Are current approaches to poverty measurement disability-inclusive? Considerations for measuring poverty amongst people with disabilities

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1. Introduction

Disability and poverty are intimately linked, with the one reinforcing the other [1-3]. Given this association, the international community is increasingly recognising the importance of including considerations of disability in poverty reduction strategies [3, 4]. For example, the 2030 Sustainable Development Goals (SDGs), which have been adopted by 193 countries, call for the disaggregation of all targets and indicators by disability – including SDG 1, which focuses on the elimination of poverty "in all its forms" [5]. Tracking progress by disability status can help ensure people with disabilities are benefiting equally from poverty alleviation efforts, so as to "leave no one behind" [4, 6].

However, both poverty and disability are concepts which can be difficult to pin down into concrete definitions which support measurement. This paper discusses different approaches to measuring poverty, including considerations for more accurately capturing poverty amongst people with disabilities.

This paper is divided into five parts. Section 1 is an introduction, while Section 2 provides a working definition of disability. Then, Section 3 discusses the risk of poverty amongst people with disabilities. Next, Section 4 explores current approaches for measuring poverty and their strengths and weaknesses in the context of measuring poverty amongst people with disabilities. Section 5 describes considerations for selecting poverty indicators, while Section 6 discusses disability and poverty in the SDGs. Section 7 outlines priorities for conducting research on poverty amongst people with disabilities.

2. Defining disability

Approximately 15% of the global population has a disability, amounting to over 1 billion people worldwide [7]. While definitions and measurement of disability vary, the World Health Organization's (WHO) International Classification of Functioning, Disability and Health (ICF) is a useful and commonly used approach to conceptualise disability [8].

According to the ICF framework (Figure 1), disability is the result of a health condition that, in interaction with personal and environmental contexts, leads to dysfunction at the level of body function/structures (impairments), the individual (activity limitations) and/or the individual within society (participation restrictions). The ICF model therefore explicitly includes environmental and personal contextual factors that may heighten or lessen experiences of disability. For example, a person with polio (health condition), may experience lower limb paralysis (physical impairment), which in turn can lead to difficulties in walking or self-care (activity limitations). This individual may also be excluded from school or work (participation restrictions), especially when combined with contextual factors such as inaccessible built environments, stigma towards disability or lack of access to an assistive device. Personal factors, such as education level and access to rehabilitation services, and environmental factors, such as policies on inclusive employment, may improve the level of participation.

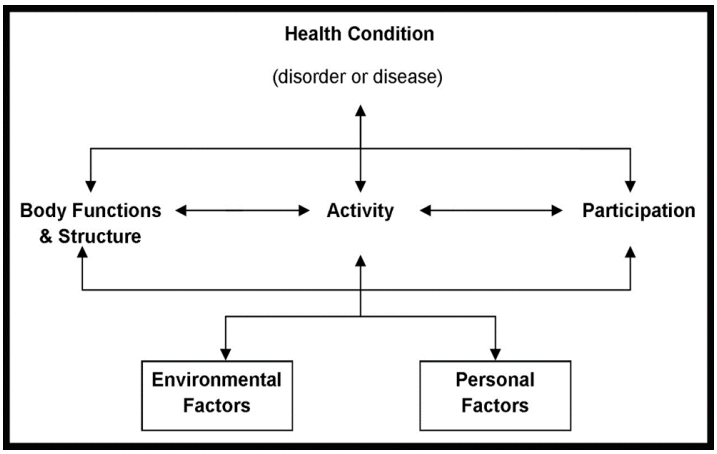


Figure 1 ICF Framework (Source: icfeducation.org)

The World Health Organization and the World Bank estimate that 15% of the global population has a disability, amounting to over 1 billion people worldwide [7]. However estimates on the prevalence of disability can vary widely, which is influenced in large part due to differences in conceptualising disability and in measurement approaches [9]. For example, prevalence measured through self-reported disability (e.g. “Do you have a disability?”) often generate low estimates due to stigma of disability or implications that “disability” represents a severe condition; these estimates may also not be comparable across time and place due to differing sociocultural interpretations of disability [9, 10]. In contrast, functioning-based approaches (e.g.

“Do you have difficulty walking…seeing…hearing”) tend to generate higher estimates of disability prevalence that are considered more internationally comparable, as they ask about difficulties in performing specific everyday activities, which is less stigmatising or open to individual interpretation [11]. The Washington Group questions, which are functioning-based, are recommended by the United Nations for robust, internationally comparable estimates of disability [12, 13].

3. Risk of poverty amongst people with disabilities

Certain groups may be particularly likely to experience poverty, as a result of greater risks and vulnerabilities. People with disabilities are a key group believed to be likely to face a heightened risk of poverty.

Risk and vulnerability are important factors in understanding poverty [14]. Vulnerability describes the likelihood that individuals, households or communities will be in poverty in the future [15]. A key component of vulnerability is exposure to “risks” [16]. Risks are shocks or stresses, which if they were to occur, would have a negative impact on well-being [14]. For example, episodes of sickness, natural disasters and unemployment are all risks that may directly lead to or worsen poverty, due to high spending on healthcare, loss of income or destruction of food crops and housing. Further, the strategies that households take to prevent or cope with these risks may indirectly contribute to poverty [14, 16]. For example, selling off productive assets to pay for healthcare or delaying seeking essential healthcare due to high costs are often unavoidable responses to sickness for households living in or vulnerable to poverty. However, these responses can have long-term implications on well-being and ability to escape poverty in the future.

