appeared to be more accessible for children with disabilities in rural areas without CBR (Table 4), even though implementation of CBR in Albay Province has concentrated on persons with disabilities 0-25 years old (SCCRDFI, 2017). CBR did not appear to be related to the likelihood of access to services for adults (Table 4).

Although the differences between CBR and non-CBR barangays did not reach statistical significance, they do raise concerns which need further investigation. For example, a contributing factor to explain the apparent deficiencies in the performance of CBR, could be that the programme targets challenging areas with a lower profile of services. It may be that the CBR being implemented is comparable to other services provided in the non-CBR barangays; more detailed

analysis on the targeting and performance of CBR in Albay Province is required. Multiple data collection methods and involvement of all relevant stakeholders would maximise the information gathered (Grandisson, 2014).

Recent studies in the Philippines and India using the RAD survey have shown that people with disabilities had lower access to services compared to people without disability: the barrier most often reported was a lack of information about the services (Marella et al., 2016; Grills et al., 2017). Our study also showed that the most important reason for not accessing support was a lack of knowledge about the availability of services, followed by no contact from support services (Figure 6). In some barangays, CBR has been implemented for decades and the findings reported here do indicate that there is a need to strengthen the communication component of CBR (WHO, UNESCO, 2010; WHO, 2017b) through increased supportive supervision of the CBR volunteers' work and through more investment in other channels of communication to persons with disabilities and the community (Asian Development Bank, 2005).

## CONCLUSION

Our study indicates that disabilities in Albay Province are more prevalent in rural areas. Deficiencies in the accessibility and performance of existing services for persons with disabilities were identified, especially in rural highland and plain areas for children with disabilities and rural highland and coastal areas for adults with disabilities. Persons with disabilities were disadvantaged in access to education and employment and many had not been educated in their basic rights. To identify, educate and fully support all persons with disabilities, CBR and related services must communicate effectively with each other, their current work should be mapped and analysed, their comparative strengths identified, and their future work better coordinated.

## Implications

Similar surveys would add to the evidence-base to improve the quality and coverage of services for persons with disabilities, in line with the WHO global disability action plan 2014-2021 (WHO, 2015). These surveys should include the profiles of CBR and related services. It is a priority to educate persons with disabilities and their families about their rights, and facilitate their access to support services; this requires increased investment in channels of communication to persons with disabilities and the community. With the passage and ratification

of the United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2017a) and the post-2015 Sustainable Development Goals (United Nations, 2017b) there is an obligation to monitor whether those with and without disabilities have equal opportunities to participate in society (WG, 2017b) and this requires identification of all persons with disabilities.

### **Limitations**

In barangays with no current household list, a source of bias may have resulted if households were not selected by strictly applying the 'EPI method' (Kok, 1986). Some persons with disabilities in the households may have been missed by the surveyors because of the sensitivity of questions on disability. Furthermore, the WG questions were not designed to identify all persons with disabilities in a population (Mont, 2007). The study would have been strengthened if it had been possible to validate functional limitations with clinical assessments (Mactaggart, 2015). In addition, a more detailed analysis on the delivery of CBR and related services would have strengthened the assessment of service access.

## **ACKNOWLEDGEMENT**

The authors wish to thank the staff of the Simon of Cyrene Community Rehabilitation and Development Foundation Inc. for their support in implementing the survey. Dr. Arnulfo M. Mascariñas, President of Bicol University, extended his strong interest and assistance, and the faculty and staff of the College of Social Sciences generously provided the personnel needed for data collection.

Barangay Captains, Barangay Health Workers and Barangay Nutrition Scholars from throughout Albay Province were extremely helpful and diligent in supporting the field work. Many city and municipal mayors in Albay Province, the League of Barangays and the Association of Barangay Captains provided logistical support. We are also grateful to Dr. Napoleon Arevalo, Director of the Department of Health, Regional Office V, and Director Dante B. Baclao, Chairman of the Philippine Red Cross, Albay Chapter, and their staff, for their assistance.

## **REFERENCES**

Asian Development Bank (2005). Disabled people and development, Philippines country report: Foundation for International Training and Regional and Sustainable Development Department: 6-7. Manila: ADB. [Online]. Available at: [http://library.pcw.gov.ph/sites/default/files/disabled people and development.pdf](http://library.pcw.gov.ph/sites/default/files/disabled%20people%20and%20development.pdf) [Accessed on 19 August 2017].



Australian Institute of Health and Welfare (2004). Disability and its relationship to health conditions and other factors. Canberra: AIHW. [Online]. Available at: <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442455793> [Accessed on 22 August 2017].

