The Economic Costs of Exclusion and Gains of Inclusion of People with Disabilities

Evidence from Low and Middle Income Countries

Lena Morgon Banks and Sarah Polack

cbm
together we can do more

International Centre for Evidence in Disability

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

The Economic Costs of Exclusion and Gains of Inclusion of People with Disabilities: Evidence from Low and Middle Income Countries

Authors: Lena Morgon Banks and Sarah Polack, International Centre for Evidence in Disability, London School of Hygiene & Tropical Medicine

Acknowledgements

We are very grateful to CBM for providing the financial support to undertake this work.

We would like to thank Diane Mulligan (CBM), Alex Cote (International Disability Alliance), Christiane Noe (CBM), Jessica Glencairn-Campbell (LSHTM) and Hannah Kuper (ICED/LSHTM) for their input and for reviewing the report. Additionally, we would like to thank John Munyi, Rosemary Nzuki and Nicholas Njoroge (all CBM Kenya) for the case studies and Iris Bothe (CBM) for access to the pictures included in this report.

Photographs have been obtained with informed consent and permission to use in this publication.

Accessible versions of all tables/figures are available upon request.

Contact details:

Lena Morgon Banks: morgon.banks@lshtm.ac.uk

Sarah Polack: sarah.polack@lshtm.ac.uk

ABOUT THE REPORT

This report is formed of two parts:

PART A - Systematic Review on Disability and Economic Poverty:
This section presents a systematic review of the literature on the relationship between disability and economic poverty.

PART B - Economic Costs of Exclusion and Gains of Inclusion.
This section explores the economic consequences of the exclusion and inclusion of people with disabilities in the areas of education, employment and health. The key pathways through which these economic costs may arise are discussed and studies that have attempted to quantify the financial impacts are reviewed.

Contents

Executive Summary

With the landmark passing of the United Nations' *Convention on the Rights of Persons with Disabilities* (UNCRPD), ratifying countries pledged to promote the full inclusion of people with disabilities in all areas of society.[1] However, many nations have struggled to make significant progress in implementing the commitments set forth by the Convention. Consequently, people with disabilities are still experiencing persistent inequalities on almost all indicators of social, political, cultural and economic participation compared to the rest of the population.[2]

The extensive exclusion of people with disabilities from society is indefensible from a human rights and social justice perspective. However, while this may be widely acknowledged, there is a common perception that inclusive interventions are not financially feasible particularly in the resource-constrained settings of many low and middle income countries (LMICs).

Although the human rights case alone is sufficient to necessitate action, there is also evidence that promoting inclusion of people with disabilities is beneficial from an economic standpoint. Some individual studies have estimated the costs of exclusion and potential gains from inclusion in areas such as work or education, however a comprehensive economics-based argument has not been extensively detailed.

This report seeks to explore the potential pathways through which exclusion of people with disabilities may generate economic costs to individuals, their families and societies at large. Additionally, potential economic gains that may be realised through inclusion are investigated.

This report is divided into two parts:

- **Part A** presents the results of a systematic review on the association between disability and poverty in LMICs. Although there is a strong theoretical basis for poverty and disability being linked, empirical support is lacking. As poverty is an overarching indicator of exclusion, investigating its association with disability is important in establishing the empirical evidence base on the extent and scope of economic marginalization of people with disabilities.
- **Part B** summarizes evidence of exclusion and barriers to inclusion of people with disabilities in the areas of health, education and work/employment. The pathways through which costs may be incurred by individuals, their families and society from exclusion of people with disabilities in these domains are then detailed with supporting evidence where available.

Part A: Main Findings of Systematic Review on Disability and Poverty

Eight electronic databases were searched for epidemiological studies that provided a measure of association between disability and economic poverty in LMICs. Disability was defined in line with the International Classification of Functioning, Disability and Health (ICF)[3] and studies focussing on both general functioning as well as specific disability types (e.g. vision, hearing, intellectual) were included. Poverty was restricted to economic measures, namely income, assets and per capita expenditure.

In total, 97 epidemiological studies from LMICs that examined the relationship between disability and poverty were included in the systematic review.

- The majority of studies (78 of 97, 80%) found a positive, statistically significant association between disability and economic poverty.
- This relationship was found across age groups, location, disability types and study designs.
- For studies that also measured the relationship between disability and unemployment, 12 of 17 (71%) found a statistically significant, positive relationship.

With 80% of studies reporting a link between poverty and disability, the results of this systematic review provide a robust empirical basis to support the theorized disability-poverty link.

Part B: Main Findings on Economic Costs of Exclusion and Gains of Inclusion of People with Disabilities

Part B focuses on education, work/employment and health; three key life areas in which people with disabilities experience widespread exclusion as a result of physical, attitudinal, financial and policy barriers.[2] Below, the pathways of economic impact from exclusion/inclusion are summarized, along with supporting studies providing estimates of the costs/gains.

1. Education

<u>Pathway 1: Earnings and labour productivity</u> – Exclusion from education may lead to lower employment and earning potential among people with disabilities. Not only does this make individuals and their families more vulnerable to poverty, but it can also limit national economic growth.

- In Bangladesh, reductions in wage earnings attributed to lower levels of education among people with disabilities and their child caregivers were estimated to cost the economy US$54 million per year.[4]

However, promoting inclusion can lead to substantial gains:

- In Nepal, the inclusion of people with sensory or physical impairments in schools was estimated to generate wage returns of 20%.[5]

- In China, estimates indicated each additional year of schooling for people with disabilities lead to a wage increase of 5% for rural areas and 8% for urban areas.[6]
- Education can close the poverty gap between people with and without disabilities: across 13 LMICs, each additional year of schooling completed by an adult with a disability reduced the probability by 2-5% that his/her household belonged to the poorest two quintiles.[6]

Pathway 2: Non-employment costs and benefits – Increasing access to education can also have positive impacts in areas such as crime, control of population growth, health, citizen participation and gender empowerment, which in turn have financial and social consequences.

2. Work/Employment

Pathway 1: Individual earnings and household income - Exclusion from work/employment of people with disabilities may lead to lower income due to disproportionately high levels of underemployment/unemployment as well as lower pay-scales for performing the same work as individuals without disabilities.[2] In addition to challenges accessing formal employment, people with disabilities also face barriers to informal work and self-employment, due, for instance, to exclusion from micro-credit schemes.[7] Finally, caregivers may forgo work opportunities to assist family members with disabilities.

- In Bangladesh, estimates indicated that exclusion of people with disabilities from the labour market results in a total loss of US$891 million/year; income losses among adult caregivers adds an additional loss of US$234 million/year.[4]
- In Morocco, lost income due to exclusion from work was estimated to result in national level losses of 9.2 billion dirhams (approximately US$1.1 billion).[8]
- In South Africa, lost earnings averaged US$4,798 per adult with severe depression or anxiety disorder per year (about half of GDP per capita) totalling US$3.6 billion when aggregated to the national level.[9]

However, inclusion could lead to substantial gains:

- In Pakistan, it was estimated that rehabilitating people with incurable blindness would lead to gross aggregate gains in household earnings of US$71.8 million per year.[10]

Pathway 2: Labour productivity and contribution to GDP - Excess unemployment among people with disabilities, combined with unaccommodated attitudinal, physical and communication barriers that lead to lower job productivity, can affect the GDP of a country:

- Metts (2000) calculated that economic losses from lower productivity among people with disabilities across all LMICs amounted to between US$473.9-672.2 billion a year.[11]

- Buckup (2009) estimated that costs from lower labour productivity amounted to approximately 1-7% of GDP in 10 LMICs.[12]
- Smith (1996) et al calculated global annual productivity cost of blindness was $168 billion in 1993.[13]
- Frick et al (2003) estimated that globally, unaccommodated blindness and low vision cost $42 billion in 2000. Including productivity loss from caregivers of blind individuals increased the total by $10 billion.[14]

Pathway 3: Impact on social assistance spending and tax revenue – Inclusion of people with disabilities in work/employment can lead to greater economic self-sufficiency. Consequently, fewer individuals may require social assistance (in countries where it is available), decreasing overall demand on often financially-strapped programmes. Additionally, increasing labour force participation of both people with disabilities and their caregivers increases a country's potential tax base, which could increase government revenue. For example:

- In the Philippines, it was estimated that excess unemployment among individuals with unrepaired cleft lip and palate cost the government between US$8-9.8 million dollars in lost tax revenue.[15]

Although other studies in LMICs are lacking, data from supported employment projects in Scotland suggest that every £1 spent on the programme led to a savings of £5.87 due in large part to decreased need for disability/welfare benefits and increased tax income.[2, 16]

Pathway 4: Profitability for businesses – While empirical evidence in LMICs is lacking, companies in high income countries have found that employees with disabilities have greater retention rates, higher attendance and better safety records and matched productivity compared to employees without a disability.[17, 18] These savings can generate substantial gains:

- In the US, concerted efforts by major companies Walgreens and Verizon to employ significant numbers of people with disabilities saw gains such as a 20% increase in productivity and a 67% return on investment, respectively.[19, 20]

3. Health

Although empirical or modelling data on the economic impact of exclusion of people with disabilities in health is particularly lacking, the following represent theoretical pathways through which costs or gains may be realised:

Pathway 1: Spiralling medical costs and the poverty cycle – Inability to access and receive appropriate timely health care may result in continuously poor or worsening levels of functioning among people with disabilities – including the development of additional disabling conditions – that lead to higher personal and societal medical and productivity costs in the long term.[21, 22]

Pathway 2: Impact on public health interventions – Failure to include people with disabilities in public health interventions can impede the effectiveness and efficiency of these programmes. Further, as a result of exclusion, people with disabilities may experience avoidable medical/productivity costs and

governments may end up spending more in parallel care and treatment programmes for preventable health conditions.

