How Poor are People with Disabilities?

Evidence based on the Global Multidimensional Poverty Index

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Abstract

People with disabilities and their families have been recognised as a high-risk population for poverty (Mitra, Posarac, & Vick, 2013). Although the number of studies analysing the levels of poverty of this group has increased, there is still a lack of empirical evidence that establishes whether and how people with disabilities are significantly poorer than families with no disabled members (Banks, Kuper, & Polack, 2017; Groce, Kembhavi, et al., 2011). This study analyses the levels of multidimensional poverty of people living in households with members with disabilities in 11 low- and middle-income countries in different regions of the world, using the global Multidimensional Poverty Index (MPI). The results reveal that in five of the 11 countries people living in households with disabled members face higher levels of multidimensional poverty compared with people without disabilities. In addition, we found that differences between the levels of poverty were larger in middle-income countries than in low-income countries, revealing the existence of a development disability gap.

Keywords: disability, multidimensional poverty, low- and middle-income countries

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Disability is a complex situation which affects individuals and families around the world. According to the World Health Organization (WHO) and the World Bank (WB), 15 per cent of the world's adult population live with some type of disability. This percentage is expected to be higher in developing countries, with characteristics of poverty, conflict, and fragile welfare states, factors that increase the risk of people having a health condition that becomes a disability (World Health Organization & The World Bank, 2011).

Currently the Convention on the Rights of Persons with Disabilities (CRPD) defines persons with disabilities as *'those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others'* (United Nations (UN), 2008). Those barriers are mainly associated with exclusion from basic services and opportunities related to education, health, employment, and social or political participation. In addition, those barriers negatively affect the living standards of people with disabilities and their families and the type of life that this group can enjoy.

People with disabilities and their families face additional direct costs (e.g. for medical treatment), indirect costs (e.g. for informal care), and opportunity costs (e.g. access to employment), which increase their vulnerability to becoming poor or chronically poor. Sen (2005, 2009) has called these two situations an *'earning handicap'* and a *'conversion handicap'*. The first type of handicap is related to the disadvantage confronting people with disabilities in obtaining an income (lack of opportunities in the labour market or a reduction of income because of health problems). A conversion handicap is associated with difficulties in converting income into a good living. In general, people with disabilities not only face disadvantages in obtaining an income that covers their needs, but also have additional and more expensive needs compared with those of people without disabilities. Consequently, people with disabilities and their families appear to be at higher risk of becoming poor and of facing severe levels of deprivation.

Social exclusion from health care, education, employment, and participation are fundamental aspects in the creation of the bidirectional relationship between disability and poverty (Yeo & Moore, 2003). Low levels of nutrition, limited access to preventive health care,

exposure to violence, and low access to sanitation and to clean sources of water are some of the factors that increase poor people's risk of becoming chronically ill. People with impairments face extra costs and barriers in their access to health-care services; they are socially excluded from education and employment and have to assume direct, indirect, and opportunity costs, which negatively affect their income and consumption (Banks et al., 2017; Groce, Kembhavi, et al., 2011; Groce, Kett, Lang, & Trani, 2011; Yeo & Moore, 2003).

Disability has an effect on the types and numbers of opportunities available for people with disabilities, not only on their levels of income. Monetary metrics of poverty do not capture all the effects that direct costs (e.g. medical treatment), indirect costs (e.g. informal care), and opportunity costs (e.g. no access to employment) have on individuals and their families. Indeed, reductions in household income as a result of disability are mostly associated with reductions in the labour income of a person with disabilities and his or her carers. In this context, costs related to medical expenses, technical aids, or equipment are not captured by monetary measures (Kuklys, 2005). Nor do they capture other negative aspects that affect people with disabilities and their families, such as social exclusion. Therefore, it is fundamental to analyse this group's poverty from a multidimensional perspective.

In the past five years the number of studies analysing the levels of multidimensional poverty of people with disabilities has increased (Igei, 2017; Mitra, 2018; Mitra et al., 2013; Pinilla-Roncancio, 2017; Trani, Bakhshi, Myers, Lopez, & Gall, 2015; Trani, Biggeri, & Vincenzo, 2013; Trani & Cannings, 2013; Trani, Kuhlberg, Cannings, & Chakkal, 2016; United Nations (UN), 2018). Most studies have concluded that people with disabilities have higher levels of multidimensional poverty and face a larger number of deprivations compared with people without disabilities. Mitra et al. (2013) is the only study using information from a set of 15 developing countries that compares the levels of multidimensional poverty of people with and without disabilities. Their results revealed that the incidence of multidimensional poverty was higher for people with multiple impairments, and that people with disabilities face higher levels of deprivation in indicators related to education, health expenditure, and employment.