People currently in poverty are highly vulnerable to remaining in or falling further into poverty, particularly due to the presence of “poverty traps”. People living in poverty are likely to have the highest risk of shocks and stresses, due for instance to unsafe working or living environments, unstable employment, poor nutrition and greater exposure to disease [16]. They are also likely to have fewer – or lower quality – resources and coping mechanisms available to prevent or mitigate the impact of risks if they occur [17]. For example, people in poverty may not have adequate income, savings, or access to health insurance and accident/injury cover. In addition to risk and vulnerability, chronic poverty may also be explained by adverse structural

factors, such as discrimination and stigma towards certain groups [14]. Chronic poverty can be particularly difficult to escape and may lead to irreversible losses in well-being, even across generations [18].

Poverty and disability are often described as operating in a cycle[1], with the one reinforcing the other (Figure 2) [19, 20]. This cycle can help explain why people with disabilities face a greater risk of entering and staying in poverty. For example, conditions associated with poverty, such as inadequate safe water, sanitation and hygiene (WASH), lack of access to healthcare, malnutrition, and unsafe working and living conditions increase the risk of disability. In turn, disability is linked to exclusion from work, education and social life, as well as high spending on healthcare and other expenses, all of which can lead to or worsen poverty [7, 21]. People with disabilities may be particularly vulnerable to chronic poverty, as they face high exposure to risks (e.g. unstable employment, greater likelihood of experiencing violence and abuse), but may have access to fewer coping strategies (e.g. fewer assets, lower access to financial services, smaller social networks) [7, 20]. Discrimination and marginalisation of people with disabilities further compounds vulnerability to chronic poverty.

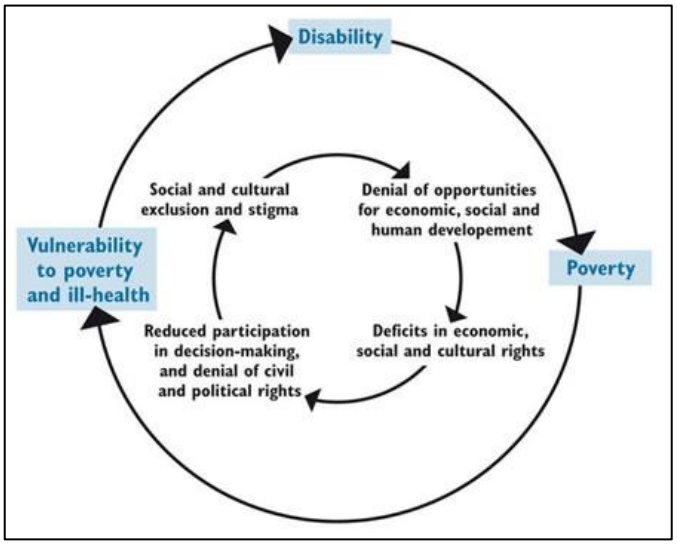


Figure 2 Disability-poverty cycle (DFID, 2002)

4. Disability and approaches for measuring poverty

As with disability, poverty is a complex concept to define and measure. In its broadest definition, poverty can be described as “a state in which individuals or households show significant deficits in well-being” [15]. However, there is little consensus on a best approach for understanding and measuring poverty, despite the focus on poverty alleviation as a core aim in most national and international social

[1] This paper will be focusing on the increased risk of poverty among people with disabilities, rather than poverty as a risk factor for developing disability.

and economic development policies and programmes [22, 23]. Different approaches have been used to measure poverty, which each have their strengths and weaknesses.

a. Income- and consumption-based measures & the monetary approach

Historically, and continuing to today, poverty has most frequently been viewed as a shortfall in income or consumption [23, 24]. Monetary approaches define poverty as occurring when individuals or households have insufficient economic resources (e.g. income, savings, material assets) considered necessary to consume a minimum set of goods and services required to achieve an acceptable standard of living [23]. Often, a person or household's available resources are measured against a defined level, below which they can be classified as living in poverty [24]. For example, poverty lines in many countries are based on the minimum income or consumption expenditure deemed necessary to satisfy basic needs, through estimations of the cost of food and other necessities [25]. Individuals or households with income or consumption below this threshold are defined as being poor and may be targeted for poverty alleviation programmes; and the distance by which they fall short of the poverty line is taken as a measure of the severity of their poverty.

Several studies have found people with disabilities and their households are more likely to be living in monetary poverty compared to people without disabilities [26-28]. Notably, in a systematic review of disability and monetary poverty, 80% of the 150 studies included found people with disabilities were poorer than people without disabilities [1]. The proportion of studies finding a correlation between disability and poverty (i.e. people with disabilities were more likely to be poor compared to people without disabilities) increased by country income level (59% for low income, 67% for lower-middle income, 72% for upper-middle income countries), which may support the theory that as countries develop, people with disabilities are more likely to be left behind from progress [29]. Studies of working-age adults with disabilities were also more likely to find an association with poverty compared to studies of older adults (86% vs. 69%), which may illustrate the impact of disability onset during key productive years.