Pathway 3: Downstream effects of poor health – Poor health can have negative consequences for both education and employment.[23] For example, consistently poor health can lead to low educational attainment, which in turn is strongly linked to lower lifetime earning potential. Additionally, poor health can decrease job productivity, and if persistent, can lead to job losses or forced reduction in hours.

However, efforts to improve the health status of individuals with disabilities can lead to greater participation in employment and education, resulting in economic gains:

- In China, a randomized control trial involving individuals with schizophrenia found that those who received individualised family-based interventions (consisting of counselling and drug supervision) worked 2.6 months more per year than those who did not receive the treatment.[24]
- In Bangladesh, children who were provided with assistive devices (hearing aids or wheelchairs) were more likely to have completed primary school compared to those who did not receive any supports.[25]

Conclusion

With 80% of studies reporting a link between poverty and disability, the results of the systematic review provide a robust empirical basis to support theorized disability-poverty cycle. As an estimated 15% of the global population live with a disability,[2] neglecting to make poverty alleviation and development programmes disability inclusive bars access to a substantial proportion of the population, significantly limiting their potential and propagating inequalities.

This report describes the pathways to economic impact of exclusion and inclusion across the areas of education, work/employment and health at the individual, family and societal level. While the theoretical basis to support these pathways is strong – backed by several epidemiological and modelling studies – further empirical research is urgently needed to understand the extent, magnitude and scope of exclusion costs and the impact of inclusive interventions.

From a human rights and social justice perspective, the widespread exclusion of people with disabilities from society is unequivocally unacceptable. The evidence presented in this report, emphasises that exclusion is also untenable from an economic perspective: not only does exclusion create a significant economic burden for individuals and their families, but it can also carry substantial costs to societies at large.

INTRODUCTION

According to recent estimates, about 15% of the global population has a disability, amounting to more than 1 billion people.[26] People with disabilities have a right to inclusion in all aspects of society on an equal basis with others. This is highlighted by the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) which more than 147 countries have now ratified.[1] However, the exclusion of people with disabilities remains widespread; people with disabilities frequently experience substantial inequalities in their participation in all areas of society including in access to education and work opportunities and potentially health care.[2]

Economic consequences of exclusion and inclusion

The goal of inclusion of people with disabilities in all aspects of society is essential from a human rights perspective and is necessary in achieving many development targets including a number of the Millennium Development Goals.[27, 28] There are also important economic consequences associated with the exclusion and inclusion of people with disabilities, although these are not well explored.

Creating inclusive societies inevitably requires some financial input, which could pose a challenge particularly in resource poor settings. However, not making efforts to promote inclusion is arguably more costly: there are thought to be significant economic costs associated with the on-going exclusion of people with disabilities. Exclusion of children with disabilities from education for example, can generate costs to individuals, families and societies through limiting work opportunities and subsequent lifetime earning potential. On the flip side, the potential economic gains from inclusion may be substantial and outweigh the costs in the long term. Further, the actual costs of inclusion if implemented effectively are reported to be lower than they are often perceived to be.[2]

Measuring economic costs of exclusion and gains of inclusion of people with disabilities is methodologically challenging. Some efforts have been made to quantify these costs[11, 12, 29] however these have not been comprehensively reviewed. In this report we explore the key pathways through which economic costs of exclusion and inclusion of people with disabilities may arise and review studies that have attempted to quantify the financial impacts. We focus on the three key life areas of health, education and work.

Poverty and Disability

Integral to understanding the economic implications of exclusion and inclusion is the relationship between poverty and disability. Poverty and disability are believed to be cyclically related, each re-enforcing the other (see figure 1). This cyclical relationship has a strong theoretical basis. Conditions associated with poverty such as lack of access to health care, water and sanitation and education, poor nutritional status and poor living conditions, increase the risk of disability.[30, 31] In turn, people with disabilities are more likely to be excluded

from education and work and may incur additional health care costs, which further exacerbates poverty.[2, 32, 33]

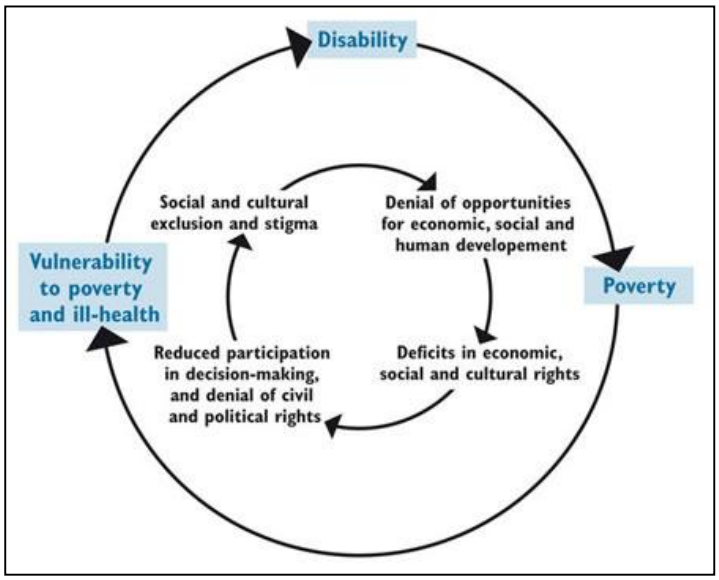


Figure 1 *– Poverty and Disability cycle. Adapted from the UK Department of International Development (www.endthecycle.org.au)*

While the theoretical basis for this argument is strong, the evidence base for the association is less clear. Typically, a small set of statistics are routinely cited – for example, that people with disabilities are twice as likely as people without disabilities to be living in poverty – though the empirical support behind such assertions is generally lacking.[31, 34]

Additionally, several recent reviews that have explored the relationship between disability and poverty have shown a need for further research in this field to both substantiate and describe linkages that are increasingly being recognized as more complex and nuanced than previously assumed. For example, in their critical review on poverty, health and disability in LMICs, Groce et al (2011) conclude that, while there is some strong indication of impact, the evidence base is relatively weak with a limited number of robust studies explicitly demonstrating an association.[34] This review raises important questions on the strength of evidence and highlights the need for further work in this area; however as acknowledged by the authors, it was a non-systematic review and it identified a relatively limited number of studies. In a review on childhood disability and home socio-economic circumstances in LMICs, Simkiss et al (2011) similarly found that quantitative evidence of an association was inconclusive and inconsistent.[35] However, only general terms for disability were used in the search strategy, thus potentially excluding many relevant studies.

To build on this base, we have undertaken a systematic literature review of the epidemiological studies which assess the association between disability and financial poverty in LMICs.

Box 1 *What is disability?*

The World Health Organisation International Classification of Functioning, Disability and Health (ICF) is a bio-psychosocial model of disability that incorporates health conditions, functional impairments, activity limitations and participation restrictions as well as the environment. Using this framework, the United Nations Convention on the rights of Persons with Disability[1] defines disability as "long-term physical, mental, intellectual or sensory impairments which, in interaction with various barriers, may hinder [a person's] full and effective participation in society on an equal basis with others". These frameworks and definitions of disability will be adopted for the purposes of this report.

PART A: Systematic Review on Disability and Economic Poverty

Overview

Poverty and disability are believed to operate in a cycle, with each re-enforcing the other. While the theoretical basis for this argument is strong, the evidence base supporting this association has been lacking. To address this gap in knowledge, Part A presents the results of a systematic review that was conducted to further explore and describe the link between disability and economic poverty in low and middle income countries.

1 METHODS

1.1 Search strategy

In total, eight electronic databases, relevant to the topic of disability and development, were searched in November 2013: EMBASE, PubMed, MEDLINE, Global Health, Web of Knowledge, Academic Search Complete, FRANCIS and EconLit. Additionally, references of relevant review articles were checked to identify additional potential sources.

Search terms for poverty, disability and low and middle income countries (LMICs) were identified through MeSH/Emtree as well as from those used for systematic reviews on similar topics.

Given its multidimensional and complex nature, measuring disability is challenging. In this review we included studies that assessed disability broadly (e.g. through self-reported functional or activity limitations) as well as studies that focussed on specific impairments or disorders (vision, hearing and physical impairments, intellectual disability and mental disorders) measured using standardised tools or clinical measures. Medical conditions such as stroke or heart disease that often – but not always – result in disability were not included in this definition.