The importance of multidimensional poverty and disability is recognised by the 2030 Agenda on Sustainable Development. On the one hand, target 1.2 establishes that by 2030 countries should reduce by half the proportion of men, women, and children living in poverty in all its dimensions. On the other hand, disability is explicitly mentioned 11 times, people with disabilities are recognised as a vulnerable group, and there is a call to disaggregate data by different subgroups, including people with disabilities (United Nations (UN), 2015). In this

context, the 2030 Agenda is calling for a better understanding of what is multidimensional poverty and how individual characteristics can be a factor increasing the risk of poverty and deprivation of specific groups, including people with disabilities.

Although empirical evidence in the field of disability and multidimensional poverty has increased, there is still a lack of knowledge and understanding of the levels of multidimensional poverty using a comparable measure. In this context, the aim of this article is to use existing data to analyse the levels of multidimensional poverty of people with disabilities and their families in low- and middle-income countries (LMICs), using an international comparable measure of poverty, which is the Global Multidimensional Poverty Index (Global MPI). The article analyses the levels and composition of multidimensional poverty – and of destitution – of individuals living in households with disabled members and compares it with those of people living in households without members with disabilities in 11 LMICs in four regions of the world.

Methodology

Data

Data sources. The main sources of information used for the calculation of the Global MPI are the Demographic Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS). Both sources are national representative surveys which are standardised across countries, and their main objective is to collect information on topics related to fertility, family planning, mortality, reproductive health, child health, child nutrition, and sociodemographic characteristics of household members (ICF International, 2012b; United Nations Children's Fund (UNICEF), 2015). DHS and MICS are nationally representative surveys, with women aged 15–49 and children under five years living in residential households constituting their main target populations. Some DHS data include men aged 15–59. DHS and MICS follow a two-stage probability sampling frame (ICF International, 2012a). In addition to DHS and MICS, the Global MPI uses information from National Household Surveys, such as the *Encuesta Nacional de Salud y Nutrición* (ENSANUT) in Mexico in 2012 and the Quality of Life Survey (*Encuesta de Condiciones de Vida* (ECV)) in Ecuador in 2014.

Selection of the countries. The selection and inclusion of countries depended on whether a publicly available survey included two kinds of data: information on disability, and data on the indicators used to calculate the Global MPI. Given the low number of countries that have

included questions on disability in their DHS, MICS, or other surveys currently used to calculate the Global MPI, it was possible to analyse the levels of multidimensional poverty of people in only 11 LMICs (Algeria, Cambodia, Cameroon, Chad, Colombia, Dominican Republic, Ecuador, Gambia, Mexico, Uganda, and Yemen).

Of those 11 countries, nine have included questions on limitations/difficulties in their DHS. Uganda's and Cambodia's DHS used the set of questions proposed by the Washington Group on Disability Statistics (WG). Algeria's MICS addressed questions on disability to all household members, and in Cameroon and Chad questions on disability were asked at the household level, meaning that the respondent stated whether any household member had a disability, without identifying the member(s) of the household (a document summarizing the questions used in each country is available upon request).

The age groups of individuals whose disability was ascertained differs among surveys; in Cambodia, Ecuador, and Uganda information was collected for individuals aged 5 years or older; in Gambia for members aged 7 to 69 years; and in Mexico for members aged 6 years or older. In the rest of the countries, information was gathered for all household members (Table 1). To reduce age-related incomparability across surveys, we considered a household to have a member with disability if any of its members aged seven years or older lived with at least one difficulty/limitation. The selection of the age group was to avoid difficulties identifying children with disabilities, given that, without the appropriate set of questions, it is not possible to identify children with disabilities (Meltzer, 2016), and the prevalence of disability for children younger than seven may be overestimated.

Finally, although all DHS surveys follow the same sampling framework, in the case of Dominican Republic and Cameroon, questions on disability were posed to a subsample only. For Dominican Republic, half of the sample answered the *health and health expenses* questionnaire (where questions on disability were included); in Cameroon, a 50 per cent subsample answered questions on disability.