Bennett S, Woods T, Liyanage WM, Smith DL (1991). Simplified general method for cluster sample surveys. *World Health Statistics Quarterly*; 44(3): 98-106. [Online]. Available at: [http://www.ph.ucla.edu/epi/rapidsurveys/RScourse/whostatquarterly44\\_98\\_106\\_1991.pdf](http://www.ph.ucla.edu/epi/rapidsurveys/RScourse/whostatquarterly44_98_106_1991.pdf) [Accessed on 19 August 2017].

Department of Education, Republic of the Philippines (24 February 2017). DepEd ensures inclusive education for learners with special needs (press release). [Online]. Available at: <http://www.deped.gov.ph/press-releases/deped-ensures-inclusive-education-learners-special-needs> [Accessed on 19 August 2017].

Department of Health, Republic of the Philippines (2009). Health and wellness of persons with disabilities - Situational analysis:1-10. [Online]. Available at: <http://caro.doh.gov.ph/wp-content/uploads/2016/01/PERSONS WITH DISABILITIES-situational-analysis.pdf> [Accessed on 20 August 2017].

Department of Health, Republic of the Philippines (2017a). Philippine registry for persons with disability. [Online]. Available at: <http://www.doh.gov.ph/philippine-registry-for-person-and-disability> [Accessed on 21 August 2017].

Department of Health, Republic of the Philippines (2017b). Persons with disabilities. [Online]. Available at: <http://www.doh.gov.ph/persons-with-disabilities> [Accessed on 21 August 2017].

Embassy of Canada (2016). Project funding from the Government of Canada for the Simon of Cyrene Community Rehabilitation and Development Foundation, Inc. [Online]. Available at: <https://www.facebook.com/CanEmbPH/posts/675555712599521:0> [Accessed on 19 August 2017].

Gonzales FF, Miller SP (2006). Does perinatal asphyxia impair cognitive function without cerebral palsy? *Archives of Disease in Childhood Fetal and Neonatal edition*; 91(6): F454-F459. <http://dx.doi.org/10.1136/adc.2005.092445>

Grandisson M, Hébert M, Thibeault R, Templeton A (2014). Community-based rehabilitation programme evaluation: Lessons learned in the field. *Disability, CBR and Inclusive Development*; 25(1): 55-71. <https://doi.org/10.5463/dcid.v1i1.240>

Grills N, Singh L, Pant H, Varghese J, Murthy GVS, Hoq M, Marella M (2017). Access to services and barriers faced by people with disabilities: A quantitative survey. *Disability, CBR and Inclusive Development*; 28(2): 23-44. <https://doi.org/10.5463/dcid.v28i2.615>

Haworth E, JN, Tambahangphe KM, Costello A et al. (2017). Prenatal and perinatal risk factors for disability in a rural Nepali birth cohort. *BMJ Global Health*; 2:e000312. <https://doi.org/10.1136/bmjgh-2017-000312>

Kok PW (1986). Cluster sampling for immunization coverage. *Social Science and Medicine*; 22(7): 781-783. [https://doi.org/10.1016/0277-9536\(86\)90231-5](https://doi.org/10.1016/0277-9536(86)90231-5)

Loeb M (2014). Comparison of short set disability measures. (Presentation given at the 14th Meeting of the Washington Group on Disability Statistics). [Online]. Available at: <https://www.washingtongroup.int/>



cdc.gov/nchs/data/washington\_group/meeting13/wg13\_session2\_1\_loeb.pdf [Accessed on 20 August 2017].

Mactaggart I (2015). Field-testing an earlier version of the WG/UNICEF question set in Cameroon, India and Fiji (Presentation given at the 15th Meeting of the Washington Group on Disability Statistics). [Online]. Available at: [https://www.cdc.gov/nchs/data/washington\\_group/meeting15/wg15\\_session\\_3\\_4\\_mactaggart.pdf](https://www.cdc.gov/nchs/data/washington_group/meeting15/wg15_session_3_4_mactaggart.pdf) [Accessed on 19 August 2017].

Madans JH, Loeb ME, Altman BM (2011). Measuring disability and monitoring the UN Convention on the Rights of Persons with Disabilities: the work of the Washington Group on Disability Statistics. *BioMed Central Public Health*; 11 (Suppl 4), S4. <https://doi.org/10.1186/1471-2458-11-S4-S4>. PMID:21624190. PMCID:PMC3104217

Marella M, Huq NL, Devine A, Baker S, Quaiyum MA, Keeffe JE (2015). Prevalence and correlates of disability in Bogra district of Bangladesh using the rapid assessment of disability survey. *BioMed Central Public Health*; 15:867. <https://doi.org/10.1186/s12889-015-2202-7>.

