

Chapter 5

Functional Health

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How should we define health in older ages?

Ongoing discussions as to whether health should be defined as a 'state or an ability' reflect the shifting of the definition of health from a static concept towards a more dynamic and functional description or framework (Huber, 2010). The Constitution of the World Health Organization (WHO) (1946) defines health as 'a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity'. But the demographic and epidemiological transitions ushering age–sex structural changes have given way to global ageing and redefined the disease patterns from communicable to chronic diseases, thereby casting doubt on the effectiveness of such a definition. Questions have been raised particularly on the absoluteness of the word 'complete', which some argue 'would leave most of us unhealthy most of the time' (Smith, 2008). For example, an assessment by Von Faber et al. (2001), applying the WHO definition of health, found only tiny percentages of people who aged successfully. The increasing number of people living with chronic diseases worldwide, many of whom are able to continue functioning and to sustain a feeling of well-being, has led to the reconsideration of the definition of health. Rather than declare people with chronic diseases and disabilities as definitively ill, a preferred definition is one that captures 'the ability to adapt and to self-manage' (Huber et al., 2011: 2).

Within the context of the health of older persons (OPs), studies have demonstrated that daily functioning is a much more valuable predictor of survival than the presence of diseases or even comorbidities (Lordos et al., 2008). The emerging functional health framework shifts the perspective from a 'medical' model to a broader 'biopsychosocial' model of disability that integrates environmental factors (Berger, Robine, Ojima, Madans, and Van Oyen, 2016) affecting the OP's ability to cope and

adapt. The International Classification of Functioning, Disability, and Health (ICF) model, a multidimensional conceptual basis for the definition, measurement, and policy formulations for health and disability, is based on this integration of medical and social models of disability (WHO, 2002). In 2015, WHO shifted its focus from a disease-centred to a person-centred approach, ensuring that ‘all people have access to health services that respond to their preferences, are coordinated around their needs, and are safe, effective, timely, efficient, and of an acceptable quality’ (WHO, 2015: 34). An environment with barriers, or without facilitators, will restrict the individual’s performance; other environments that are more facilitating may increase that performance (Playford, 2015).

The concept of disability is complex and so are the instruments used to measure it. Disability is the difficulty of performing tasks and/or roles on one’s own due to health problems, which can be physical, sensory, emotional, or cognitive (Verbrugge, 2016). Traditional survey instruments measure disability using a limited number of tasks in the domain of personal care (activities of daily living [ADL]) or in the domain of household management (instrumental ADL [IADL]) (Van Oyen, Bogaert, Yokota, and Berger, 2018). The severity of the disability is measured by asking the degree of difficulty in doing ADL and IADL tasks. However, these ‘social activity limitation’ measures are inadequate in that they capture only a partial picture of the total activities that OPs normally perform. Broadening the coverage of the instrument to include more activity domains is likely to have cost implications, not to mention an increased respondent burden. Whilst ADL and IADL have been commonly used in disability research, their analysis is hampered by the lack of harmonisation across settings.

These measurement issues, including the reluctance amongst disability researchers to introduce lengthy survey instruments, have led to the crafting of a short set of disability questions that have good coverage of activities. Global health measures, sometimes called general measures, provide a snapshot of the health situation using one or a few survey questions (Robine, 2003). A good example of a short set is the six questions developed and tested by the Washington Group (WG) on Disability Statistics (2016), a United Nations workgroup established under the United Nations Statistical Commission to develop disability measures to suit specific purposes (Madans et al., 2004). The WG Short Set of Questions on Disability asks about health-related difficulties in seeing, hearing, walking and/or climbing steps, remembering and/or concentrating, self-care, and communicating. The WG

measure asks if the respondent has no difficulty, some difficulty, or a lot of difficulty in doing the said activities or is unable to do them. The measure is being widely adopted in census and survey settings throughout the world (Verbrugge, 2016). In the Philippines, data on the WG Short Set of Questions on Disability were first collected in the 2010 census for the entire population (Philippine Statistics Authority, 2010).