Table 1. Surveys used for the analysis

Country	Region	Year	Survey	Level of identification of disability	Range of age	Sample Size
Algeria	North Africa	2012-2013	MICS	Individual	All individuals	147,471
Cambodia	East Asia	2010	DHS	Individual	5 years or older	69,471
Cameroon	Africa	2011	DHS	Household	All individuals	70,882
Chad	Africa	2014-2015	DHS	Household	All individuals	99,542
Colombia	Latin America	2010	DHS	Individual	All individuals	194,161
DR	Latin America	2013	DHS	Individual	All individuals	39,564
Ecuador	Latin America	2014	ECV	Individual	5 years or older	109,694
Gambia	Africa	2013	DHS	Individual	7 to 69 years	49,553
Mexico	Latin America	2012	ENSANUR	Individual	6 years or older	194,923
Uganda	Africa	2011	DHS	Individual	5 years or older	43,508
Yemen	Middle East	2013	DHS	Individual	All individuals	115,743

Disability status. Given the different surveys used for the analysis, it was unfortunately not possible to generate strictly comparable measures of disability. For the purpose of this study, a person was defined as experiencing disability if he or she reported having an impairment/difficulty in any of the categories included in each survey; for example, in the case of Dominican Republic, a person who reported having any of the impairments listed in the survey was considered to be a person with disability. In the cases of Cambodia and Uganda, where severity scales were included, only people who reported having a lot of difficulty or complete inability in at least one activity were classified as people with disabilities, following the recommendations made by the WG (Washington Group on Disability Statistics (WG), 2013). This is equivalent to the definition of disability captured by questions asking only about the existence of an impairment/difficulty, because both types of question capture severe

disabilities (Altman, 2014). Finally, in the cases of Cameroon and Chad, where questions on disability were asked at the household level, a household was classified as having a member with disabilities if the head of the household (or the person responding to the survey) reported that a household member had any of the limitations, impairments, or difficulties listed in the questionnaire.

The resulting data are clearly not strictly comparable, and the lack of a severity scale in many surveys may bias the results (Altman, 2014; Molden & Tossebro, 2010). Given the limited number of sources that include questions on disability, we decided to use the available information for the analysis of the levels of multidimensional poverty of people living in households with and without members with disabilities and provide evidence on the levels of multidimensional poverty for people with disabilities and their households. The aim of this study therefore is not to have the ‘last word’ on disability and multidimensional poverty, but rather to be an early study that paves the way for more extensive and more comparable studies of a similar nature as soon as the data permit.

Due to data limitations, it is only possible to disaggregate national statistics by disability status or by disability status in subnational regions.

The Global Multidimensional Poverty Index (Global MPI) and destitution index

The Global MPI is a comparable index whose main purpose is to measure acute multidimensional poverty in LMICs. It was first presented in the Human Development Report (HDR) in 2010, and it is based on the Alkire Foster (AF) Method (Alkire & Foster, 2011; Alkire, Foster, et al., 2015). The AF method uses a double cut-off: at the first stage people with achievements below a 'deprivation' threshold in each indicator are identified as deprived or non-deprived in that indicator. Then a second cross-dimensional 'poverty' cut-off is applied. This cut-off represents the minimum percentage of weighted deprivations that a person must experience in order to be considered multidimensionally poor (For more details Alkire, Foster, et al., 2015).

The Global MPI was estimated for 104 countries in 2010, and it has been continuously updated since then. This index recognises that poverty is a multidimensional phenomenon, and aspects related to individual capabilities and functionings should be at the centre of the analysis (Alkire & Santos, 2013). The household is used as the unit of identification, and the individual as the unit of analysis; and it includes three dimensions and 10 indicators (Table 2). A person is considered multidimensionally poor if s/he lives in a household whose weighted sum of

deprivations is equal to 33 per cent or higher (Alkire, Roche, Santos, & Seth, 2011). In addition to this multidimensional poverty line, severe (50 per cent) and vulnerable (20 per cent) poverty cut-offs are used to calculate the percentage of people who are severely multidimensionally poor and vulnerable to multidimensional poverty.

The destitution measure identifies people who are deeply deprived in the same indicators included in the Global MPI, but using extreme deprivation cut-offs (Alkire, Conconi, & Seth, 2014). People who are destitute are already MPI poor, but they face more severe levels of deprivation in at least one-third of the dimensions (Table 2).

Table 2. Dimensions and deprivations cut-offs for Global MPI and Destitution measure.