Marella M, Devine A, Armechin GF, Zayas J, Marco MJ, Vaughan C (2016). Rapid assessment of disability in the Philippines: Understanding prevalence, well-being, and access to the community for people with disabilities to inform the W-DARE project. *Population Health Metrics*; 14:26. <https://doi.org/10.1186/s12963-016-0096-y>. PMID:27489509. PMCID:PMC4971707.

Milligan P, Njie A, Bennett S (2004). Comparison of two cluster sampling methods for health surveys in developing countries. *International Journal of Epidemiology*; 33(3): 469–476. <https://doi.org/10.1093/ije/dyh096>. PMID:15020569

Mitra S, Posarac A, Vick B (2011). Disability and poverty in developing countries : A snapshot from the World Health Survey. Social Protection Discussion Paper (1109), Social Protection and Labor. Washington DC; World Bank: 188-197. [Online]. Available at: <http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/SP-Discussion-papers/Disability-DP/1109.pdf> [Accessed on 20 August 2017]. <https://doi.org/10.1596/27369>

Mont D (2007). Measuring disability prevalence, Social Protection Discussion Paper, (0706), Social Protection and Labor, Washington DC; World Bank: 5-14, Section 3.23. [Online]. Available at: <http://siteresources.worldbank.org/DISABILITY/Resources/Data/MontPrevalence.pdf> [Accessed on 20 August 2017].

National Council on Disability Affairs (2017a). About the National Council on Disability Affairs. [Online]. Available at: <http://www.ncda.gov.ph/about/> [Accessed on 19 August 2017].

National Council on Disability Affairs (2017b). Implementing Rules and Regulations (IRR) of Republic Act (RA) 10754 - an Act expanding the benefits and privileges of persons with disability. Manila. [Online]. Available at: <http://www.ncda.gov.ph/disability-laws/implementing-rules-and-regulations-irr/irr-of-ra-10754-an-act-expanding-the-benefits-and-privileges-of-persons-with-disability-persons-with-disabilities/> [Accessed on 1 June 2017].

Peden M, Scurfield R, Suet D, Mohan D, Hyder A, Junawar E, Mathers C (Eds) (2004). World report on road traffic injury prevention (summary), World Health Organization, Geneva: 109-137. [Online]. Available at: [http://www.who.int/violence\\_injury\\_prevention/publications/road\\_traffic/world\\_report/summary\\_en\\_rev.pdf](http://www.who.int/violence_injury_prevention/publications/road_traffic/world_report/summary_en_rev.pdf) [Accessed on 20 August 2017].

- Peden M, Oyegbite K, Ozanne-Smith J, Hyder AA, Branche C, Rahman AKMF, Rivara F, Bartolomeos K (Eds) (2008). World report on child injury prevention, World Health Organization, Geneva: 178-189. [Online]. Available at: [http://apps.who.int/iris/bitstream/10665/43851/1/9789241563574\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/43851/1/9789241563574_eng.pdf) [Accessed on 20 August 2017].
- Periquet AO (1981). Community-based rehabilitation in the Philippines. *International Disability Studies*; 11(2): 95–6. <https://doi.org/10.3109/03790798909166400>
- Philippine Statistics Authority (2010). Philippines - Census of Population and Housing 2010. [Online]. Available at: <https://psa.gov.ph/sites/default/files/attachments/hsd/pressrelease/Bicol.pdf> [Accessed on 11 April 2017].
- Philippine Statistics Authority (2013). Persons with disability in the Philippines (results from the 2010 census). [Online]. Available at: <https://psa.gov.ph/content/persons-disability-philippines-results-2010-census> [Accessed on 13 April 2017].
- Philippine Statistics Authority (2015). Albay Quickstat - May 2015. [Online]. Available at: <https://psa.gov.ph/content/albay-quickstat-may-2015> [Accessed on 19 August 2017].
- Philippine Statistics Authority (2016). Philippines in figures. [Online]. Available at: <https://psa.gov.ph/content/philippines-figures-0> [Accessed on 11 May 2017].
- Philippine Statistics Authority (2017). Gender and development. statistics on women and men in the Philippines. [Online]. Available at: <https://psa.gov.ph/statistics/survey/labor-force> [Accessed on 19 August 2017].
- Reichert C von, Myers A (2014). The geography of disability in America : On rural - urban differences in impairment rates. Independent Living and Community Participation, Paper 7. University of Montana Rural Institute. [Online]. Available at: [http://scholarworks.umt.edu/ruralinst\\_independent\\_living\\_community\\_participation/7](http://scholarworks.umt.edu/ruralinst_independent_living_community_participation/7) [Accessed on 19 August 2017].
- Richards NC, Gouda HN, Hebe N, Durham JW, Rampatige R, Rodney A, Whittaker M (2016). Disability, noncommunicable disease and health information. *Bulletin of the World Health Organization*; 94: 230-232. <https://doi.org/10.2471/BLT.15.156869>
- Short S (1981). An holistic approach towards disabled persons and their rehabilitation. *Australian Journal of Physiotherapy*; 27(5): 145–147. [https://doi.org/10.1016/S0004-9514\(14\)60754-6](https://doi.org/10.1016/S0004-9514(14)60754-6)
- Simon of Cyrene Community Rehabilitation and Development Foundation, Inc. (2017). Community-based rehabilitation. [Online]. Available at: <http://www.simonofcyrenefdn.org/CBR.html> [Accessed on 19 August 2017].
- Soriano J (2016). Census leaves out persons with disabilities, angers disability council. *The Philippine Star*, [Online]. Available at: <http://www.philstar.com/headlines/2015/11/23/1525063/census-leaves-out-persons-with-disabilities-angers-disability-council> [Accessed on 19 August 2017].
- Taaffe DR, Marcus R (2000). Musculoskeletal health and the older adult, *Journal of Rehabilitation, Research and Development*; 37(2): 245-254. [Online]. Available at: <https://www.rehab.research.va.gov/jour/00/37/2/taaffe.htm> [Accessed on 4 September 2017].