In recent years, in response to a call to develop a more parsimonious measure of disability, the concept of the Global Activity Limitation Indicator (GALI) was proposed. This measure underlies healthy life years or disability-free life expectancy in most European Union member countries (Bogaert, Van Oyen, Beluche, Cambois, and Robine, 2018). GALI is intended to be a global self-reported measure of participation restriction because of its implicit reference to the ability to participate societally in a variety of non-specified settings and non-specified domains of life (e.g. employment, school, housework, and leisure) (Van Oyen et al., 2018). The GALI question is, 'For at least the past 6 months, to what extent have you been limited because of a health problem in activities people usually do? Would you say you have been: severely limited, limited but not severely, or not limited at all?' Although GALI is widely used in Europe, it has never been validated in an Asian setting except in Taiwan (Hsiao, Wu, Hsu, Saito, and Lin, 2019). WG and GALI measures of disability are guided by the ICF model.

Bed disability is a common disability measure that captures extreme disability. This is broadly defined to include short-term episodes of restrictions on a person's usual activities and includes days spent in non-institutional illness involving confinement to bed for more than half the daylight hours (Sullivan, 1971).

A dimension of health in the disablement process that is closely related to the concept of disability is functional loss. Verbrugge and Jette (1994) described functional limitations as restrictions in performing fundamental physical and mental actions in daily life by one's age-sex group. These actions indicate the overall abilities of the body and mind to do purposeful 'work', including walking, lifting objects, climbing stairs, reading standard-size print, and hearing other people.

Amongst the measures of functional loss or limitations are the Nagi measures of physical functioning (Nagi, 1965), which include 10 questions that measure physical ability and agility. These questions are modified versions of the original set

of questions. Respondents were asked to indicate which of the following actions they find difficult to perform alone, without the assistance of a person or physical prop or aid: (1) walk 200–300 metres, (2) climb 10 steps without resting, (3) stand or go without sitting for 2 hours, (4) continue to sit for 2 hours, (5) stoop or bend knees, (6) raise hands above head, (7) extend arms out in front as if to shake hands, (8) grasp with fingers or move fingers, (9) lift an object weighing approximately 10 kg, and (10) lift an object weighing approximately 5 kg. Those who said they had no difficulty lifting a 10 kg object (item number 9) were not asked about item number 10.

All five measures of disability (ADL, IADL, WG Short Set of Questions on Disability, GALI, and bed disability) and one measure of functional loss (Nagi) were collected in the Longitudinal Study of Ageing and Health in the Philippines (LSAHP). The following section will analyse these health indicators by age and sex. We first describe the level of disability in the context of ‘personal care’ using ADL disabilities and in ‘household management’ using IADL disabilities. Global measures of disability using the WG Short Set of Questions on Disability and GALI are discussed as comparable measures of disability. This is followed by a discussion on the OPs’ experience of bed confinement within 2 weeks prior to the survey. The final section is a discussion of functional limitations using the Nagi functioning measures.

Prevalence of Disability

Amongst the disability measures used in the study are ADL, which cover personal care tasks of everyday life. We asked the respondents if they have difficulty in performing the following activities alone, without the assistance of a person or assistive device, due to their health or physical state: (1) bathe and/or shower, (2) dress, (3) eat, (4) stand up from a bed or chair or sit down on a chair, (5) walk around the house, (6) go outside (leave the house), and (7) use the toilet.

Results show that a fifth (22%) of OPs have difficulty performing at least one of the seven activities. There is no significant difference in ADL disability between females and males (Table 5.1) and is particularly significant in two activities (walking and toileting). The proportion who experience ADL difficulty monotonically increases with age, from 15% amongst those in their 60s to 24% amongst those in their 70s and to 51% amongst those in their 80s (Figure 5.2). Those who have ADL disability recorded an average of three ADL difficulties, with no apparent gender difference. However, there is a clear age gradient, with the number of ADL

difficulties increasing from 2.1 amongst those in their 60s to 2.7 amongst those in their 70s and surging to 3.4 amongst those in their 80s (Table 5.1). Overall, OPs find it most difficult to leave the house, particularly females and those in older age groups. Almost half (46%) of those in their 80s find it difficult to go out of the house alone. Males, in general, find it most difficult to stand up from a bed or chair or sit down on a chair.