Dimension	Indicator	Deprivation cut-offs Global MPI	Deprivation cut-offs Destitution	Weight
Education	Years of Schooling	No household member aged 10 years or older has completed five years of schooling	No household member aged 10 or older has completed at least one year of schooling	1/6
	Child school attendance	Any school-aged child is not attending school up to the age they would complete class 8	No children are attending school up to the age at which they should finish class 6	1/6
Health	Child mortality	Any child has died in the household in the past five years	Two or more children have died in the family	1/6
	Nutrition	Any adult under 70 years of age or any child for whom there is nutritional information is malnourished in terms of weight for age	Severe undernourishment of any adult (BMI<17) or any children (-3 standard deviation from the median)	1/6
Living Standards	Electricity	The household has no electricity	The household has no electricity	1/18
	Improved sanitation	The household's sanitation facility is not improved (according to MDG guidelines) or it is improved but shared with other households	There is no sanitation facility (open defecation)	1/18
	Safe drinking water	The household does not have access to safe drinking water or safe drinking water is at least a 30-minute walk from home round-trip	The household does not have access to safe drinking water or safe drinking water is more than a 45-minute walk from home round-trip	1/18
	Flooring	The household has a dirt, sand or dung floor	The household has a dirt, sand or dung floor	1/18

Cooking fuel	The household cooks with dung, wood or charcoal	The household cooks with dung, wood or organic waste	1/18
Assets ownership	The household does not own more than one of the following items: radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck	The household has no assets and no car	1/18

Source: Adaptation from ([Alkire et al., 2016](#)).

Robustness test. To explore the robustness of the estimations, in a second stage the levels of multidimensional poverty of households with at least one member with disability seven years or older were computed, using different sets of weights and poverty cut-offs. Also, in the cases of Uganda and Cambodia the levels of multidimensional poverty were computed for individuals reported as living with some difficulty, or a lot of difficulty, and unable to perform in at least one domain of the six included (results available upon request).

General Results

This section presents key results in the analysis of the levels of multidimensional poverty of people living in households with members with disabilities (PHWD). First, the incidence, intensity, and levels of multidimensional poverty are presented, followed by a description of the censored deprivation levels in each of the indicators (these show the percentage of the population who are multidimensionally poor and deprived in each indicator) and the weighted contribution of each indicator and dimension to the Global MPI. Subsequently, the percentage of PHWD who are severely multidimensionally poor and vulnerable to multidimensional poverty are compared with the incidence of MPI among people living in multidimensionally poor households without members with disabilities. Finally, the levels of destitution of people living in households with and without members with disabilities are compared.

Prevalence of disability

Mexico was found to be the country with the highest prevalence of disability: the proportion of people with disabilities was 8.6 per cent (Table 3). When the prevalence of disability was adjusted by age group, we found that in all countries the prevalence of disability was higher among adults older than 65 years, with the lowest prevalence of disability for this group in Algeria (4.1 per cent) and the largest in Mexico, where 38.9 per cent of individuals older than 65 years reported living with disability. Differences in the prevalence of disability

were the results of different types of question used to capture disability status, as for cultural differences regarding the perceptions of what disability means and stereotypes on this topic (Altman & Barnartt, 2006). Although it was estimated that the prevalence of disability would be higher, other studies have found that, when using a similar definition to ours (severe limitation), most low-income countries have a prevalence of disability lower than 10 per cent (Mitra & Sambamoorthi, 2014).

Table 3. Incidence (H), Intensity (A) and MPI for people living in households with and without disabled members

	Household <u>with</u> disabled members					Household <u>without</u> disabled members		
	%	%	MPI	Incidence	Intensity	MPI	Incidence	Intensity
	PWD	PHWD						
Algeria	1.5%	7.5%	0.011**	2.8%**	38.85%	0.005	1.3%	39.1%
Cambodia	5.2%	17.5%	0.136	31.1%	43.9%	0.148	33.4%	44.4%
Cameroon	--	26.2%	0.367**	62.2%**	59.0%	0.310	54.3%	57.1%
Chad	--	19.7%	0.565	89.1%	63.4%	0.549	86.6%	63.4%
Colombia	6.1%	17.7%	0.021*	6.1%	39.9%	0.262	5.2%	41.2%
DR	5.4%	14.6%	0.022	5.3%	42.1%	0.021	5.5%	38.8%
Ecuador	5.9%	16.4%	0.191**	4.9%**	38.6%	0.123	3.2%	38.5%
Gambia	2.7%	16.1%	0.342	62.9%	55.1%	0.32	59.8%	54.3%
Mexico	9.8%	25.4%	0.010	2.8%	38.2%	0.011	2.8%	39.1%
Uganda	4.2%	14.5%	0.398	76.5%**	52.0%	0.361	68.7%	52.5%
Yemen	3.6%	17.9%	.248	48.7%	51.5%	.233	45.2%	50.9%

*Differences between groups are significant at 10% ** significant at 5%. Statistical significance is tested with ttest for continuous variables and Pearson's Chi square test for binary variables.