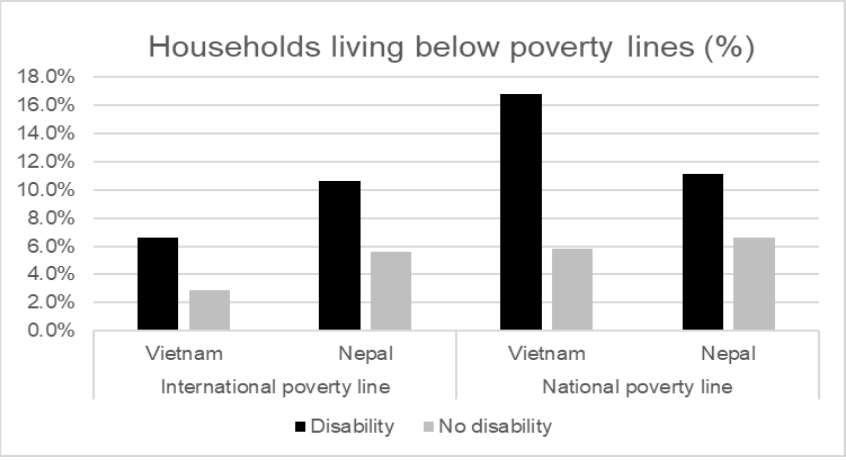
BOX 1. Measuring poverty through a monetary approach: Evidence from Vietnam and Nepal

Population-based surveys were conducted in the districts of Tanahun, Nepal and Cam Le, Vietnam to compare levels of poverty between households with and without members with disabilities. In total, almost 2,928 households (12,397 individuals) were surveyed. Disability was measured using the Washington Group Short Set (Vietnam) and modified Extended Set (Nepal).

Household heads were asked to report the total household income from all sources. Per capita household income was then compared against national poverty lines in each country, as well as the international poverty line for extreme poverty of $1.90 per person per day (with 2011 Purchasing Power Parity) [30].

In Vietnam, 6.6% of disabled households were living below the international poverty line compared to 2.9% of non-disabled households; however this difference was not statistically significant. Disabled households were twice as likely to live below the national poverty line compared to non-disabled households (16.8% vs 5.8%).

In Nepal, disabled households were statistically significantly more likely to live below both the international and national poverty lines. For example, 10.6% of disabled households lived in extreme poverty, compared to 5.6% of non-disabled households. Similarly, 11.1% of disabled households were living below the national poverty line, compared to 6.6% of non-disabled households.



Source: Banks et al (2019) [ref forthcoming]

Potential challenges of using the monetary approach to measure poverty amongst people with disabilities

Although many still recognise that monetary approaches to poverty are useful, major critiques have emerged. These critiques affect the validity of poverty assessments for both people with and without disabilities, but in some cases may particularly underestimate or misrepresent poverty amongst people with disabilities.

First, monetary poverty is often measured at the household level, which assumes all household members share resources equitably. However, people with disabilities may not receive an equitable share of resources within the household due to factors such as lower decision-making power or discrimination within the household. For example, some studies have found people with disabilities are more likely to be malnourished or less likely to attend school compared to other household members, potentially indicating a lower prioritisation in the division of household resources or other barriers to inclusion [31-33].

Second, consumption needs will vary by individual and setting [34, 35]. Equivalence scales have been used to capture to some extent the differences in consumption needs amongst households, as they apply weighting structures that account for differences in factors such as household size (i.e. to account for economies of scale in larger households) and age composition (i.e. to account for lower consumption needs in children) [36]. While compelling in theory, in practice the use of equivalence scales has been criticised, primarily due to the subjective nature of assigning weight values [37, 38]. Further, standard equivalence scales include age, number of members and sometimes gender, but rarely capture other intra-household characteristics such as disability status. People with disabilities, however, may experience significantly higher consumption needs, as illustrated in the growing body of research on extra costs associated with disability [39-41].

“Extra costs” refers to the additional expenses/consumption needs people with disabilities frequently require in order to participate in society, such as for assistive devices, rehabilitation/specialist healthcare, added transport or personal assistance [39]. People with disabilities and their households will bear the greatest burden of these costs in non-inclusive environments (e.g. inaccessible facilities and transportation, lack of coverage of assistive devices and rehabilitation in health

insurance policies). People with disabilities therefore will often require a higher level of consumption to maintain the same standard of living as a person without a disability, who does not have to spend on these items. Consequently, standard poverty lines are likely to underestimate poverty among people with disabilities. For example, extra costs were estimated at 9%, 14% and 19% of household income in Vietnam, Bosnia and Herzegovina, and Cambodia, respectively [28, 42]. Raising the poverty line by the estimated extra costs increased the prevalence of poverty amongst people with disabilities in these three settings by 3.7, 9.7 and 18.4 percentage points, respectively. Experts have therefore advocated for adjusting poverty lines for people with disabilities to account for these extra consumption needs [43], however, there is still debate on how to best measure these costs (Box 2).