Table 5.1. Activities of Daily Living (ADLs) by Sex and Age

Activities of Daily Living	SEX			AGE GROUP				TOTAL
	Male	Female	Sig	60-69	70-79	80+	Sig	
% who experience difficulty with the following activities								
Take a bath/shower by oneself	5.0	6.3	n.s.	3.1	5.8	20.7	***	5.8
Dress	6.5	5.5	n.s.	4.1	5.0	18.3	***	5.9
Eat	2.5	3.0	n.s.	1.3	2.9	10.9	***	2.8
Stand up from a bed/chair; sit down on a chair	12.9	12.3	n.s.	9.7	12.3	28.9	***	12.6
Walk around the house	7.0	11.4	**	4.0	14.4	30.4	***	9.7
Go outside (leave the house)	11.2	17.5	n.s.	7.8	19.2	45.5	***	15.0
Using the toilet	4.5	6.5	*	2.7	5.9	22.2	***	5.7
% who experienced at least one ADL difficulty	19.5	23.2	n.s.	15.4	24.0	51.4	***	21.7
<i>N</i>	2,411	3,574		3,760	1,552	673		5,985
Mean number of ADLs with difficulty	2.55	2.71	n.s.	2.13	2.72	3.44	***	2.65
<i>N</i>	470	828		579	373	346		1,298

* $p < .05$. ** $p < .01$. *** $p < .001$. n.s. = not significant.

Source: Calculated by DRDF using original LSAPH data.

IADL are measures of household management, independent living, or the ability to be involved in one's community (Verbrugge, 2016). Seven IADL were used to capture the level of disability. We asked the respondents if they find it difficult to perform the following IADL due to their health or physical state: (1) prepare own meals; (2) leave the home to purchase necessary items or medications; (3) take care of financial matters such as paying utilities (e.g. electricity and water); (4) use the telephone; (5) dust, clean up, and do other light housework; (6) take the bus, jeepney, or public transport to leave home; and (7) take medications as prescribed.

Overall, about one in four admitted difficulty in performing at least one IADL, with the level significantly higher amongst females and increasing with age (Figure 5.1 and Figure 5.2). Similar to the pattern of ADL disability, results show an abrupt increase in the prevalence of IADL disability for those who survive to their 80s (i.e. from 19%

amongst those aged 60–69 to 57% amongst those aged 80+). Compared with ADL disability, the gender difference in IADL disability is more pronounced, with the level amongst females almost twice that of males (33% vs. 19%) (Table 5.2). Those who reported IADL disability recorded an average of 2.3 IADL difficulties, more amongst males than females. Those in their 60s with IADL difficulty reported an average of 1.9 activity limitations; the average increases to 2.4 for those in their 70s and abruptly increases to 3.0 for those 80 years and over.

Table 5.2. Instrumental Activities of Daily Living (IADLs) by Sex and Age

Instrumental Activities of Daily Living	SEX			AGE GROUP				TOTAL
	Male	Female	Sig	60-69	70-79	80+	Sig	
% who experience difficulty with the following activities								
Prepare own meals	5.3	8.5	**	4.1	8.6	21.2	***	7.2
Leave home to purchase necessary items/medication	9.5	15.6	*	6.9	18.9	35.0	***	13.2
Take care of financial matters such as paying utilities	5.8	6.7	**	3.6	8.0	18.0	***	6.4
Use the telephone	2.9	5.3	n.s.	4.3	3.0	7.6	***	4.3
Dust, clean up, other light housework	8.0	9.5	n.s.	4.3	13.0	25.4	***	8.9
Take bus/jeep/public transport to leave home	13.3	24.2	***	11.0	28.7	48.6	***	19.8
Take medication as prescribed	2.8	4.4	n.s.	1.6	4.2	15.0	***	3.8
N	2,411	3,574		3,572	1,774	639		5,985
% who experienced at least one IADL difficulty								
	18.8	33.2	***	18.9	35.0	57.4	***	27.4
N	2,411	3,574		3,760	1,552	674		5,985
Mean number of IADLs with difficulty								
	2.53	2.24	n.s.	1.90	2.41	2.97	***	2.32
N	453	1,186		710	543	387		1,639

*p < .05. **p < .01. ***p < .001. n.s. = not significant.