PHWD: People living in households with members with disabilities. PWD: People with disabilities.

For 10 of the 11 countries included in the analysis, more than 15 per cent of the population lived in a household with at least one person with disabilities, and on average across the 11 countries it was 19.4 per cent. Cameroon had the largest percentage of people living in a household with members with disabilities (26.2 per cent), and Algeria had the lowest percentage (7.5 per cent). Households with at least one member with disabilities had a larger number of members older than 65 years.

Among the 9 countries for which we have individuals' disability status (88% of our total population), 20.4 million persons are themselves living with a disability. When we contextualize disability in the household it is worth recognising that the density is quite high. On average, each person living with a disability shares the household with two persons without a disability. Across countries the average number of persons without a disability who share

their household with a person with disability ranges from a low of 1.6 in Mexico to a high of four persons in Algeria and Yemen, and five persons in the Gambia.

In nine countries where questions on disability were addressed to individuals (excluding Cameroon and Chad), people with disabilities share similar characteristics. They are significantly older, and are more likely to be illiterate or have a lower level of education compared with the national average; they tend not to participate in the labour market; and they tend to live in rural areas and in large households. No differences were found in the prevalence of disability for men and women, and physical impairment was the most prevalent impairment in most countries (this information is available upon request).

Incidence, intensity, and MPI. In Algeria, Cameroon, Colombia, Ecuador, and Uganda the incidence of multidimensional poverty for PHWD was significantly higher than for people living in other households. No significant differences were found in the intensity of multidimensional poverty. Thus, PHWD present higher levels of poverty in five countries (which represent 46 per cent of the population of the eleven countries covered), but the intensity of their poverty is similar to individuals in households without members with disabilities.

Figure 1. Relative differences between the incidence of multidimensional poverty of PHWD and without members with disabilities compared to the National incidence of Multidimensional poverty.

PHWD: People living in households with members with disabilities

Finally, PHWD in Algeria, Cameroon, Colombia, and Ecuador (but not Uganda) have significantly higher levels of MPI compared with people living in other households. A more detailed analysis comparing the incidence of multidimensional poverty of PHWD and people

in households without a member with disability in the 11 countries revealed that in countries with lower multidimensional poverty (e.g., Algeria, Ecuador, and Colombia), the relative differences between the headcount ratios of multidimensional poverty were larger compared with countries with higher multidimensional poverty, such as Chad and Uganda (Figure 1). Therefore, people living in countries with high poverty rates tend to experience less of the disability penalty, because most people (disabled and non-disabled) are multidimensionally poor.

The percentage of PHWD who were vulnerable to multidimensional poverty (meaning that they were deprived in 20 to 33.32 per cent of deprivations) was higher than vulnerability among people living in a household without members with disabilities in nine of the 11 countries analysed, with the exception of Gambia and Uganda where the results the percentage of PHWD vulnerable were lower compared to households without disabled members. In the case of Cambodia, 23.1 per cent of PHWD were vulnerable to poverty, compared with 21.2 per cent for people living in households without members with disabilities, and in Yemen this applied to more than 19 per cent of PHWD. Although this finding reflects that people with disabilities and their families that are not multidimensionally poor also face higher levels of vulnerability to poverty, the difference between groups (PHWD vs. people in other households) was significant only in the case of Colombia, Gambia, and Uganda.

We now turn to the people who are MPI poor and experience deprivation in at least 50 per cent of the dimensions, so experience ‘*severe*’ multidimensional poverty. No significant differences were found in the levels of severe multidimensional poverty between people living in households with and without members with disabilities. Nevertheless, it is important to highlight that in the case of Cameroon and Uganda more than 40 per cent of the PHWD were facing severe levels of multidimensional poverty, and in Chad more than 70 per cent of PHWD were severely poor ($k=50\%$), which is higher than for people living in households without members with disabilities (34% in Cameroon, 37% in Uganda and 70% in Chad). In addition, in the case of Cameroon, Chad, Gambia, and Uganda the percentage of PHWD who were classified as severely multidimensionally poor was more than half of the total percentage of multidimensionally poor people living in households with members with disabilities.