We focussed on economic measures of poverty, namely income, expenditures and/or assets, as well as socioeconomic status if it included at least one of these indicators. LMICs were identified using the World Bank's classifications. (See Appendix A for sample search string)

For the initial search, limits were placed so only English-language titles were retrieved. Publication type was set to exclude non-academic sources, such as editorials and newspaper articles. To focus results on more recent trends, date of publication was restricted to 1990-November 2013.

1.2 Inclusion/exclusion criteria

Since the purpose of this review focused on the published evidence for a relationship between poverty and disability in LMICs, only papers involving all three of these topics were included. Papers exploring both directions of association between poverty and disability, as well as those in which the directionality was not evident, were included in the final sample.

Any study with an epidemiological design was eligible for inclusion; anecdotal narratives, review articles and case reports were therefore excluded. Only studies with comparison groups (i.e. to allow comparison of people with disabilities to people without disabilities) were included and no restrictions concerning population characteristics and study size were applied.

1.3 Study selection

Articles were screened by one reviewer (LMB), first by titles, then abstract and then finally by full paper to determine eligibility. In the event of indecision, the screener asked for the opinion of a second reviewer (SP). Furthermore, every 100th abstract was dually reviewed by SP to check for agreement.

Full-text studies that met the inclusion criteria were then assessed for risk of bias independently by the two reviewers (see Appendix B for quality assessment criteria); studies that ranked poorly were excluded from the final sample.

1.4 Data extraction and analysis

Data extracted from the final selection of articles included: research methods used (study design, means of assessing poverty/disability), setting (country, site of recruitment), population characteristics (disability type, gender and age) and the primary research outcome (measure of association between disability and poverty). In addition, although terms for employment were not included in the search strategy, the association between disability and employment status was recorded as a secondary outcome measure for the studies that conducted these analyses. . All extracted values were checked by the second reviewer (SP) to ensure accuracy.

2 RESULTS

2.1 Selection of final sample

Database search results yielded a total of 10,547 records. Removing duplicates and restricting date of publication from 1990-present narrowed the field to 6,079, of which 4,907 and 980 records were excluded in the title and abstract screening, respectively. The full-texts of 192 articles were then assessed for inclusion. After 100 were deemed ineligible, 2 untraceable and an additional 7 gathered from other reviews, a final sample of 97 studies was attained (*see Figure 2*).

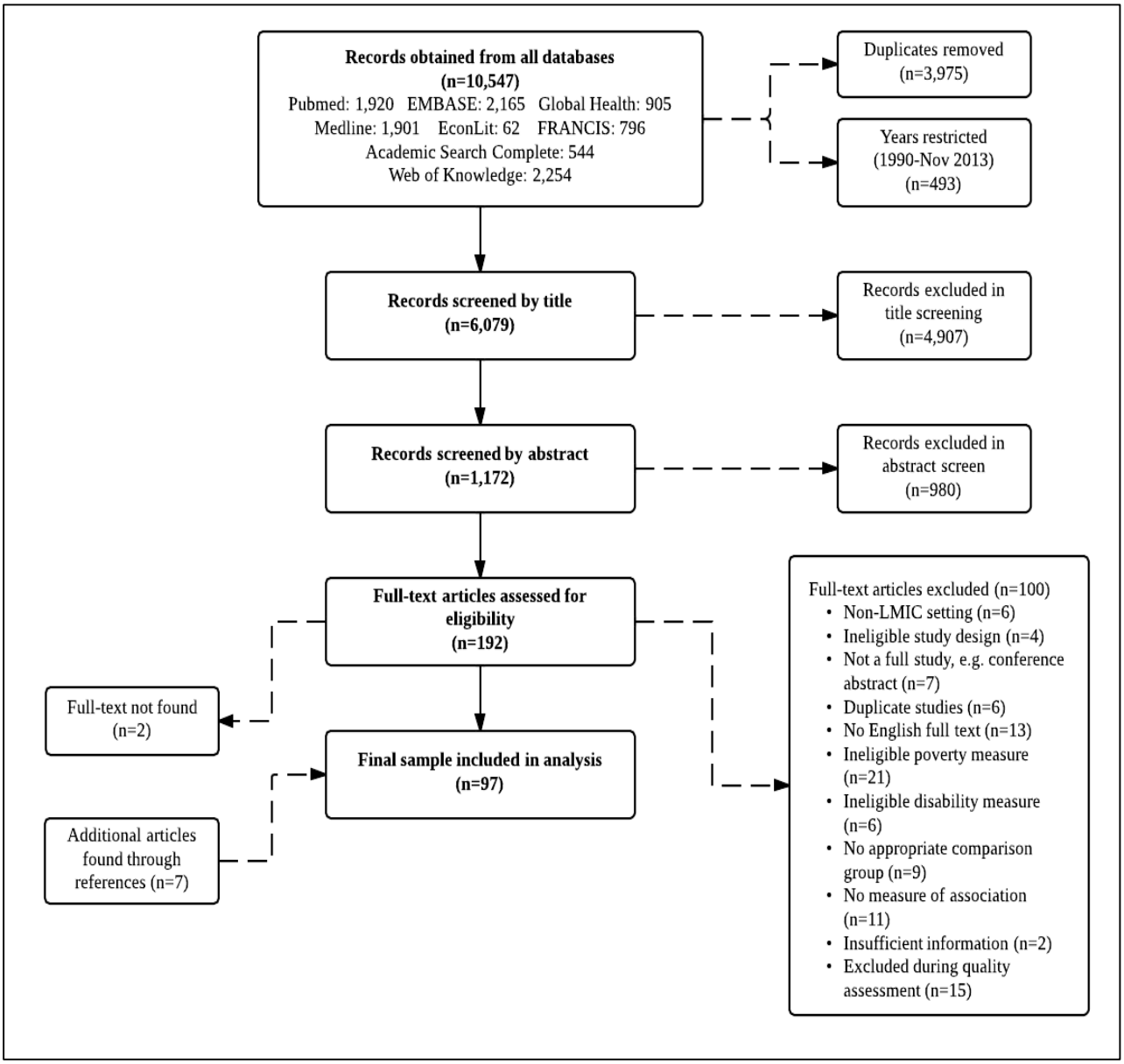


Figure 2: *Flowchart of search results*

2.2 Overview of study characteristics

2.2.1 General

As can be seen in Figure 3, most of the included studies (over 80%) were published from the mid-2000s onwards.

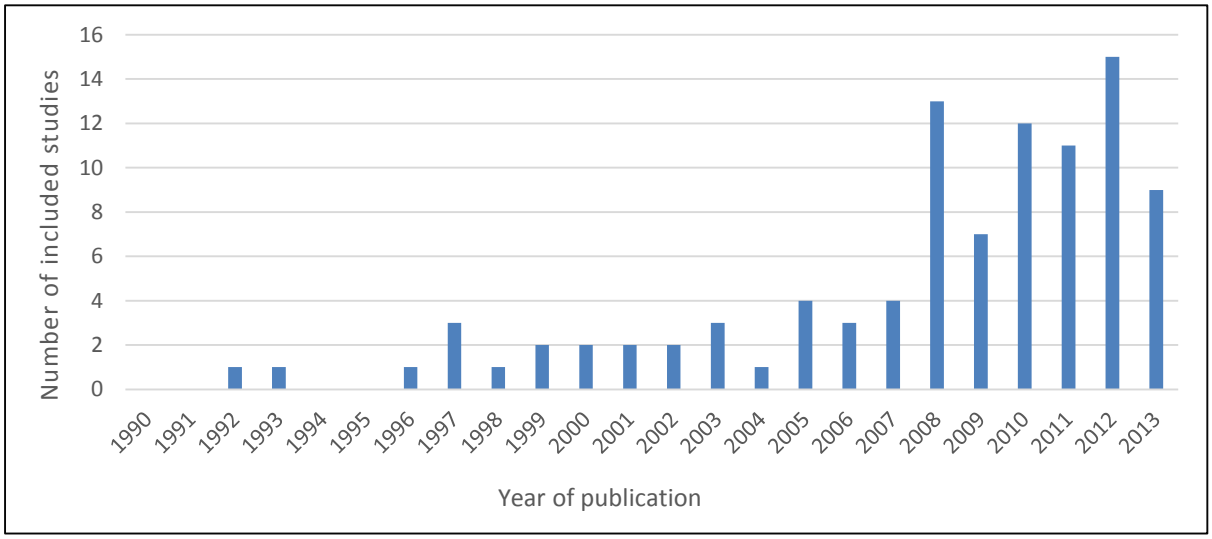


Figure 3: *Number of included studies by year of publication*

By region of study location,[a] the following frequencies were observed: Latin America/Caribbean (n=27; Brazil n=22), East Asia/Pacific (n=20; China n=16), Sub-Saharan Africa (n=19), South Asia (n=19; India n=12), Middle East/North Africa (n=8) and Europe/Central Asia (n=2). Of note, over half of included studies were conducted in China, India or Brazil. In addition, six studies performed global multi-country studies.