Source: Calculated by DRDF using original LSAHP data.

Amongst the seven items, the use of transportation to leave home is by far the most difficult, regardless of age and sex. Overall, 20% expressed difficulty in using transportation, with females more likely than males to express difficulty (24% vs. 13%). The level of difficulty significantly increases from 11% amongst those in their 60s to almost half (49%) amongst those in their 80s. The second most difficult amongst the seven IADL is leaving home to purchase necessary items, which may relate to the prior difficulty. This is consistently registered as the second most prevalent difficulty for both sexes. Light household cleaning is the next top challenging activity, followed by preparation of their own meals. Using the telephone and taking medication as prescribed are amongst the least difficult to do for OPs, implying positive cognition.

Another disability measure employed in the study is the WG Short Set of Questions on Disability. Unlike ADL and IADL, which focus on the basic functioning of individuals within particular contexts, the WG Short Set of Questions on Disability is more generic and brief; it aims only to identify people at greater risk than the general population for participation restrictions due to the presence of difficulties in six core functional domains (Madans et al., 2004; Washington Group on Disability Statistics, 2016) (Table 5.3).

Table 5.3. Washington Group Short Set on Functioning by Sex and Age

Washington Group Short Set on Functioning	SEX			AGE GROUP				TOTAL
	Male	Female	Sig	60-69	70-79	80+	Sig	
Seeing, even if wearing glasses								
No difficulty	67.2	63.8		70.4	61.8	43.5		65.1
Some difficulty	26.5	27.3	n.s.	23.3	30.1	40.3	***	27.0
A lot of difficulty	4.4	6.0		3.9	6.1	12.2		5.4
Cannot do it at all	1.9	3.0		2.5	2.1	4.0		2.5
Hearing, even if using a hearing aid								
No difficulty	81.5	78.3		86.2	74.9	52.9		79.5
Some difficulty	11.1	12.9	n.s.	7.2	17.3	27.8	***	12.2
A lot of difficulty	2.8	3.7		1.2	3.4	15.3		3.3
Cannot do it at all	4.6	5.2		5.4	4.4	4.0		5.0
Walking or climbing steps								
No difficulty	68.9	56.1		71.5	50.5	29.2		61.3
Some difficulty	22.2	31.1	***	22.9	35.0	36.0	***	27.5
A lot of difficulty	6.9	10.0		4.9	12.2	22.1		8.7
Cannot do it at all	2.1	2.7		0.7	2.3	12.8		2.5
Remembering or concentrating								
No difficulty	63.0	55.8		67.5	49.7	30.4		58.7
Some difficulty	32.3	37.0	*	30.1	43.5	43.8	***	35.1
A lot of difficulty	4.1	6.5		2.2	6.0	22.8		5.5
Cannot do it at all	0.7	0.8		0.3	0.8	3.1		0.7
Self-care (washing all over or dressing)								
No difficulty	91.0	90.3		93.7	91.2	71.8		90.6
Some difficulty	6.2	5.4	n.s.	5.2	5.3	9.3	***	5.7
A lot of difficulty	1.1	1.9		0.5	1.5	7.4		1.6
Cannot do it at all	1.8	2.5		0.6	2.0	11.6		2.2
Communicating								
No difficulty	93.5	91.7		96.1	91.9	73.4		92.4
Some difficulty	5.0	6.2	n.s.	3.3	5.9	18.7	***	5.7
A lot of difficulty	1.0	1.3		0.3	1.0	6.5		1.2
Cannot do it at all	0.5	0.8		0.3	1.2	1.4		0.7
% with at least one difficulty	62.5	71.2	**	59.0	77.5	93.6	***	67.7
% with at least one with 'some difficulty'	57.1	65.0	**	54.0	71.3	83.6	***	61.9

Washington Group Short Set on Functioning	SEX			AGE GROUP				TOTAL
	Male	Female	Sig	60-69	70-79	80+	Sig	
% with at least one with 'a lot of difficulty'	15.1	19.5	**	11.1	21.8	45.8	***	17.7
% with at least one with 'cannot do it at all'	7.7	8.9	n.s.	6.4	7.7	21.6	***	8.4
N	2,411	3,574		3,760	1,552	673		5,985

*p < .05. **p < .01. ***p < .001. n.s. = not significant.