Analysis of the censored headcount ratios for households with members with disabilities showed that *cooking fuel* was the indicator with the highest levels of deprivation (except in Yemen), followed by deprivation in access to *improved sanitation*. In Cameroon, Chad, Gambia, and Uganda, more than 30 per cent of multidimensionally poor PHWD were

classified as deprived in terms of child mortality, and more than 20 per cent in terms of education indicators. In Mexico, Colombia, and Ecuador, most indicators presented similar levels of deprivation, meaning that multidimensionally poor PHWD faced relatively the same composition of deprivations as people living in households without members with disabilities. Detailed results of this analysis are available upon request.

Percentage contribution of indicators to the MPI. In exploring differences in the configuration of the contribution of each indicator to the MPI for PHWD and other households, we found that the situation of PHWD mirrors that of people living in households without disabled members in eight of the 11 countries analysed. For example, in countries with the highest levels of MPI for PHWD (Cameroon, Chad, Gambia, and Uganda) the contribution of each indicator to the MPI for PHWD compared with people living in other households was similar. In Ecuador, Mexico, and Dominican Republic, the contribution of health and education to the MPI was higher for PHWD compared with people in households without disabled members.

Disability and destitution

Comparing the levels of destitution for people living in households with and without disabled members, we find that in eight of 11 countries (except Cambodia, Dominican

Table 4. Incidence of destitution of people living in households with and without disabled members

Country	All households	% with disabled members	CI 95%		% without disabled members	CI 95%	
Algeria	0.25%	0.4%	0.17%	0.68%	0.2%	0.15%	0.32%
Cambodia	9.8%	9.3%	6.7%	11.8%	9.9%	8.7%	11.1%
Cameroon	29.3%	34.1%*	30.6%	37.6%	27.6%	25.5%	29.8%
Chad	62.3%	65.7%	62.0%	69.4%	61.5%	59.4%	63.5%
Colombia	0.8%	0.7%	0.5%	0.9%	0.8%	0.6%	0.9%
DR	0.6%	0.1%	0.0%	0.2%	0.6%	0.3%	0.9%
Ecuador	0.7%	1.1%*	0.8%	1.3%	0.6%	0.5%	0.7%
Gambia	24.5%	27.8%	19.7%	35.8%	23.9%	20.5%	27.2%
Mexico	0.6%	0.6%	0.4%	0.7%	0.6%	0.4%	0.7%
Uganda	29.8%	32.2%	25.4%	39.1%	29.3%	26.3%	32.2%
Yemen	18.7%	21.4%	18.9%	23.9%	18.2%	16.3%	19.9%

*Differences between groups are significant at 5%. Statistical significance is tested with test for continuous variables and Pearson's Chi square test for binary variables.

Republic, and Colombia) PHWD had a higher incidence of destitution compared with people living in households without disabled members. However, those differences were significant in Cameroon and Ecuador only (Table 4).

Destitution and/or living in severe multidimensional poverty. The severity of multidimensional poverty can be measured using an intensity approach or a depth approach (Alkire et al., 2014; Alkire, Roche, Seth, & Sumner, 2015). In the case of disability, it is important to analyse whether PHWD face a larger number of deprivations (intensity approach) or face severe levels of deprivation (depth approach). The results of the analysis revealed that PHWD can be both severely multidimensionally poor and destitute, or destitute without being severely multidimensionally poor, or vice versa. Table 5 presents the percentage of PHWD in each group. It is evident that in countries with a high incidence of severe multidimensional poverty or destitution (e.g. Cameroon, Chad, and Gambia), the percentage of people who were both (severe and destitute) was larger than in other countries.

When these results were compared with those of people living in households without disabled members, it was found that the relative percentage of PHWD destitute and severely multidimensionally poor was significantly higher in Yemen; small sample sizes prevent us discussing other cases, but the proportion appeared to be higher in six of the eleven countries.

Robustness analysis

Aiming to corroborate the robustness of the estimators, we calculate the levels of multidimensional poverty using three different combinations of weights (50 per cent in one dimension and 25 per cent in the other two dimensions) and for different poverty cut-offs. The results were robust for the three combinations of weights, and for poverty cut-off from 25 per cent to 45 per cent, with a Kendal Tau b rank correlation higher than 0.9 in both cases. Therefore, people with disabilities and their families in 10 of the 11 countries have higher levels of multidimensional poverty, with the exception of Cambodia, where people with disabilities had lower levels of multidimensional poverty compared with people living in households without disabled members.