Concerning study design characteristics, the vast majority (n=86, 88%) were cross-sectional studies. The remainder were comprised of six case-control and five cohort studies. Most studies recruited participants from the general population (n=79, 81%), while hospitals (n=9), schools (n=9) and microcredit programmes (n=1) were utilized for the rest. Almost all studies (n=88, 91%) performed multivariate analyses to control for potential confounding. In terms of the age groups of the study populations, 35 studies included older adults only (36%), 35 included adults only (36%), 19 included children/adolescents only (19%) and 10 included participants of all ages (11%).

2.2.2 Measures of poverty

As this review focused on the relationship between financial poverty and disability, only studies that used economic means of assessing poverty were included. Income was the most frequently used indicator for poverty, employed in 59 of 97 studies (61%). Most of these studies reported total or per capita family/household income, while a small number reported individual or household head income, satisfaction with income and change in income over the life

[a] Regions divided according to World Bank classifications.[36] Additionally, some studies are repeated in multiple categories if included less than five countries in the analysis (otherwise they are considered global multi-country).

course. SES was the second most common economic measure (n=34). Studies deriving a composite score/index from multiple socio-economic indicators were termed as using a SES measure of poverty. The majority of SES indices were based on ownership of assets and household characteristics (n=17) while some included other more multidimensional such as education, occupation, income, sanitation facilitates and use of services. A smaller number of studies collected data on per capita expenditure (n=6), asset ownership (n=5) and self-rated wealth (n=2). Although a small proportion of studies relied on qualitative assessments of poverty (e.g. perception of wealth as good/average/poor), the majority (89 of 97) gathered quantitative data.

2.2.3 Measures of disability

The majority of studies (n=82, 85%) focussed on specific impairment types and most used clinical examinations or standardised, objective assessment tools. However, some studies (n=15) used indicators such as activity or functional limitations that are more in line with broader definitions of disability.

Mental disorders (n=40) were the most frequently assessed disability type[b], followed by intellectual/cognitive impairments (n=23). Reported functional limitations/general disability (n=18), sensory impairments (n=15) and physical impairments (n=8) comprised the remainder.

2.3 Overview of study outcomes

2.3.1 Association between disability and poverty

The main outcome of interest in this systematic review was the association between disability and poverty. In classifying study outcomes, the following definitions were used:

> **Positive association:** the disability measured was statistically significantly more common among poorer compared to wealthier economic groups OR people with disabilities were significantly poorer compared to people without disabilities.
>
> **Negative association:** the disability measured was statistically significantly less common among poorer compared to wealthier economic groups OR people with disabilities were significantly richer compared to people without disabilities.
>
> **No association:** no statistically significant difference was observed in disability prevalence between economic groups OR no significant difference in poverty was observed between people with and without disabilities.

Statistical significance after adjusting for confounding (for studies employing multivariate analyses) was used for reporting on these associations.

[b] Three studies reported separate associations for several disability types so the total does not add to 97.

Overall, the vast majority of studies (n=79[c], 81%) found evidence for a positive relationship between disability and poverty. Of these, the majority 60 (76%) found that all the associations between disability and poverty measured were statistically significant (19 found mixed significance). The remainder was comprised of 15 studies (16%) that found no significant association and three (3%) that found a negative relationship. The study findings for each of the different disability types are summarised below (tables 1-5).

2.3.1.1 Sensory impairments

Fourteen studies assessed the relationship between sensory impairments and poverty (see Table 1).

For the eleven studies on visual impairment, eight found evidence of a positive association with poverty. This difference was statistically significant for at least one indicator measured in all of these eight studies (two were mixed significance). Additionally, one study found a negative, significant trend, indicating school children with myopia were more likely to be from higher income families. Finally, one study – the only one which performed only a bivariate analysis – found no significant association between visual impairment and poverty.

Only three studies examined the association between hearing impairment and poverty, all of which found a significant, positive relationship.

2.3.1.2 Physical impairments

Eight of the included studies evaluated the link between poverty and physical impairment (see Table 2). Six of these studies found evidence of a positive association on at least one measure (two studies reported mixed significance). The remaining two studies found no significant difference in poverty level between people with and without a physical impairment

2.3.1.3 Intellectual disability and cognitive impairment

Twenty-three studies on poverty and intellectual/cognitive impairments were included in the final sample (see Table 3).

The majority of studies (13 of 23) focused on older adults and measured either dementia (n=7) or cognitive impairment (n=6). Seven studies found a positive link between poverty and impairment, of which one was of mixed significance. Additionally, six studies found no significance after adjustment for confounders.

Nine studies were conducted in children (including adolescents and infants) and measured developmental delay (n=5), intellectual disability (n=3) or ADHD (n=1). Eight of these studies found a positive association linking poverty and impairment (one mixed significance) and one found no significant association.

[c] Three studies reported on several disability types and their results have been separated into the appropriate categories. After this disaggregation, 84 of 103 (82%) found a positive association, 16 found no association and 3 found a negative association.

Only one study assessed intellectual disability across all ages, finding a significant positive association with poverty.

2.3.1.4 Reported functional limitations and general disability

Eighteen studies reported on the relationship between poverty and either reported functional limitations or general disability (see Table 4).

For reported functional limitations/general disability, 16 found a positive association with poverty for at least one measure (6 mixed significance); the remaining two studies found no difference in poverty between people with and without disabilities. All studies on general disability found a positive association with poverty. This observed relationship was consistently significant in three studies, mixed in three and non-significant in one.

2.3.1.5 Mental disorders

Forty studies assessed the relationship between poverty and mental disorders (see Table 5). The vast majority (n=35) used a multivariate approach for their analyses. Mental disorders were separated into depression (n=16), common mental disorders (n=9) and other (n=15).

For depression, 12 found a positive association (11 consistently significant, 1 mixed significance). In the other studies, one reported a significant negative relationship (in a bivariate analysis) and five found no association. Most of these studies were conducted in older adults (n=10), but no discernible differences in trends of association were noted between age groups. The relationship between common mental disorders and poverty was positive and significant for all nine studies. For other mental disorders, thirteen found a positive association (five mixed). One study found no evidence of an association and the remaining study found a significant negative relationship between poverty (measured through per capita expenditure) and psychiatric disorders.

Table 1: *Summary of studies examining sensory impairments and poverty*

Citation	Study design	Study location	Rural/ urban	Age group	Disability specifics and measure	Economic measure	Multivariate/ bivariate analysis	Overview of results	Summary of poverty and disability association	Summary disability and employment association
VISION										
ALL AGES										
Ataguba et al (2011)*[37]	CS (population -based)	South Africa	Both	All ages	VI (self-reported)	SES	Multivariate	Prevalence of VI was disproportionately concentrated among lower SES quintiles (p<0.01)	Positive	–
Dandona et al (2000)[38]	CS (population -based)	India	Both	All ages	Blindness, visual impairment due to ocular trauma (CE, blindness VA<6/60, VI: VA<6/12 in best corrected eye)	SES	Multivariate	Higher prevalence of blindness among low/lowest compared to middle/upper SES groups; aOR=3.74 (95% CI: 1.18–11.84). Same trend for VI, but not significant	Positive, but only significant for blindness, not for VI	–
Dandona et al (2001)[39]	CS (population -based)	India	Both	All ages	Blindness (CE, VA <6/60)	SES	Multivariate	Increasing prevalence of blindness with worsening SES (p<0.0001); Upper vs extreme lower SES: aOR= 9.72 (95% CI: 2.30–41.0)	Positive	–
Dandona et al (2002)[40]	CS (population -based)	India	Urban	All ages	Moderate VI(CE, VA<6/18-6/60)	Income	Multivariate	Increasing prevalence of blindness with worsening SES (p=0.002): Upper vs extreme lower: 3.03 (95% CI: 1.78 - 5.17)	Positive	–
CHILDREN										
You et al (2012)[41]	CS (school-based)	China	Urban	Children	Myopia (CE, ≤1.00 diopters in worse eye)	Income	Multivariate	Prevalence of myopia in school-attending children increased with increasing parental income (p<0.001, in univariate/multivariate analysis)	Negative	–
ADULTS										
Emamian et al (2011)[42]	CS (population -based)	Iran	Urban	Adults	VI (CE, 0.3 LogMAR in better eye)	SES	Multivariate	Prevalence of VI increased with worsening SES (high: 3.6%, medium 7.5%, low 11.1%; p<0.001)	Positive	–
Emamian et al (2013)[43]	CS (population -based)	Iran	Urban	Adults	Near VI (CE, ≥1.6 M in better eye)	SES	Multivariate	Prevalence of VI increased with worsening SES (highest vs lowest:OR=3.05 (95% CI: 2.55-3.65), aOR=1.49 (1.20-1.86); highest vs. medium: OR=1.87 (1.55-2.26), aOR=1.2 (0.99-1.46)	Positive	–
Zainal et al (1998)[44]	CS (population -based)	Malaysia	Rural	Adults	VI (CE, VA<6/18)	Income	Bivariate	Mean level of income was not significantly differently between adults with and without VI	No significant association	–
OLDER ADULTS										
Cockburn et al (2012)[45]	CS (population -based)	South Africa	Urban	Older adults	Vision impairment (CE, VA <6/18)	SES	Multivariate	Prevalence of VI increased with decreasing SES (aP<0.001); poorest to wealthiest SES tertile: OR= 4.5 (95% CI: 1.3-3.9); aOR=3.9 (95%CI: 2.2-6.7)	Positive	–