Third, it has been increasingly recognised that the correlation between economic resources and well-being is not always straightforward [23, 44]. For example, income only predicts whether an individual – or more frequently, a household – can theoretically afford certain items or services, but does not capture whether these items are available or accessible to that person [34, 35]. While expenditure data more closely tracks actual spending and consumption, it may still be an imperfect proxy for well-being [34, 35]. As an illustration, paying for healthcare is not a guarantee of being in good health or having received good quality services that meet the individual's health needs. People with disabilities often experience additional barriers - including extra costs but also non-financial barriers such as discrimination and poor availability and quality of needed goods and services – that limit their ability to access the goods and services needed to improve their well-being. For example, many people with disabilities have high levels of health spending, but frequent unmet health needs, due to the poor availability and quality of many needed services such as rehabilitation, assistive devices and other specialist services [45].

BOX 2. Measuring extra costs of disability

Several approaches have been used to measure extra costs of disability [39]. These approaches focus on direct costs of disability, and do not include indirect or opportunity costs (e.g. underemployment, unemployment), which would theoretically be captured in lower income/expenditure levels. While these approaches are often used to create an average estimate of extra costs amongst all people with disabilities, it is important to note that extra costs can vary widely amongst people with disabilities due to impairment type, gender or location for example.

Goods and services used approach compares expenditures between people with and without disabilities to identify sources and magnitude of additional spending amongst people with disabilities. This approach is likely to underestimate disability-related extra costs, as it only captures what households are actually spending – which for many will be constrained by poverty - not the costs for all needed items and services. Particularly in LMICs, many services or items might be essential for people with disabilities to participate in society, but they are either unaffordable, unavailable or inaccessible [39].

Standard of living approach uses modelling estimates to determine how much additional income is required to raise disabled households to the same standard of living as an otherwise similar non-disabled household [41]. The underlying rationale for this approach is that disabled households allocate money towards disability-associated expenses (e.g. extra transportation, caregiving, medical expenses), so that, for a given level of income, these households have fewer resources available to contribute towards improving their living standards compared to households without members with disabilities. As with the goods and services used approach, actual spending, rather than needed spending, is the focus. Further, sources of extra costs are not captured, which is important for informing policy responses.

Unlike the two previous approaches, the *goods and services required* approach does account for unmet spending needs. It estimates the full cost of goods and services required for participation in different activities. Typically, individuals are asked to identify and estimate the costs of different items or services that they need. However, a concern with applying this approach is that individuals may not be aware of all the possible goods and services that they need, particularly in contexts where they are not widely available. Consequently, even the

goods and services required approach may underestimate the magnitude of disability related-extra costs.

Adapted from Mitra et al (2017)

Fourth, monetary indicators may not capture all resources at an individual or household's disposal [46]. Income, for instance, is a particularly poor measure of material wealth in societies where barter or production of goods and services for personal consumption (e.g. subsistence farming) are common [47]. Similarly, measurement tools tend to focus on private resources, often overlooking social resources (i.e. goods and services that an individual may have access to due to their relationships with others, such as being able to borrow a friend's car or sharing food with neighbours) and publicly-provided goods and services (e.g. school nutrition programmes, subsidised transport, education, healthcare) [23, 48]. There is some indication that people with disabilities and their households have lower access to social and publicly-provided goods and services compared to people without disabilities, as they often have smaller social networks and may face barriers utilising public goods and services due to discrimination, inaccessible information and infrastructure [49, 50]. Consideration of these resources can more accurately capture assessments of well-being between people with and without disabilities.

Finally, accurately capturing all sources of income and expenditures can be methodologically challenging, as well as time consuming and costly [47]. For example, respondents may be reluctant to disclose their income or expenditures – as with any sensitive data – to unfamiliar data collectors. Additionally, surveys on expenditure may also not capture all sources of spending, particularly on disability-specific goods and services [28, 39]. Moreover, income and expenditure can be highly volatile over time. For instance, households may be engaged in a range of income-generating activities, which may be short-term or fluctuate in their returns, or receive gifts, remittances or aid at irregular time periods. Similarly, prices captured in expenditure surveys may vary substantially if data is collected over short time periods (e.g. due to seasonality, shortages). Often, measurements at one point in time are used as a proxy for average wealth, which may be misleading when fluctuations are extreme or frequent [51].