Additionally, the analysis of the levels of multidimensional poverty of people with different levels of difficulty (some difficulty, a lot of difficulty, and 'cannot do it') in Cambodia and Uganda revealed that the results were robust compared with the original results presented in this article, with a Kendal Tau b rank correlation larger than 0.9 in both countries. In the case of Cambodia, persons with some difficulties, a lot of difficulty, or 'cannot do it' difficulties

had lower levels of multidimensional poverty. In addition, an increase in the number and severity of difficulties was associated with higher levels of destitution, and in some cases of multidimensional poverty. However, this result varies depending on the combination of difficulties and the severities of each of them. Finally, in Uganda people with higher levels of difficulty have higher levels of multidimensional poverty and destitution. It is important to note that, given the small sample of each of the subgroups, it is not possible to disaggregate by type of difficulty or to analyse in more detail the relationship between the severity of the difficulty and multidimensional poverty.

Discussion

This article analysed the levels of multidimensional poverty and destitution of people living in households with disabled members in 11 LMICs, in four regions of the world (Algeria, Cambodia, Cameroon, Chad, Colombia, Dominican Republic, Ecuador, Gambia, Mexico, Uganda and Yemen). The main results reveal that in five of the 11 countries people with disabilities and their families face higher levels of multidimensional poverty, and in eight of the 11 countries they also face higher levels of destitution. In addition, countries with higher levels of economic and human development present larger differences in the incidence of multidimensional poverty between households with and without people with disabilities. Also, the contribution of each indicator to the Global MPI was similar for PHWD in comparison with people living in households without members with disabilities in most countries. However, in the case of Ecuador, Mexico, and Dominican Republic the contribution of indicators related to health and education was larger than in other countries.

The 11 countries studied are home to 350 million persons, if aggregated using 2013 population figures. Of these 68 million persons (19% of the combined populations) live in households with a person experiencing a disability. 22% of these people - nearly 15 million - are MPI poor. In the other households, 60 million persons are MPI poor, which represents 21% of their population. But already we can see a stark pattern: one in five persons who are MPI poor across all countries, share their household with a person living with disabilities. This ranges from a low of one in six persons in the Dominican Republic, down to two in five poor persons in Cameroon. This ratio also surprisingly high in Mexico, where 34% of all MPI poor persons share their house with a person living with disabilities.

This is the first article analysing the topic of disability and multidimensional poverty using an internationally accepted comparable measure of multidimensional poverty: *Global MPI* and the household as unit of identification. Contrary to what was expected, people with

disabilities and their families were not in all countries significantly poorer than people living in households without members with disabilities. In countries with more than 80 per cent of the population living in multidimensional poverty (e.g. Chad), no significant differences were found between groups. Thus, people with disabilities and their families faced levels of poverty and deprivation similar to those experienced by other groups. However, this does not mean that disability does not produce a disadvantage, but rather that when analysing acute poverty, the disability penalty was less intense, given that most individuals in the country were multidimensionally poor. By contrast, in countries such as Colombia and Ecuador, where the levels of multidimensional poverty were lower, differences in the levels of multidimensional poverty between groups were significantly higher, suggesting that people with disabilities and their families were more likely to be deprived in basic indicators and were left behind by development strategies. This finding suggests that people with disabilities in more developed countries are left behind by development strategies, suggesting the existence of what in the literature is called *the disability and development gap* (Groce & Kett, 2017) and which was also found in previous studies analysing poverty and disability (Mitra et al., 2013).

The results of this study revealed that people living in households with disabled members faced a configuration of their levels of multidimensional poverty similar to those faced by people living in other households. We expected that PHWD would face higher or more severe levels of deprivation in important indicators such as years of schooling or standard of nutrition. However, the results did not reveal significant differences in levels of deprivation or in the configuration of the percentage contribution to the Global MPI between PHWD and people living in households without persons with disabilities. These findings suggest that even though disability might have a direct effect on other members of a household, this possible effect is not captured by the indicators computed at the household level, which are more likely to hide intra-household inequalities. In addition, this finding can also be associated with the types of indicator included in the Global MPI. Indeed, indications such as employment, labour-market participation, or extra health-care costs must be included in a multidimensional poverty measure. Therefore it is possible to analyse whether deprivation in these indicators increases (or not) the magnitude of multidimensional poverty for people in general, and whether the increase is higher for households with people with disabilities.

This study is subject to three main limitations. First, the percentage of people who reported themselves as living with a difficulty and were categorised as disabled depended on the questions included in each survey, which were not comparable across countries and in some cases did not follow international recommendations or standards. Only Cambodia and Uganda

included the short set of questions recommended by the WG, and although other countries included severity scales (e.g., Colombia), the same activity domains were not used, thus limiting the comparability of the results.