Source: Calculated by DRDF using original LSAHP data.

Findings indicate that about 7 in 10 OPs have one difficulty amongst the six items; 62% have some difficulty, 18% have a lot of difficulty, and 8% cannot perform at least one activity. Older people generally find communicating the least difficult to perform, followed by self-care, hearing, and seeing. They recorded the highest difficulty in remembering or concentrating, with females experiencing more difficulty than males. The degree of difficulty dramatically increases with age, as shown in the proportion who reported cognitive difficulty: from a third amongst those in their 60s to as high as 70% amongst those in their 80s. OPs reported walking or climbing as the next most difficult to perform.

GALI is a single-question instrument that provides a global measure of disability. It measures long-standing activity limitations in a broad range of activities in the 6 months or more prior to the survey. Prevalence by age and sex is presented in Table 5.4. Findings show agreement in the age pattern of the GALI with the three other disability measures (ADL, IADL, and the WG Short Set of Questions on Disability) but not in the gender differences. Unlike the three other measures, which show consistently higher disability amongst females, there is no significant gender difference reported in GALI disability. The age gradient shows an increasing level of disability with advancing age. The proportion without any GALI disability decreases with advancing age, from 47% amongst those in their 60s to 35% for those in their 70s and to 20% for those in the oldest age group (80+). Similarly, the proportion reporting severe limitation increases dramatically with age: 10%, 12%, and 36%, respectively.

Table 5.4. Global Activity Limitation Index (GALI) by Sex and Age

Global Activity Limitation Index	SEX			AGE GROUP				TOTAL
	Male	Female	Sig	60-69	70-79	80+	Sig	
Yes, severely limited	13.7	13.2		9.7	12.3	36.4		13.4
Yes, limited but not severely	46.5	45.0	n.s.	42.9	52.9	43.7	***	45.6
Not limited at all	39.9	41.8		47.4	34.8	19.9		41.0
N	2,411	3,574		3,760	1,551	673		5,985

***p < .001. n.s. = not significant.

Source: Calculated by DRDF using original LSAHP data.

Empirical data on OPs' experience of being bedridden within 2 weeks prior to the survey was collected as an indicator of extreme disability. We asked the respondents, 'Have you ever been bedridden for any reason during the past 2 weeks?' Of those who responded 'yes', we asked, 'How many days were you in bed?' Results show that 2.4% had been bedridden within a couple of weeks before the survey, with no gender difference. The preponderance of the condition increases significantly with age, from 2% amongst those in their 60s to 8% amongst those in the oldest age group (Table 5.5). Those who had been bedridden reported an average of 7 days in bed or about 50% of the time. There is no gender difference, but the number of days they were confined in bed increases monotonically with age from 5 days amongst those in their 60s to 9 days amongst those in their 80s.

Table 5.5. Experience of being Bedridden by Sex and Age

Experience being Bedridden	SEX			AGE GROUP				TOTAL
	Male	Female	Sig	60-69	70-79	80+	Sig	
% who have been bedridden during the past two weeks	2.2	2.6	n.s.	1.5	2.7	7.5	***	2.5
N	2,412	3,574		3,760	1,551	673		5,985
Mean number of days in bed	7.85	6.64	n.s.	5.34	7.17	8.96	***	7.06
N	48	91		54	39	47		140

***p < .001. n.s. = not significant.

Source: Calculated by DRDF using original LSAHP data.

Table 5.6 shows the level of functional loss using the Nagi measures of physical functioning. Amongst all 10 activities, OPs find the following tasks the most difficult to perform: standing without sitting for 2 hours, lifting 10 and 5 kg objects, climbing 10 steps without resting, and walking 200–300 metres. Generally, there is a clear gender and age disparity, with females and the older cohort reporting higher levels of difficulty than their younger counterparts (Figure 5.1 and Figure 5.2). Those who expressed difficulty in performing any of the Nagi tasks alone, without the assistance of a person or physical prop or aid, reported an average of four difficulties.