Tareque MI, Tiedt A, Islam TM, Begum S, Saito Y (2017). Gender differences in functional disability and self care in Bangladesh, *BioMed Central Geriatrics*; v.17: 177. <https://doi.org/10.1186/s12877-017-0577-2>

United Nations (2017a). Convention on the rights of persons with disabilities. Division for Social Policy and Development. New York: UN. [Online]. Available at: <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html> [Accessed on 3 September 2017].

United Nations (2017b). Sustainable Development Goals (SDGs) and disability. Division for Social Policy and Development. New York: UN. [Online]. Available at: <https://www.un.org/development/desa/disabilities/about-us/sustainable-development-goals-sdgs-and-disability.html> [Accessed on 30 August 2017].

United Nations Children's Fund (2013). The state of the world's children 2013: children with disabilities: 32-36. New York: UNICEF. [Online]. Available at: [https://data.unicef.org/wp-content/uploads/2015/12/SOWC\\_2013\\_75.pdf](https://data.unicef.org/wp-content/uploads/2015/12/SOWC_2013_75.pdf) [Accessed on 19 August 2017].

United Nations Children's Fund (2016). Module on child functioning - UNICEF data. New York: UNICEF. [Online]. Available at: <https://data.unicef.org/topic/child-disability/module-on-child-functioning/> [Accessed on 16 April 2017].

United Nations Children's Fund (2017). UNICEF/Washington Group on Disability Statistics Module on Child Functioning (concept note). New York: UNICEF. [Online]. Available at: <https://data.unicef.org/wp-content/uploads/2017/03/UNICEF-WG-Module-on-Child-Functioning-Concept-Note.pdf> [Accessed 19 August 2017].

United Nations Educational Scientific and Cultural Organization (2009). Towards inclusive education for children with disabilities: 67-89. Paris: UNESCO. [Online]. Available at: <http://uis.unesco.org/sites/default/files/documents/towards-inclusive-education-for-children-with-disabilities-a-guideline-2009-en.pdf> [Accessed on 19 August 2017].

United Nations Educational Scientific and Cultural Organization (2015). Philippines - Education for all 2015 national review report: 24. Paris: UNESCO. [Online]. Available at: <unesdoc.unesco.org/images/0023/002303/230331e.pdf> [Accessed on 19 August 2017].

Vorstman JAS, Ophoff RA (2013). Genetic causes of developmental disorders. *Current Opinion in Neurology*; 26(2): 128-136. <https://doi.org/10.1097/WCO.0b013e32835f1a30>

Washington Group on Disability Statistics, United Nations Children's Fund (2013). Washington Group/UNICEF Module on Child Functioning and Disability. (document for the 13th meeting of the Washington Group on Disability Statistics). [Online]. Available at: [https://www.cdc.gov/nchs/data/washington\\_group/meeting13/wg13\\_unicef\\_child\\_disability\\_background.pdf](https://www.cdc.gov/nchs/data/washington_group/meeting13/wg13_unicef_child_disability_background.pdf) [Accessed on 20 August 2017].