The second limitation affecting the results of this study is a *small sample* problem. In countries such as Dominican Republic, questions on disability were addressed only to a sub-sample of the population sampled for the survey. This had negative consequences for the probability of identifying people with disabilities, and therefore the final percentage of people reporting living with disability is lower than other countries. In addition, if disability is not considered as part of the sampling frame, the prevalence of this condition is underestimated. This issue creates difficulties in obtaining significant results. However, this should not become a barrier to conducting analysis using data on disability and informing policy, especially given the pressure that the Sustainable Development Goals have imposed on governments to disaggregate data on disability, and the lack of knowledge related to the conditions of people with disabilities around the world.

The final limitation, and one of the most important, is the use of the Global MPI. Although the Global MPI is an internationally accepted and comparable measure of multidimensional poverty, the fact that it uses the household as the unit of identification and does not allow the analysis of intra-household inequalities, affects the results and may affect measured levels of multidimensional poverty and deprivation of people with disabilities. In particular, the dimensions and indicators included in the Global MPI may, for reasons of data limitations, omit key deprivations associated with disability. Dimensions such as employment, social participation, and empowerment have been identified as constitutive of poverty for people with disabilities (Inclusion International & Inclusion Interamericana, 2004). Thus, an enhanced MPI for this group should be built using surveys that include indicators on these topics, recognising the specific needs of people with disabilities. In addition, we observe that the Global MPI captures acute deprivations at the household level which in middle-income countries are hardly existent, but which in low-income countries can affect the general population to a similar extent.

To analyse more comprehensively if people with disabilities face higher levels of deprivation, it could be useful to study the intra-household distribution of opportunities and/or to calculate MPIs using the person as the unit of identification, and including appropriate indicators related to access to health care, education, labour markets, and other social opportunities using other datasets. Evidence presented in previous studies mainly used information at the individual level and found that people with disabilities were more likely to

be multidimensionally poor and faced higher levels of deprivation; however, their levels of deprivation for household indicators were not significantly higher (Mitra, 2018; Mitra et al., 2013; Trani et al., 2015; Trani et al., 2013; Trani & Cannings, 2013). Only one previous study using census data from five Latin American countries (Brazil, Colombia, Chile, Costa Rica, and Mexico) and a similar version of the Global MPI (similar indicators with higher deprivation cut-offs) used the household as a unit of analysis (Pinilla-Roncancio, 2017). In contrast to what was found in this article, in the five countries included in that analysis, the levels of multidimensional poverty and deprivations were higher for people with disabilities and their families compared with other groups. One main reason of the differences between the findings of this article and Pinilla-Roncancio (2017) was the use of census data, instead of survey data, which reduces the problem of small samples and increases the power of the sample.

Given the challenge of target 1.2 of the SDGs to reduce poverty by half on all its dimensions, and the need to disaggregate data by disability status, disaggregation by disability should become a standard analysis for all countries. However, it is necessary to ensure that the definitions of disability are comparable between countries and between years. It is also necessary to understand the implications of using measures for which the household is the unit of identification, when disaggregating by disability, given that these measures may not fully reflect the real levels of deprivation and multidimensional poverty that people with disabilities face. In addition, it may be desirable to include in National MPIs dimensions and indicators capturing deprivations in employment, participation, and social inclusion, in order to analyse the levels of deprivation in these important dimensions for people with disabilities versus other groups.

Conclusions

Analysis of the experience of multidimensional poverty of people with disabilities and their families in LMICs is scarce. This article aims to underscore the possibility and importance of disaggregating the Global MPI by disability status. This study found that people living in households with members with disabilities have significantly higher levels of multidimensional poverty in five of the 11 countries analysed, and in eight countries people with disabilities and their families were more likely to be destitute. The findings also suggest that although people with disabilities and their families face higher levels of multidimensional poverty in more developed countries, contrary to what was expected, people with disabilities were not significantly poorer in all countries analysed, and in countries with lower levels of multidimensional poverty (e.g. Colombia, Dominican Republic, and Ecuador) people with

disabilities face significantly higher levels of multidimensional poverty, and therefore they are a group which has been left behind by development strategies and needs special recognition in order to reduce its levels of poverty and vulnerability. Finally, there is a need to continue disaggregating all international poverty measures by disability status. The results of this analysis will provide important evidence concerning disability and multidimensional poverty.

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