For all these reasons, collecting income or consumption data is as much an art as a science. Reasonable choices between diary and recall-based collection, between week- or month-long recall periods, and between long or short lists of consumption items may result in dramatically different estimates of consumption for the same household [52]. Methodological choices are likely to reflect logistical concerns and survey budgets as much as technical criteria. Once set, there is a good case that methodological consistency over time in a national survey is more important than continuous efforts at incremental improvement which make it hard or impossible to identify trend. This does, however, make it difficult to compare or aggregate estimates that are derived from surveys which take different approaches in different countries.

b. Multidimensional poverty measures & the capability approach

Other approaches to conceptualising poverty have been advanced in light of these critiques of monetary approaches. For example, the capability approach pioneered by Sen & Nussbaum conceptualises well-being as individuals' freedom to lead a life they value, and have reason to value [53, 54]. It focuses on an individual's "capabilities" and "functionings". Functionings describe different states that a person has succeeded in "doing or being" (e.g. being healthy, employed, nourished), while capabilities refer to the opportunities a person has to achieve these desired functionings (e.g. access to healthcare, decent work and food) [23, 53]. A classic example to differentiate functionings and capabilities concerns two people who are starving: one may have access to food, but is choosing to fast for religious reasons, while the other cannot afford food. These two individuals have the same functioning (starving), but differ in their capabilities (access to food). In the capability approach, resources such as income can be useful in achieving desired functionings, but they are considered insufficient as a measure of well-being because the ability to transform resources into desired functionings will vary between individuals and societies [3]. This variation may be due to individual characteristics (e.g. health status, social relationships, age, gender) or contextual factors (e.g. living in areas where services are available, publicly provided) [23]. Consequently, directly measuring capabilities and functionings (e.g. level of health, access to healthcare) more accurately captures well-being in these areas, rather than using material

wealth as a proxy (e.g. spending on healthcare, having enough income to afford health services).

Measurement of poverty using the capability approach focuses on deprivations in certain basic capabilities [54]. The content of this set of desired basic capabilities was not explicitly defined by Sen to allow for context- and purpose-relevant development of indicators [55]. Ideally, measures should focus on capabilities (e.g. ability to go to school) but in practice, achieved functionings are most often used as they are easier to observe (e.g. school attendance) [56, 57].

The capability approach also emphasises the importance of multidimensional poverty measurement. Multidimensional poverty can be measured using several non-monetary indicators of poverty (e.g. education attainment, level of health, housing characteristics), which can be presented either individually (e.g. dashboard approach) or in composite indexes. Multidimensional poverty indexes (MPIs), particularly as developed using the Alkire & Foster methodology, are often grounded in the capability approach [46, 58]. For example, the Global MPI developed by the Oxford Poverty and Human Development Initiative (OPHI) has been used by the United Nations Development Programme since 2010 in its Human Development Reports to measure multidimensional poverty in over 100 countries [59]. Governments in several countries, particularly in Latin America, have also developed national MPIs that are tailored to capture locally-relevant measures of poverty [46]. Under the Alkire-Foster methodology, MPIs use a set of indicators (covering capabilities or functionings such as access to health and education and living standards) each of which have a deprivation cut-off below which an individual/household can be considered to be deprived [58]. Each indicator is given a relative weight so that the MPI sums to one (1=complete deprivation, 0=no deprivation). Deprivation scores generated are then compared against a poverty cut-off (e.g. ≥0.33). An individual or household may be classified as multidimensionally poor if the sum of their weighted deprivations falls above this line. The choice of indicators, their weights and cut-offs, and, in particular, the overall multidimensional poverty line cut-off, are defined through normative judgement – such as what are acceptable levels of deprivation and how important each indicator is to an individual's experience of poverty – which has been cause for critique [27, 58]. To improve the validity of these choices, participatory and expert-based approaches are

recommended [60]. Further, robustness testing – particularly the robustness in the rank ordering (i.e. comparison of poverty levels between groups or areas) – is also important for strengthening the utility of the MPI in informing policy decisions [61].

The capability approach and multidimensional poverty measures have been used increasingly to describe the relationship between disability and poverty [3, 57, 62, 63] (see Box 3). Studies have found that people with disabilities and their households often experience deprivations across common multidimensional indicators, such as lower educational enrolment and attainment [26, 64-67], less sustainable livelihoods [26, 68-71], poorer levels of health and less equitable access to health services [26, 49, 72, 73]. Additionally, several studies have used MPIs to assess poverty among people with disabilities, with all finding strong links between disability and multidimensional poverty [26, 57, 74, 75].

Overall, multidimensional measures represent an important addition to understanding poverty amongst people with disabilities [57, 62]. For example, the notion in the capability approach that the possession of a certain amount of resources does not translate neatly into well-being mirrors some of the above critiques of using monetary measures to assess poverty amongst people with disabilities [3, 57]. Notably, the challenges in converting resources to well-being – what Sen & Nussbaum call “conversion handicaps” – include the extra-costs of disability, as well as other barriers (e.g. availability, discrimination and stigma, inaccessible environments). For example, a person with a physical disability may not be able to access schools even if they have the money for fees if associated travel costs are too high, schools are physically inaccessible or teachers refuse to admit students with disabilities.

BOX 3. Measuring poverty through a capability approach: Using the Global MPI in Brazil, Chile, Colombia, Costa Rica and Mexico

The Global Multidimensional Poverty Index (MPI) has been created/used by the UNDP to track multidimensional poverty in over 100 countries [59]. The Global MPI includes ten indicators of poverty, grouped into three dimensions (health, education and living standards).

In a study by Pinilla-Roncancio (2018), levels of multidimensional poverty were compared between disabled and non-disabled households using census data from five Latin American countries (Brazil, Chile, Colombia, Costa Rica and Mexico). Measurement of disability varied between countries.