The average is higher amongst females than males (3.8 vs. 3.4) and increases with age: 3.2 for those in their 60s, 3.7 for those in their 70s, and 4.9 for those in their 80s. The measures vary in their time reference, with some capturing the current health state and others (e.g. GALI) referring to health status at least 6 months from the time of the interview.

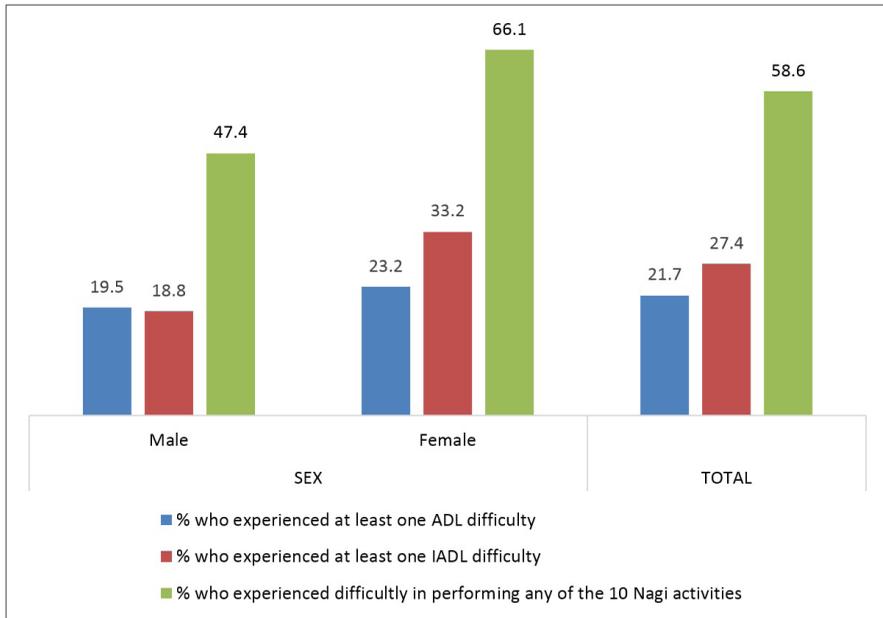
Table 5.6. Nagi Functioning Measures by Sex and Age

Nagi Functioning Measures	SEX			AGE GROUP				TOTAL
	Male	Female	Sig	60-69	70-79	80+	Sig	
% who experience difficulty with the following activities								
Walk 200 to 300 meters	20.5	33.5	***	19.4	37.7	56.2	***	28.3
Climb 10 steps without resting	23.8	39.3	***	21.9	45.6	66.8	***	33.1
Stand (go without sitting) for 2 hours	32.0	42.8	**	29.4	48.0	66.9	***	38.4
Continue to sit for 2 hours	17.8	23.6	n.s.	19.1	21.3	33.0	**	21.2
Stoop or bend your knees	20.8	23.8	n.s.	16.8	27.3	44.1	***	22.6
Raise your hands above your head	8.5	5.9	n.s.	5.5	7.2	14.1	***	6.9
Extend arms out in front of you as if to shake hands	3.6	3.5	n.s.	1.8	4.8	10.4	***	3.5
Grasp your fingers or move your fingers easily	6.0	8.6	*	5.9	8.7	14.1	***	7.6
Lift an object weighing approximately 10 kg	20.0	50.1	***	26.9	48.8	75.0	***	38.0
<i>N</i>	2,411	3,574		3,760	1,552	674		5,985
10. Lift an object weighing approximately 5 kg	38.9	33.0	n.s.	20.7	40.0	55.3	***	34.3
<i>N</i>	517	1,900		1,123	781	514		2,418
% who experienced difficulty in performing any of the 10 activities	47.4	66.1	***	47.9	72.2	86.9	***	58.6
<i>N</i>	2,411	3,574		3,760	1,552	673		5,985
Mean number of Nagi activities with difficulty	3.40	3.76	*	3.19	3.73	4.86	***	3.64
<i>N</i>	1,142	2,360		1,799	1,118	585		3,502

* $p < .05$. ** $p < .01$. *** $p < .001$. n.s. = not significant.