Kuper et al (2008)[46]	CC (population -based)	Kenya, Philippines, Bangladesh	Both	Older adults	VI due to cataract (CE, VA<6/24 in better eye)	1. PCE 2. SES 3. Self-rated wealth	Multivariate	Increasing prevalence of VI with worsening PCE (test for trend of aORs: Kenya p=0.006, Bangladesh p=0.06, Philippines p=0.002); people with VI were more likely than people without VI to be in the lowest (poorest) quartile of PCE rather than highest (Kenya: aOR= 3.2, 95% CI: 1.2–8.8; Bangladesh: aOR=1.7 95% CI: 1.0–3.0; Philippines: aOR=2.4, 95% CI: 1.2–4.7); Same pattern for SES index and self-rated wealth	Positive	–
Ploubidis et al (2013)[47]	CS (population -based)	Kenya	Both	Older adults	VI (CE, VA<6/18 in better eye with available correction)	Assets	Multivariate	Older adults with VI owned significantly fewer assets than older adults without VI in rural areas; no significant difference in urban areas.	Positive, mixed association	–
HEARING										
Ataguba et al (2011)*[37]	CS (population -based)	South Africa	Both	All ages	Hearing impairment (self-reported)	SES	Multivariate	Prevalence of hearing impairment was disproportionately concentrated among lower SES quintiles (p<0.01)	Positive	–
Béria et al (2007)[48]	CS (population -based)	Brazil	Urban	All ages	Disabling hearing impairment (CE, ≥41 dB (age ≥15 years), ≥31 dB (<15 years) in better ear)	Income	Multivariate	Prevalence of disabling hearing impairment was higher among individuals with incomes below US$200 compared to those above this threshold (OR =1.55; aOR=1.56 (95% CI: 1.06-2.27))	Positive	–
Taha et al (2010)[49]	CS (school-based)	Egypt	Both	Children	Hearing impairment (CE, ≥20 dB)	SES	Bivariate	Children with hearing impairment more likely to be in moderate/low SES group compared to high (p<0.05)	Positive	–

Study design abbreviations: CS=cross-sectional, CC=case control; Means of assessment abbreviations: CE=clinical evaluation, VI=visual impairment, VA=visual acuity, dB=decibel; Economic measure abbreviation: SES=socioeconomic status, PCE=per capita expenditure, GNP=gross national product; Overview of results abbreviations: OR=odds ratio, aOR=adjusted odds ratio, CI=confidence interval; *study is repeated in more than one category (results have been disaggregated by disability type)

Table 2: *Summary of studies examining physical impairments and poverty*

Citation	Study design	Study location	Rural/ urban	Age group	Disability specifics and measure	Economic measure	Multivariate/ bivariate analyses	Association between disability and poverty	Summary of poverty and disability association	Summary disability and employment association
ALL AGES										
Ataguba et al (2011)*[37]	CS (population-based)	South Africa	Both	All ages	Physical impairment (self-reported)	SES	Multivariate	Prevalence of physical impairment was disproportionately concentrated among lower SES quintiles (p<0.01)	Positive	–
Lin et al (2013)[50]	CS (population-based)	China	Both	All ages	Physical impairment caused by road traffic accidents (CE, ICF, ICD-10)	Income	Multivariate	Adults: higher prevalence of disability from road traffic accidents among persons with lower family income (aOR= 1.61 (95% CI: 1.43–1.81). Children - no significant difference by income level	Positive, significant for adults only	Positive
Rischewski et al (2008)[51]	CC (population-based)	Rwanda	Both	All ages	Musculoskeletal impairment (CE, ICF definitions)	1. PCE 2. SES	Multivariate	No significant difference in PCE or SES among cases with and without physical impairment	No significant association	Positive
CHILDREN										
Acuña-González et al (2011)[52]	CC (hospital-based)	Mexico	Both	Children, youth	Cleft lip and/or palate (existing diagnosis)	SES	Multivariate	Prevalence of cleft life/palate increased with decreasing SES (p<0.0001) (OR (low to high SES) = 4.49 (95% CI: 2.78-7.24); aOR (low/med to high) = 1.90 (95% CI: 1.15-3.14)	Positive	–
ADULTS										
Hosseinpoor et al (2012)*[53]	CS (population-based)	41 countries	Both	Adults	Arthritis (WHS questionnaire, symptom related questions)	SES	Multivariate	Lower SES correlated with higher prevalence of arthritis (Men: significant in 2/4 models; Women: significant in 1/4 models)	Positive, mixed significance	–
Kilzieh (2010)[54]	CS (population-based)	Syria	Urban	Adults	Moderate/severe physical impairment (WHS Questionnaire, Health State Descriptions)	SES	Multivariate	Higher prevalence of physical impairment in poorer SES group Moderate impairment: aOR 1.76 (95%CI: 1.09–2.84) Severe impairment: aOR 2.48 (95% CI: 1.32–4.67)	Positive	–
OLDER ADULTS										
Melzer et al (2004)[55]	CS (population-based)	Brazil	Both	Older adults	Mobility disability (Questionnaire - difficulties with daily physical activities)	Income	Multivariate	Lower prevalence of disability in wealthier income groups. Highest vs lowest: aOR (M) = 0.43 (95% CI: 0.35-0.53), aOR (F): 0.72 (95%CI: 0.61-0.84)	Positive	–
Blay et al (2012)[56]	CS (population-based)	Brazil	Both	Older adults	Arthritis (self-reported, yes/no to sought treatment in last 6 months)	Income	Multivariate	Prevalence of arthritis was higher in individuals below the poverty threshold compared to individuals at or above it, but this association was not significant after adjustment	No significant association	Positive, but ns after adjusting

Study design abbreviations: CS=cross-sectional, CC=case control; Means of assessment abbreviations: CE=clinical evaluation, WHS: World Health Survey, ICF: International Classification of Functioning, Disability and Health, ICD:-10: International Classification of Diseases; Economic measure abbreviation: SES=socioeconomic status, PCE=per capita expenditure; Overview of results abbreviations: OR=odds ratio, aOR=adjusted odds ratio, CI=confidence interval

Table 3: *Summary of studies examining intellectual disability/cognitive impairments and poverty*

Citation	Study design	Study location	Rural/ urban	Age group	Disability specifics and measure	Economic measure	Multivariate/ bivariate analysis	Overview of results	Summary of poverty and disability association	Summary disability and employment association
ALL AGES										
Ataguba et al (2011)*[37]	CS (population-based)	South Africa	Both	All ages	Intellectual disability (self-reported)	SES	Multivariate	Prevalence of intellectual disability was disproportionately concentrated among lower SES quintiles (p<0.05)	Positive	–
CHILDREN										
Avan et al (2010)[57]	CS (population-based)	Pakistan	Both	Children (<3 years)	Psychomotor delay (Bayley's Infant Development Scale II)	SES	Multivariate	Mean psychomotor delay scores worsen with decreasing SES (after adjustment, p<0.05)	Positive	–
de Moura (2010)[58]	Cohort (hospital-based, 2 yrs)	Brazil	Urban	Children	Developmental delay (Battelle Screening Developmental Inventory)	SES	Multivariate	Prevalence of developmental delay increased with worsening SES (p<0.001). Highest to lowest SES groups: PR=5.44 (95% CI: 2.64, 11.20); aPR=3.00 (95%CI: 1.45, 6.19)	Positive	–
Halpern et al (2008)[59]	Cohort (2 x 1 yr cohorts of hospital births)	Brazil	Urban	Infants	Developmental delay (Denver II Screening Test)	Income	Multivariate	Prevalence of suspected delay increased with decreasing income (p<0.005); highest vs lowest income groups PR (1994): 1.6 (95% CI: 1.2-2.1); PR (2004): 1.4 (95% CI: 1.1-1.8)	Positive	–
Islam et al (1993)[60]	CS (population-based)	Bangladesh	Both	Children	Mental retardation (Ten Question Screen, CE)	SES	Multivariate	Prevalence of mild mental retardation was higher in individuals from low vs. medium/high SES (OR=3.96 (95% CI: 1.23-8.02), aOR=2.65 (95%CI: 1.11-6.34). No difference in SES for severe mental retardation.	Positive, mixed significance	–
Kumar et al (1997)[61]	CS (population-based)	India	Rural	Children	Developmental delay (NP battery, below 25th percentile)	Income	Multivariate	Higher prevalence of slower psychosocial development in poorer income group: OR=2.30 (95%CI: 1.73-3.05); aOR=1.82 p=0.011	Positive	–
Ozkan et al (2012)[62]	CS (hospital-based)	Turkey	Urban	Infants, children	Developmental delay (Denver II)	Income	Multivariate	Probability of 'abnormal' developmental delay scores significantly higher among children of families with low household income : OR = 1.67 (95% CI: 1.10–2.549), aOR = 1.55 (1.00–2.41)	Positive	–
Pheula et al (2011)[63]	CC (public schools)	Brazil	Urban	Children	ADHD-I (K-SADS-E, CE)	SES	Multivariate	No significant association	No significant association	–
Xie et al (2008)[64]	CS (population-based)	China	Both	Children	Intellectual disability (Denver Development Screening Test, Gesell Developmental Inventory)	Income	Multivariate	Higher prevalence of ID in children from poorer income group OR=9.54 (95%CI: 4.82-18.91)	Positive	–
Zheng et al (2012)[65]	CS (population-based)	China	Both	Children	Intellectual disability (Denver Developmental Screening, Gesell Development Inventory, Vinland Social Maturity Scale)	Income	Multivariate	Higher prevalence of ID among children in poorer income groups (Mild ID , lowest vs highest: aOR=2.01 (95% CI 1.55-2.82); Severe ID aOR=3.00 (95% CI 2.19-4.12)	Positive	–