Across the five countries, disabled households had higher levels of multidimensional poverty compared to non-disabled households. Disabled households were both more likely to be living in poverty and amongst the poor, disabled households faced a higher intensity of poverty compared to non-disabled households. Additionally, disabled households were more likely to be deprived across all indicators. For example, disabled households were more than twice as likely to have had a child die in the last two years compared to non-disabled households.

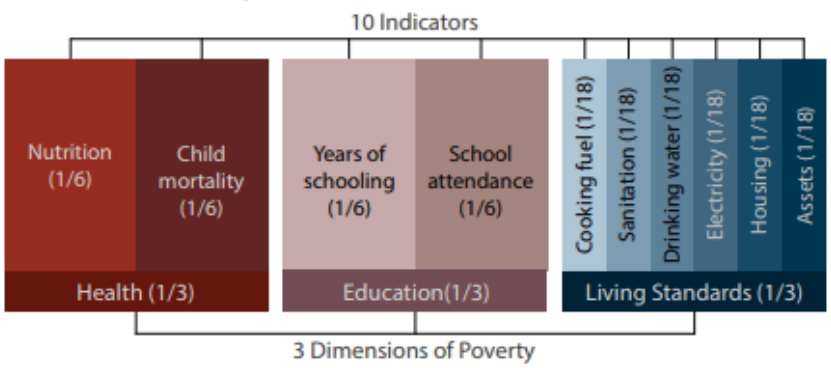


Image source: OPHI [76]

Source: Pinilla-Roncancio (2018) [77].

Potential challenges of using multidimensional indicators to measure poverty amongst people with disabilities

As with income- and consumption-based measures used in the monetary approach, multidimensional poverty measures also have some potential challenges that may underestimate or fail to fully capture poverty, particularly amongst people with disabilities.

Notably, quality is a concern for several multidimensional indicators, such as access to services, employment and education. Although issues of quality are a universal concern, people with disabilities are likely to be disproportionately affected. For example, research has highlighted that children with disabilities attending school may not actually be gaining tangible skills if the school does not have resources in place to support their learning (e.g. instruction in Braille, sign language) [32, 78]. Similarly, markers on access to healthcare (e.g. distance to nearest facility, having health insurance) may be misleading for people with disabilities: for example, people with mobility limitations may struggle to get to facilities if there's no accessible transportation links, or may find they are denied services or receive substandard care due to stigma of disability [7]. Further, available services may not meet the needs of people with disabilities (e.g. if there are no rehabilitation or other specialist services), and so access to healthcare may not translate to better health and well-being.

Additionally, several multidimensional indicators are measured at the household-level, raising similar concerns as with monetary measures on intra-household equity. For example, sanitation facilities and water sources are commonly used in MPIs. However, people with disabilities may not be able to use the same sanitation facility or water source as others in the household (e.g. due to inaccessible facilities, difficult terrain, discrimination from others when using communal facilities) or in the same way (e.g. hygienically, independently, with privacy and without pain) [79, 80]. Consequently, household access to improved sanitation and clean water may be a less accurate indicator in MPIs for people with disabilities compared to other non-disabled household members. Similarly, household ownership of assets is commonly used in MPIs. However, people with disabilities may not be able to use

communal assets such as phones, internet, computers or televisions if these items do not include accessibility features.

c. Relative poverty measures & the social exclusion approach

Most of the poverty measures discussed so far concern absolute poverty, in which indicators of deprivations are compared against a defined minimum level deemed necessary to meet basic needs or achieve a desired capability/functioning (e.g. income or consumption poverty line for monetary poverty, being deprived or not on multidimensional indicators). Starting first in high-income countries and expanding to LMICs, relative measures of poverty, have increasingly been used as an alternative [81]. Income, expenditure and many common multidimensional indicators can be measured in both absolute or relative terms. For example, the European Union measures at risk-of-poverty as the proportion of people falling below 60% of national median disposable income in each year[2] [82]. Similarly, surveys such as the Demographic and Health Surveys (DHS) calculate wealth indexes for each country based on assets, housing characteristics and access to sanitation and hygiene facilities, which are divided into quintiles [83]. With these relative measures, classifications of poverty are determined by spread of wealth in a given context at a given time.

Relative measures often reflect the "social exclusion" conceptualisation of poverty, which recognised that as countries grew wealthier and put in place welfare systems to ensure its citizens could meet basic needs, marginalisation and deprivation still persisted [23, 81]. Most definitions of the social exclusion approach incorporate Townsend's characterisation of poverty as occurring when an individual, household or group's "…resources are so seriously below those commanded by the average family that they are in effect excluded from the ordinary living patterns, customs, and activities" [84]. Relative poverty measures are context- and time-specific, as they focus on *relative* exclusion from social activities or rights, based on what is typically enjoyed by others in that setting at that time [23, 85]. The social exclusion approach is also more focused than other models on processes of exclusion, such as structural inequalities or discrimination against certain groups (e.g. ethnic, religious minorities, people with disabilities) [23].