Source: Calculated by DRDF using original LSAHP data.

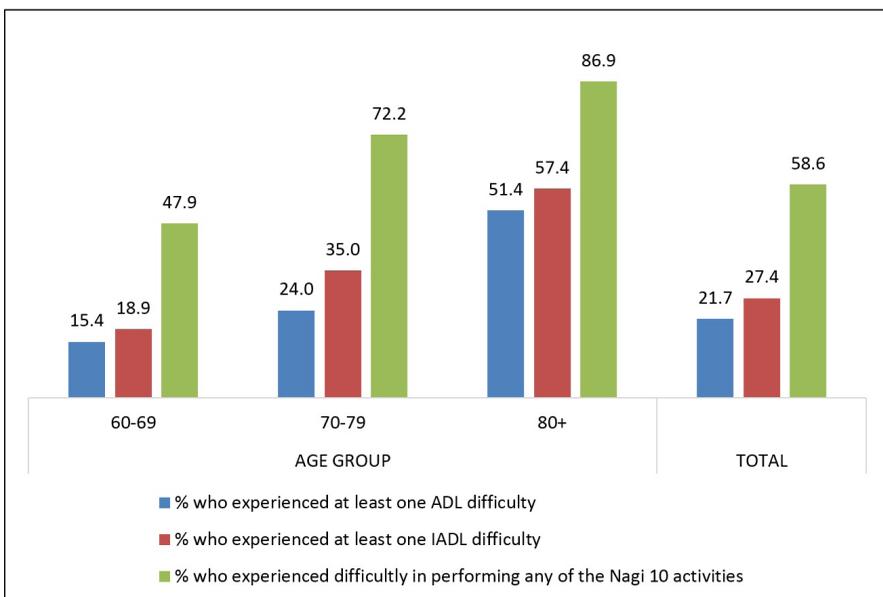
Figure 5.1. Functional Difficulty of Older Persons by Sex



ADL = activity of daily living, IADL = instrumental activity of daily living.

Source: Calculated by DRDF using original LSAHP data.

Figure 5.2. Functional Difficulty of Older Persons by Age



ADL = activity of daily living, IADL = instrumental activity of daily living.

Source: Calculated by DRDF using original LSAHP data.

Summary, Conclusions, and Recommendations

Redefining the health framework from a 'static concept towards a more dynamic and functional description' (Huber, 2010: 3) makes it relevant to assess OPs' functional health. The functional health perspective that considers not only individual capacities but also environmental influences on health provides a broader perspective that implies a wider-ranging policy intervention to address elder health. It is within this context that the LSAHP explored empirical measures of disability and the related concept of functional loss, which are key dimensions in functional health. Results present interesting data for framing appropriate health policies and programmes.

Following the disablement process, which is often used as a foundation for disability research, we employed five measures of disability that are not necessarily comparable. Some are limited to specific domains such as self-care, independent living, sensory ability, or cognition, whilst others are more comprehensive or global. The measures vary in their time reference, with some capturing the current health state and others (e.g. GALI) referring to health status at least 6 months from the time of the interview.

Despite the lack of harmonisation, results show generally good agreement across measures, with all five disability indicators revealing an increasing disability pattern with advancing age. The sex pattern is generally consistent, showing that females have a poorer disability status than males. An exception is the GALI disability measure, which shows no gender disparity.

One major finding that requires urgent policy response is the incidence of severe disability measured in terms of current bed confinement. Expectedly, we see increasing severity with advancing age, with 7% of those in their 80s having been confined to bed for 9 days on average in the 2 weeks before the survey. Using the projected number of OPs aged 80 years and over based on the 2015 census, this translates to over 55,000 octogenarians with bed disability, each of them more likely to be confined to bed within a 2-week period. Such findings have tremendous implications for potential demand for caregiving, long-term care, and rehabilitation, which need to be addressed if we are to ensure the well-being of older Filipinos.

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