OLDER ADULTS										
Chen et al (2011a)[66]	Cohort (population-based, 7.5 yrs)	China	Both	Older adults	Dementia, incident (AGECAT)	Income	Multivariate	Incidence of dementia was lower in individuals who reported poor vs satisfactory income, but the difference was not significant	No significant association	–
Chen et al (2011b)[67]	CS (population-based)	China	Both	Older adults	Dementia, prevalent (GMS/AGECAT)	Income	Multivariate	Prevalence of dementia was higher among individuals who reported their income as vs satisfactory income, although this association was only significant in Anhui (aOR = 2.18 (95% CI: 1.35-3.51), not the 4 provinces	Positive, mixed significance	–
Dorsi et al (2011)[68]	CS (population-based)	Brazil	Urban	Older adults	Cognitive impairment (MMSE)	Income	Multivariate	Prevalence of cognitive impairment was higher among people from the lowest income quartile compared to the highest: aOR=1.29 (95% CI: 1.09-1.52)	Positive	–
Esmayel et al (2013)*[69]	CS (hospital-based)	Egypt	Urban	Older adults	Cognitive impairment (MMSE)	Income	Bivariate	No significant association between mean scores for cognitive impairment and income.	No significant association	–
Fei et al (2009)[70]	CS (population-based)	China	Urban	Older adults	Cognitive impairment, no dementia (Interview and NP screens)	Income	Multivariate	Higher prevalence of cognitive impairment among people with lower income: OR=1.48 (95%CI: 1.25-1.75); aOR=ns	No significant association	–
Herrera et al (2002)[71]	CS (population-based)	Brazil	Urban	Older adults	Dementia (MMSE, PFAQ, CE)	SES	Multivariate	No significant association between dementia and SES was found	No significant association	–
Keskinoglu (2006)[72]	CS (population-based)	Turkey	Urban	Older adults	Dementia (MMSE)	Income	Multivariate	Higher prevalence of dementia in poorer income group: OR=3.25 (95%CI: 1.21-8.76); aOR=ns	No significant association	Positive
Lopes et al (2007)[73]	CS (population-based)	Brazil	Urban	Older adults	Cognitive and functional impairment (MMSE, FOME, IQCODE, B-ADL)	SES	Multivariate	Higher prevalence of CFI in lower SES, not significant after adjusting OR=4.00 (95% CI: 1.81–8.87), aOR=ns	No significant association	–
Saha et al (2010)[74]	CS (population-based)	India	Rural	Older adults	Cognitive impairment (MMSE)	Income	Multivariate	Higher prevalence of cognitive impairment among people with lower income: OR=2.32 (95%CI: 1.18-2.32); aP-value: 0.05	Positive	–
Scazufca et al (2008)[75]	CS (population-based)	Brazil	Urban	Older adults	Dementia (10/66 Dementia Research Group dementia diagnostic tool)	Income	Multivariate	Prevalence of dementia increased with decreasing income (p<0.001); Lowest to highest income group: aOR 3.38 (1.63-6.98) aP for trend <0.001	Positive	–
Scazufca et al (2008)[76]	CS (population-based)	Brazil	Urban	Older adults (all low SES)	Dementia (10/66 Dementia Research Group dementia diagnostic tool)	Income	Multivariate	Low income associated with increased risk of dementia (OR=3.7 (p<0.05), aOR: p for trend <0.001)	Positive	–
Singh et al (1999)[77]	CS (population-based)	India	Urban	Older adults	Cognitive deficits (Author-made questionnaire)	SES	Bivariate	Higher prevalence of cognitive deficits in poorer socio-economic classes (p<0.01)	Positive	–
Sosa et al (2012)[78]	CS (population-based)	8 countries	Both	Older adults	Mild cognitive impairment (NP battery)	Assets	Multivariate	Lower prevalence of mild cognitive impairment associated with ownership of more assets compared to less assets: aOR (pooled) = 0.88 (0.82-0.95)	Positive	–

Study design abbreviations: CS=cross-sectional, CC=case control; Means of assessment abbreviations: CE=clinical evaluation, MMSE=mini-mental state evaluation, B-ADL: basic activities of daily living, PFAQ=Pfeffer Functional Activities Questionnaire, GMS= Geriatric Mental State, AGECAT= Automated Geriatric Examination for Computer Assisted Taxonomy, IQCODE=Informant Questionnaire on Cognitive Decline in the Elderly; Economic measure abbreviation: SES=socioeconomic status; Overview of results abbreviations: OR=odds ratio, aOR=adjusted odds ratio, CI=confidence interval, PR=prevalence ratio, aPR=adjusted prevalence ratio*study is repeated in more than one category (results have been disaggregated by disability type)

Table 4: *Summary of studies examining reported functional limitations, general disability*

Citation	Study design	Study location	Rural/ urban	Age group	Disability specifics and measure	Econ. measure	Multivariate/ bivariate analysis	Overview of results	Summary of poverty and disability association	Summary disability and employment association
ALL AGES										
Filmer (2008)[79]	CS (population -based)	13 countries	Both	All ages	All disability (National household surveys, disability definition varies)	SES	Multivariate	Children: positive and significant in 2/14 surveys (India, Indonesia); Adults: positive, significant in 8/12 surveys	Positive, mixed significance	–
Hoogeveen (2005)[80]	CS (population -based)	Uganda	Both	All ages	General disability in head of household (Population and Housing Census 1991, disability: impairment preventing labour in past week)	PCE	Multivariate	Lower mean per capita expenditure among households with a disabled household head (significant difference in 3/4 regions); households with disabled head more likely to be below the poverty line (significant in 4/4 regions)	Positive	–
Mont & Nguyen (2011)[81]	CS (population -based	Vietnam	Both	All ages (+5 yrs.)	Functioning (Washington Group 6 questions)	PCE	Multivariate	Households with a person with a disability are over-represented in the lower consumption quartiles	Positive	Positive
Palmer et al (2012)[82]	CS (population -based)	Vietnam	Both	All ages	Functional difficulties and ADL (questionnaire, ICF based)	Assets	Bivariate	People with disabilities were poorer than people without disabilities PR= 1.76 (severe: PR = 1.83); p<0.001	Positive	–
CHILDREN										
Kawakatsu et al (2012)[83]	CS (population -based)	Kenya	Rural	Children	Hearing, physical, visual, cognitive impairment and epilepsy (TQQ, CE, NP battery)	Income	Multivariate	Children with disabilities more likely to be in poorest income group compared to those without (OR=ns; aOR=2.79 (95%CI=1.28-6.08)	Positive	–
Kumar et al (2013)[84]	CS (population -based)	India	Both	Children	Neurological disorders: epilepsy, global developmental delay, and motor, vision, and hearing)	Income, assets	Multivariate	Both asset ownership and income were lower among families with child with a disability, but this difference was only significant for asset ownership (p<0.001)	Positive, mixed significance	–
Natale et al (1992)[85]	CS (population -based)	India	Urban	Children	Serious disability (TQQ)	Income	Multivariate	Higher proportion of families with disabilities living in area with lowest family income compared to next lowest: aOR=2.39 (95% CI: 1.85-3.09)	Positive	–
ADULTS										
Hosseinpoor et al (2013)[86]	CS (population -based)	49 countries	Both	Adults	Functioning (World Health Survey)	SES	Multivariate	Disability prevalence highest in poorest compared to richest wealth quintiles. Unadjusted: all positive but significant for 16/18 (LICs), 14/15 (lower MICs), 9/9 (upper MICs) Adjusted: all positive but significant for 9/18 (LICs), 7/15 (lower MICs), 7/9 (upper MICs)	Positive, mixed significance	–
Mitra et al (2013)[33]	CS (population -based)	15 countries	Both	Adults	General disability - functional limitations (World Health Survey)	1. PCE 2. Assets	Multivariate	1. Higher proportion of households with disabilities under the extreme poverty line compared to households without disabilities, significant in 3/15 countries 2. Households with disability are more lively to be asset deprived in 12/15 countries but only statistically significant in 4/15 in countries	Positive, mixed significance	–