[2] Equivalised and after social transfers

People with disabilities and their households may be more likely to experience relative poverty due to widespread exclusion across many sectors of society, ranging from health, employment, education and social life [7]. This exclusion is triggered by structural processes, such as discrimination and misconceptions of disability, poor availability and quality of needed services, and inaccessible information and infrastructure. Studies using relative income/consumption-based and multidimensional measures of poverty reflect that people with disabilities are more likely to be living in poverty compared to people without disabilities [49, 66, 86]. Box 4 provides an example of a study using relative measures to assess poverty between people with and without disabilities.

BOX 4. Measuring poverty through a social exclusion approach: Research amongst older adults with visual impairments in Kenya, Bangladesh and the Philippines

Population-based case-control studies were undertaken amongst nearly 600 older adults (age 50+) with visual impairments in Kenya, Bangladesh and Philippines and age-, sex-, location-matched controls without visual impairments. Visual impairment was determined through visual acuity testing and ophthalmic examination.

Poverty was assessed using relative rather than absolute measures in this study. For example, data on asset ownership and per capita expenditure was used to categorise respondents into quartiles from poorest to wealthiest, relative to others in the sample. Similarly, respondents were asked to rate their household's wealth in comparison to others in the community. Across these measures of relative poverty, people with visual impairments were significantly poorer compared to people without visual impairment in all three settings. For example, people with visual impairments were two to almost four times more likely to live in a household that ranked in the poorest quartile by household expenditure or asset ownership. People with visual impairments also ranked their wealth significantly lower compared to people with no visual impairment and spent less time on productive activities relative to people without visual impairment ($p<0.002$).

Source: Kuper et al (2008); Danquah et al (2014); Polack et al (2007) [87-89]

Potential challenges of using multidimensional indicators to measure poverty amongst people with disabilities

Relative measures of poverty face many of the same challenges as absolute income/expenditure-based or multidimensional poverty measures. For example, relative measures of monetary poverty may underestimate poverty among people with disabilities: due to extra costs, people with disabilities have a higher barrier to social inclusion. Similarly, measures of household welfare may mask individual wellbeing.

One additional concern with relative poverty measures has been its applicability to LMICs, particularly settings where absolute poverty is high [23]. For example, low levels of education and insecure livelihoods may be the norm in certain contexts. Therefore, exclusion from decent work or education does not constitute social exclusion in those settings, even if it is recognised that these situations are undesirable or negatively impact well-being [23].

5. Considerations for selecting indicators

a. Purpose and time frame

In selecting measures of poverty, it is important to consider the purpose of the data collection and the timeframe of interest. For example, many commonly used multidimensional poverty indicators reflect a longer term, slower changing measure of household wealth compared to income- or consumption-based measures. Multidimensional measures may provide a more stable indicator of household wealth, however, they are less responsive to short-term shocks or changes in wealth, which can be seen in income/expenditure data much more rapidly [47]. For example, assets and housing improvements may take several years of income savings in order to purchase; when households face downturns, savings or consumption will often be decreased first before selling off assets or moving houses. Similarly, some indicators such as death of a child in the last five years or adult educational attainment will be counted as deprivations for many years, even if the household's circumstances have improved considerably. Consequently, it is important to consider the timeframe of interest when selecting indicators to measure changes in poverty levels.

b. Participatory approaches

Many national and international indicators of poverty have been critiqued for externally imposing a definition of poverty without properly consulting with people who are living in poverty [23, 85, 90]. Consequently participatory approaches to selecting indicators of poverty have been employed in some recent studies and programmes, whereby people living in poverty are central to defining what poverty means in their setting and how to capture it [90, 91]. Notably, this approach has been institutionalised by the World Bank and the International Monetary Fund as a required component of their Poverty Reduction Strategy Papers (PRSPs), which are part of a country's application for debt relief or aid [23, 91].

BOX 5. Identifying indicators through participatory approaches: Research amongst people with psychosocial impairments in the United States

Mitra et al. used participatory approaches to select dimensions and their relative weights for an MPI, in order to create a measure that was relevant for people with psychosocial impairments in the United States.

Two focus group discussions were conducted: one involved people who had a diagnosis of a psychosocial impairment, and the other comprised mental health service providers or researchers. Participants in each group were asked to select and rank dimensions of poverty (e.g. having meaningful work, not being homeless, living independently) from a pre-existing list.

Selection of dimensions, and their relative ranking, differed markedly between groups. The group of people with psychosocial impairments considered education attainment, home ownership and employment to be the three most important indicators for measuring poverty, whereas the group of service providers and researchers chose family income, employment and health. Two dimensions – home ownership and transportation – were selected by people with psychosocial impairments but were not included in the index created by service providers and researchers.

These differences in the selection and ranking of dimensions had implications for measuring poverty. Using the index derived from the discussion with people with psychosocial impairments, 41% of people with psychosocial impairments were living in poverty. Poverty levels decreased using the researcher/service provider tool, which estimated that 34.0% of people with psychosocial impairments were poor.