Washington Group on Disability Statistics, United Nations Children's Fund (2014). Washington Group/UNICEF Module on Child Functioning and Disability: Background. [Online]. Available at: [https://www.cdc.gov/nchs/data/washington\\_group/meeting13/wg13\\_unicef\\_child\\_disability\\_background.pdf](https://www.cdc.gov/nchs/data/washington_group/meeting13/wg13_unicef_child_disability_background.pdf) [Accessed on 19 August 2017].

Washington Group on Disability Statistics (2016). The Washington Group Short Set of

Questions on Disability. [Online]. Available at: <http://www.washingtongroup-disability.com/wp-content/uploads/2016/01/The-Washington-Group-Short-Set-of-Questions-on-Disability.pdf> [Accessed on 19 August 2017].

Washington Group on Disability Statistics (2017a). Washington Group on Disability Statistics: Frequently asked questions. [Online]. Available at: <http://www.washingtongroup-disability.com/frequently-asked-questions/> [Accessed on 19 August 2017].

Washington Group on Disability Statistics (2017b). International monitoring. [Online]. Available at: <http://www.washingtongroup-disability.com/methodology-and-research/international-monitoring/> [Accessed on 19 August 2017].

Woolf AD, Pfleger B (2004). Burden of major musculoskeletal conditions. *Bulletin of the World Health Organization*; 81: 646-656. [Online]. Available at: <http://www.who.int/bulletin/volumes/81/9/Woolf.pdf> [Accessed on 20 August 2017].

World Bank (2017). Disability. [Online]. Available at: <http://www.worldbank.org/en/topic/disability> [Accessed on 20 August 2017].

World Health Organization (1981). Disability prevention and rehabilitation: Report of the WHO Expert Committee on Disability Prevention and Rehabilitation: 14-17. Geneva: WHO. [Online]. Available at: [http://apps.who.int/iris/bitstream/10665/40896/1/WHO\\_TRS\\_668.pdf](http://apps.who.int/iris/bitstream/10665/40896/1/WHO_TRS_668.pdf) [Accessed on 30 August 2017].

World Health Organization (2002). Towards a common language for functioning, disability and health: The International Classification of Functioning Disability and Health (ICF). Geneva: WHO: 9-10. [Online]. Available at: <http://www.who.int/classifications/icf/training/icfbeginnersguide.pdf> [Accessed on 22 August 2017].

World Health Organization (2008). The global burden of disease: 2004 update. Geneva: WHO. [Online]. Available at: [http://www.who.int/healthinfo/global\\_burden\\_disease/GBD\\_report\\_2004update\\_full.pdf](http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf) [Accessed on 20 August 2017].

World Health Organization (2010). The ICF: An overview. Functioning and Disability Reference Group. Geneva, WHO: 1-10. [Online]. Available at: [http://www.wcpt.org/sites/wcpt.org/files/files/GH-ICF\\_overview\\_FINAL\\_for\\_WHO.pdf](http://www.wcpt.org/sites/wcpt.org/files/files/GH-ICF_overview_FINAL_for_WHO.pdf) [Accessed on 20 August 2017].

World Health Organization (2011). World report on disability. Technical appendix B. Geneva: WHO, WB. [Online]. Available at: [http://www.who.int/disabilities/world\\_report/2011/report.pdf](http://www.who.int/disabilities/world_report/2011/report.pdf) [Accessed on 19 August 2017].

World Health Organization, United Nations Educational Scientific and Cultural Organization, International Labour Organization, International Disability and Development Consortium (2010). Community-based rehabilitation guidelines: Advocacy and communication. Geneva: WHO, UNESCO, ILO, IDDC. [Online]. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK310928/> [Accessed on 19 August 2017].

World Health Organization, United Nations Children's Fund (2012). Early childhood development and disability: A discussion paper. Geneva: WHO, UNICEF. [Online]. Available at: [http://apps.who.int/iris/bitstream/10665/75355/1/9789241504065\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/75355/1/9789241504065_eng.pdf) [Accessed on 30 August 2017].

World Health Organization (2015). WHO global disability action plan 2014-2021. Geneva: WHO. [Online]. Available at: <http://www.who.int/disabilities/actionplan/en/> [Accessed 20 August 2017].

World Health Organization (2017a). World health survey (2002-2004). Geneva: WHO. [Online]. Available at: <http://www.who.int/healthinfo/survey/en/> [Accessed on 19 August 2017].

World Health Organization (2017b). Community-based rehabilitation guidelines. Geneva: WHO. [Online]. Available at: <http://www.who.int/disabilities/cbr/guidelines/en/> [Accessed on 29 August 2017].