Trani et al (2012)[32]	CC (nested, population-based)	Afghanistan Zambia	Both	Adults, youth	General disability (questionnaire, ICF based and Washington Group 6 questions)	Assets	Multivariate	Asset ownership not significantly different between people with and without disabilities	No significant association	Positive
OLDER ADULTS										
Beydoun et al (2005)[87]	Cohort (population-based, 3 years)	China	Both	Older adults	Functional status decline: ADL (IADL, modified Katz questionnaire)	Income SES	Multivariate	Incidence of functional status decline increased with decreasing household income (adjusted for age/gender), but not significant after controlling for rural-urban residence and living arrangements).	Positive, mixed significance	–
Falkingham et al (2011)[88]	CS (population-based)	Kenya	Urban	Older adults	Self-reported functioning (WHODAS)	SES	Multivariate	Higher wealth status associated with reporting less disability (p<0.001)	Positive	Positive
Fillenbaum et al (2010)[89]	CS (population-based)	Brazil	Urban	Older adults	Limitations in ADL -help needed with daily activities (self-reported)	Income	Multivariate	Individuals with incomes below US$200 reported more limitations in ADL (OR significant in 5/5 categories; aOR significant for 3/5)	Positive, mixed significance	–
Guerra et al (2008)[90]	CS (population-based)	Brazil	Urban	Older adults	Disability in ADL (questionnaire, self-reported)	Income	Multivariate	Perceived insufficient current income (aOR=1.91, 95% CI: 1.49-2.45) and poor childhood economic situation (aOR=1.29, 95% CI: 1.02-1.64) were both associated with higher prevalence of disability in ADL.	Positive	–
Gureje et al (2006)[91]	CS (population-based)	Nigeria	Both	Older adults	Disability in ADL and IADL (Katz index, Nagi scale)	Assets	Multivariate	No significant association between asset ownership and disability in ADL or IADL.	No significant association	–
Liu et al (2009)[92]	CS (population-based)	China	Both	Older adults	Functional disability, mobility focused (CE, using ICF criteria)	Income	Multivariate	Higher prevalence of disability in poorest compared to richest income group (OR=2.166, 95%CI: 2.075-2.262)	Positive	Positive
Razzaque et al (2010)[93]	CS (population-based)	Bangladesh	Rural	Older adults	Functional ability (WHODASi)	SES (asset-based)	Multivariate	Poorer functional ability scores in lower SES groups	Positive	–
Xavier Gómez-Olivé (2010)[94]	CS (population-based)	South Africa	Rural	Older adults	Level of functioning (WHODAS)	Assets	Multivariate	Higher prevalence of disability in poorest compared to wealthiest group OR = 1.24 (95% CI: 1.03 - 1.50)	Positive	Positive

Study design abbreviations: CS=cross-sectional, CC=case control; Means of assessment abbreviations: CE=clinical evaluation, TQQ=Ten Questions Questionnaire, ADL= activities of daily living, IADL: instrumental activities of daily living, ICF: International Classification of Functioning, Disability and Health, NP:=neuropsychological, WHODAS=WHO Disability Assessment Schedule, WHODASi: WHODAS inverted; Economic measure abbreviation: SES=socioeconomic status, PCE=per capita expenditures; Overview of results abbreviations: OR=odds ratio, aOR=adjusted odds ratio, CI=confidence interval

Table 5: *Summary of studies examining mental disorders*

Citation	Study design	Study location	Rural/ urban	Age group	Disability specifics and measure	Economic measure	Multivariate/ bivariate analysis	Overview of results	Summary of poverty and disability association	Summary disability and employment association
DEPRESSION										
YOUTH/ADULTS										
Abas et al (1997)[95]	CS (population-based)	Zimbabwe	Urban	Adults	Depression and anxiety (Shona Screen for Mental Disorders, Present State Examination)	Income	Multivariate	Prevalence of depression/anxiety was higher in women with below average income compared to women with above average income (OR=2.22 (95% CI: 1.06-4.67); aOR=ns)	No significant association	–
Ball et al (2010)[96]	CS (population-based)	Sri Lanka	Both	Youth, Adults	Depression (CIDI)	SES	Multivariate	Lifetime prevalence of depression was higher in individuals from the poorest 2 quintiles of standard of living compared to those from the riches 3 quintiles (OR=1.33 (95%CI: 1.12–1.57), aOR=1.25 (95%CI 1.05–1.49)).	Positive	–
Chen et al (2013)[97]	CS (university students)	China	Both	Adults	Depression (Beck Depression Inventory)	Income	Multivariate	Prevalence of depression higher among students from poor compared to good family economic situation (OR =1.80 95% CI: 1.51-2.15; aOR = 1.34 95% CI: 1.13-1.58)	Positive	–
Hamad et al (2008)[98]	CS (microcredit applicants)	South Africa	Urban	Adults	Depressive symptoms (Center for Epidemiologic Studies Depression Scale, cut-off: professional care recommended)	Income	Multivariate	Increased prevalence of depression with lower income (Unadjusted: p<0.01; adjusted: p<0.10)	Positive, borderline significance	–
Hosseinpoor et al (2012)*[53]	CS (population-based)	41 countries	Both	Adults	Depression (World Health Survey questionnaire, ICD-10)	SES	Multivariate	Lower SES correlated with higher prevalence of depression (Men: significant in 4/4 models; Women: significant in 3/4 models)	Positive	–
Ibrahim et al (2012)[99]	CS (university students)	Egypt	Both	Adults	Depression (Zagazig Depression scale - based on Hamilton Rating Scale)	Income	Multivariate	Lower prevalence of depression associated with higher income	Positive	–
OLDER ADULTS										
Blay et al (2007)[100]	CS (population-based)	Brazil	Both	Older adults	Depression (Short Psychiatric Evaluation Schedule)	Income	Multivariate	Prevalence of depression was significantly higher in individuals with incomes below the poverty threshold compared to individuals at or above it OR=2.19 (95%CI: 1.97-2.43); aOR=1.53 (95% CI: 1.35-1.75).	Positive	Positive
Chen et al (2005)[101]	CS (population-based)	China	Rural	Older adults	Depression (GMS-AGECAT)	Income	Multivariate	Prevalence of depression was higher in older adults from the lowest income group compared to highest (OR=8.14 (95% CI: 4.13-16.06); aOR=2.49 (95% CI: 1.17-5.28).	Positive	–

Esmayel et al (2013)*[102]	CS (hospital-based)	Egypt	Urban	Older adults	Depression (GDS)	Income	Bivariate	Mean depressions scores were lower in individuals who reported poor income compared to those who reported moderate income (p=0.009).	Positive	–
Guerra et al (2009)[103]	CS (population-based)	Peru, Mexico, Venezuela	Both	Older adults	Depression (DSM-IV and ICD-10 criteria, GMS-AGECAT, EURO-D, ICD-10 depressive episode)	Assets	Multivariate	No significant association with number of household assets for any country, before or after adjustment.	No significant association	–
Gureje et al (2007)[104]	CS (population-based)	Nigeria	Both	Older adults	Lifetime major depressive disorder (CIDI, DSM-IV)	Assets	Bivariate	Lower prevalence of depression in poorer SES groups. Highest vs lowest OR for = 0.5 (95%CI: 0.3-0.8))	Negative	–
Li et al (2011)[105]	CS (population-based)	China	Both	Older adults	Depression (GDS-15, score >7)	Self-rated wealth	Multivariate	People with depression more likely to be in the poorest economic group (OR= 17.69 (95%CI: 9.28–33.75); aOR=8.319 (p<0.001))	Positive	No significant association
Malhotra et al (2010)[106]	CS (population-based)	Sri Lanka	Both	Older adults	Depression, clinically significant (GDS-15, score: ≥6)	Income	Multivariate	Higher prevalence of depression in lower income group Unadjusted = p<0.05, Adjusted (model 1)=p<0.05; (model 2) = 0.89 (95% CI: 0.76–1.04)	Positive, mixed significance	–
Mendes-Chiloff et al (2008)[107]	CS (population-based)	Brazil	Urban	Older adults	Depressive symptoms (GDS, MMSE)	Income	Multivariate	No significant difference in prevalence between income groups	No significant association	–
Patil et al (2003)[108]	CS (population-based)	India	Urban	Older adults	Depression score (Karim & Tiwari (1986) Depression scale)	Income	Bivariate	Higher prevalence of depression in lower income group (p<0.0001)	Positive	–
Rajkumar et al (2009)[109]	CS (population-based)	India	Rural	Older adults	Depression (BMS, WHODAS, CERAD, HAS-DSS, Neuropsychiatric Inventory)	Income	Multivariate	Higher prevalence of depression among people with lower family income OR=2.47 (95% CI: 1.65–3.68), aOR=1.78 (95% CI: 1.08-2.91)	Positive	–
COMMON MENTAL DISORDERS										
Anselmi et al (2008)[110]	CS (hospital-based)	Brazil	Urban	Adults	Common mental disorders (SRQ-20, minimum 8 symptoms)	Income	Multivariate	Prevalence of CMD higher for those whose family income at birth was in the lowest group compared to those from the highest group; prevalence of CMD was higher amongst individuals who were in the lowest tertile of family income throughout their life course compared to individuals who were consistently in the first and second tertiles.	Positive, mostly significant	–
Coelho et al (2009)[111]	CS (population-based)	Brazil	Urban	Adults	Common mental disorders (SRQ-20, min 6 symptoms for women, 8 for men)	SES	Multivariate	Higher prevalence of CMD among poorer SES groups (p for trend <0.001). OR for poorest compared to wealthiest: OR=3.79 (95%CI: 2.34-6.14); aOR=3.33 (2.01-5.52)	Positive	Positive
Lima et al (1996)[112]	CS (population-based)	Brazil	Urban	Adults	Common mental disorders (SRQ-20)	Income	Multivariate	Prevalence of CMD was higher in individuals from the poorest compared to richest tertile of family income (aOR= 2.25 (95% CI: 2.15–2.35))	Positive	–
Ludermir et al (2001)[113]	CS (population-based)	Brazil	Rural	Adults	Common mental disorders (SRQ-20)	Income	Multivariate	Higher prevalence of CMD among poorer income group OR=3.88 (95%CI: 2.1-7.1); aOR=2.4 (95% CI: 1.0-5.6)	Positive	–