Source: Mitra et al (2013) [92]

Participatory approaches to selecting variables to measure poverty present an important, and underexplored, opportunity for defining important indicators for people with disabilities [19]. These approaches may highlight indicators that are highly relevant for people with disabilities, but often excluded from standard measures of poverty – such as experiences of stigma, discrimination and violence, independent living and autonomy over life choices, as well as access to disability-specific services

such as assistive devices, rehabilitation and inclusive education. Including people with disabilities in the consultation process for developing poverty metrics can help promote both measures as well as future programming that is disability-inclusive. For example, Wazakili et al explored the consultation process for including disability in PRSPs and found few had included disability considerations into national plans, which was partially attributed to the lack of adequate consultation of people with disabilities and Disabled Peoples Organisations (DPOs) in defining important national metrics of poverty [93].

6. Poverty & disability in the Sustainable Development Goals

Goal 1 of the SDGs seeks to "[e]nd poverty in all its forms everywhere" [94]. The SDGs represent an evolution in the conceptualisation of poverty from the predecessor Millennium Development Goals (MDGs), whose targets and indicators focused on a monetary approach to poverty (i.e. the proportion of people whose income is less than the international poverty line, defined in US dollars per capita per day and adjusting for purchasing power parity) [95, 96]. In contrast, the underlying targets and indicators for SDG 1 reinforce a commitment to addressing both monetary and multidimensional forms of poverty.

Monetary poverty is the focus of Target 1.1, which aims to "eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day" by 2030 [94]. Based on the average of the national poverty lines in the world's poorest countries, this threshold[3] is considered as the international poverty line representing "extreme poverty" across contexts, with adjustment for purchasing power parity to account for differences in costs of living in each country [35]. Consumption per capita is the preferred source of data for monitoring Target 1.1, although income is also used by some countries (particularly in Latin America) [35].

In addition to the international poverty line, Target 1.2 addresses national definitions of poverty, across both economic and multidimensional forms. Indicator 1.2.1 measures "the proportion of the population living below the national poverty line, by sex and age", while indicator 1.2.2 focuses on "poverty in all its dimensions according to national definitions" [94]. For the latter, several countries – particularly

[3] The international poverty line has since been revised to $1.90 per person per day (international dollars, using 2011 purchasing power parity) [11].

middle-income Latin American countries – have adopted national MPIs to produce a single summary measure for tracking progress [35]. Similarly, Target 1.4 covers access to basic services, as well as land rights and financial services, to broaden the conceptualisation of poverty beyond monetary measures [94]. Target 1.5 then focuses on risk and vulnerability as a contributor to poverty. It aims to "build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters" [94].

Finally, SDG 10 focuses in-depth on inequality across social, economic and political domains. Targets and indicators in SDG 10 capture poverty in line with social exclusion approaches. This includes the use of relative measures of economic well-being, such as the "proportion of people living below 50% of median income…" (Indicator 10.2.1) and the focus on processes of exclusion such as "…discriminatory laws, policies and practices…" (Target 10.3) [97].

Unlike the predecessor MDGs, the SDGs include more of an explicit focus on disability. Disability is referenced directly in several Goals, Targets and Indicators, such as for education (Goal 4), employment and economic growth (Goal 8), inequality (Goal 10) and sustainable cities and communities (Goal 11) [98]. Disability is not mentioned explicitly in poverty-related indicators, with the exception of SDG Target and Indicator 10.2 (social, political and economic inclusion) [97]. However, data disaggregation across all targets and indicators of the SDGs is recommended to identify groups at risk of exclusion so as "to leave no one behind" [4]. Specifically, SDG 17.18, calls for disaggregation of data across all targets and indicators by "income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts" [4].

7. Conclusion

There are many different approaches to define and measure poverty, each with its own strengths and weaknesses. Across approaches and measures, however, people with disabilities may be more likely to experience poverty compared to people without disabilities. Additionally, many indicators may underestimate poverty among people with disabilities. More research is needed to describe the relationship

between disability and both monetary and multidimensional poverty and to develop appropriate approaches for measuring poverty amongst people with disabilities.

Below, priorities for conducting research on poverty amongst people with disabilities are outlined:

1. Evaluate the effectiveness of new and existing programmes and policies – such as social protection – for reducing both monetary and multidimensional poverty amongst people with disabilities.
2. Include measures of disability, such as through the Washington Group question sets, in national living standard surveys and other research on poverty to disaggregate poverty measures by disability status.
3. Conduct further research on extra disability-related costs, including identifying dominant sources, their magnitude, coping strategies for meeting them and their impact. Similarly, trial and evaluate methods for measuring unmet but required disability-related needs, their cost and barriers to meeting them. Incorporate considerations of disability-related extra costs into determinations of poverty.
4. Adjust monetary measures of poverty, particularly poverty lines, to account for disability-related extra costs.
5. Improve the collection and analysis of administrative data so that programmes can disaggregate access and impact by disability status.
6. Undertake participatory research to define appropriate and context-specific indicators of poverty that are relevant to people with disabilities.
7. Use individual-level indicators of poverty over household-level indicators when possible. Conduct further research on intra-household differences in poverty and division of resources.
8. Conduct longitudinal research amongst people with disabilities to understand changes in poverty over time, including chronic and cyclical poverty.

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