Menil et al (2012)[114]	CS (population-based)	Ghana	Urban	Adults	Common mental disorders (SF36 mental health component, K6)	SES	Multivariate	Low SES status associated with CMD (p=0.04)	Positive	Positive
Patel et al (1997)[115]	CC (primary care sites)	Zimbabwe	Urban	Adults	Common mental disorders (Shona Symptom Questionnaire)	Income	Multivariate	Lower mean income among people with CMD compared to people without (p=0.008)	Positive	No significant association
Patel et al (2006)[116]	Cohort (population-based, 1 year)	India	Both	Adults	Common mental disorders, incident (Revised Clinical Interview Schedule, Scale for Somatic Symptoms)	Income	Multivariate	Increasing incidence of CMD with decreasing income (aP-for-trend p=0.04)	Positive	–
Rocha et al (2010)[117]	CS (population-based)	Brazil	Urban	Adults	Common mental disorders (SRQ-20, score: ≥7)	Income	Multivariate	Higher prevalence of CMD associated with lower income (PR=1.94 (95%CI: 1.62-2.32), aPR:1.89 (95% CI: 1.44-2.48))	Positive	–
Stewart et al (2010)[118]	CS (hospital-based)	Malawi	Rural	Adults	Common mental disorders (SRQ-20 score)	SES	Multivariate	Maternal CBD associated with lower SES (Several adjusted models: p=0.001-0.04)	Positive	–
OTHER MENTAL DISORDERS										
ALL AGES										
Ataguba et al (2011)*[37]	CS (population-based)	South Africa	Both	All ages	Emotional disabilities (self-reported)	SES	Multivariate	Prevalence of emotional disabilities was disproportionately concentrated among lower SES quintiles (p<0.05)	Positive	–
YOUTH										
Anselmi et al (2012)[119]	CS (hospital-based)	Brazil	Urban	Youth	Conduct, emotional or attention/hyperactivity problems (Strengths and Difficulties Questionnaire score, parent-reported)	Income	Multivariate	Prevalence of conduct, emotional and attentional/hyperactivity problems were higher in adolescents from families consistently in the lowest tertile of income compared to adolescents from the highest tertile.	Positive, mixed significance after adjusting	–
Shams et al (2011)[120]	CS (high school students)	Iran	Rural	Youth	Obsessive compulsive disorder (Maudsley Obsessional-Compulsive Inventory and SCL-90-R)	Income	Bivariate	No significant association between level of income and prevalence of OCD, although OCD was more prevalent in the poorest income group compared to highest income group (OR= 2.78 (95% CI: 1.04-7.50))	Positive, mixed significance	–
ADULTS										
Awas et al (1999)[121]	CS (population-based)	Ethiopia	Rural	Adults	Mental disorders (mood disorders, phobic disorders, other anxiety disorders, somatoform disorder) (CIDI)	Income	Multivariate	Prevalence of mental disorders was higher in the low income group compared to the medium and high income groups. This difference was only significant for mood disorders in low vs medium income groups.	Positive for mood disorders only	–
Blue (2000)[122]	CS (population-based)	Brazil	Urban	Adults	Psychiatric morbidity (Questionnaire for Adult Psychiatric Morbidity)	Income	Multivariate	Prevalence of psychiatric disability was higher in adults from families in the lowest income group compared to those in the highest (OR=2.34 (95% CI: 1.71-3.20), aOR=1.49 (95%CI: 0.99-2.23)).	Positive, borderline significant	–

Islam et al (2003)[123]	CS (population-based)	Bangladesh	Urban	Adults	Psychiatric disorders (SRQ, CE)	PCE	Multivariate	Prevalence of psychiatric disorders increased significantly with higher per capita expenditure (ap<0.001)	Negative	–
Kawakami et al (2012)[124]	CS (population-based)	11 countries	Both	Adults	Early onset (before individual completed education) mental disorders (CIDI, WMHS)	Income	Multivariate	Early onset mental disorders associated with low current household income significant in middle but not low income countries	Positive, mixed significance	Positive
Levinson et al (2010)[125]	CS (population-based)	9 countries	Both	Adults	Serious mental illness (CIDI, serious = score in "severe range" on Sheehan Disability Scales or attempting suicide)	Income	Multivariate	Proportion of respondents with low and low-average earnings significantly higher among those with compared to without serious mental illness (p<0.001). Respondents with serious mental illness earned 33% less than median earnings (p<0.05)	Positive	–
Li et al (2012)[126]	CS (population-based)	China	Both	Adults	Psychiatric disability (CE, ICD-10 for diagnosis, WHO-DAS11 severity)	Income	Multivariate	People with psychiatric depression more likely to be living below poverty line (aOR= 2.25(95% CI: 2.15–2.35)	Positive	–
Ma et al (2009)[127]	CS (population-based)	China	Both	Adults	General anxiety disorder, lifetime prevalence (CIDI, ICD-10)	Income	Multivariate	No association between income and general anxiety disorder	No significant association	No significant association
Medina-Mora et al (2005)[128]	CS (population-based)	Mexico	Urban	Adults	Psychiatric disorders, 12 month prevalence (CIDI, any DSM-IV disorder)	Income	Multivariate	People from low OR=2.7 (95% CI: 1.3-5.4) and low-average (aOR 2.0, 95% CI 1.0-4.0) incomes more likely to report severe disorder. No significant difference for other specific disorders (mood, anxiety, impulse-control or substance)	Positive, significant for severe only	–
Mokhtari et al (2013)[129]	CS (university students)	Iran	Urban	Adults	Mental health problems (GHQ-28)	Income	Bivariate	Poorer GHQ scores among lower income groups (p<0.05)	Positive	–
Myer et al (2008)[130]	CS (population-based)	South Africa	Both	Adults	Psychological distress in past 30 days (K-10)	Income Assets SES	Multivariate	Prevalence of psychological distress significantly associated with SES (p<0.001). Prevalence higher among individuals in poorest income, asset and SES groupings compared to those in richest.	Positive	Positive
Norris et al (2003)[131]	CS (population-based)	Mexico	Urban	Adults	Post-traumatic stress disorder (Module K of CIDI)	SES	Multivariate	Prevalence of PTSD increased with decreasing SES (p<0.001)	Positive	
Xiang et al (2008)[132]	CS (population-based)	China	Urban	Adults	Schizophrenia (CIDI, ICD-10)	Income	Multivariate	Lower prevalence of schizophrenia among wealthier group compared to poorer group: aOR=0.56 (95%CI 0.005-0.015)	Positive	No significant association

Study design abbreviations: CS=cross-sectional, CC=case control; Means of assessment abbreviations: CE=clinical evaluation, CERAD=Clinical and Neuropsychology Assessment, CIDI=Composite International Diagnostic Interview, GHQ-20: General Health Questionnaire, ICD: International Classification of Disease, DSM: Diagnostic and Statistical Manual, GMS-AGECAT: Geriatric Mental State-Automated Geriatric Examination for Computer Assisted Taxonomy, SCL-90-R: Symptom Checklist-90-Revised, WMHS: World Mental Health Survey, SRQ: Self-Reporting Questionnaire, GDS: Geriatric Depression Scale, MMSE: Mini Mental State Examination, WHODAS: WHO Disability Assessment Schedule; Economic measure abbreviation: SES=socioeconomic status, PCE=per capita expenditures; Overview of results abbreviations: OR=odds ratio, aOR=adjusted odds ratio, CI=confidence interval; CMD=common mental disorders; *study is repeated in more than one category (results have been disaggregated by disability type)

2.4 Association between disability and employment status

Although terms for employment were not included in the search strategy, the association between disability and employment status was recorded as a secondary outcome measure for the studies that conducted these analyses.

In total, eighteen studies assessed the relationship between disability and employment (see Tables 1-5). Of these, thirteen found a positive association (i.e. disability was significantly more common among unemployed versus employed groups OR people with disabilities were significantly more likely to be unemployed compared to people without disabilities). The remaining five studies found no significant association between employment status and disability.

3 Summary of results

There is strong evidence to support the theorized disability-poverty cycle with 78 of 97 (80%) of included studies reporting a positive relationship between disability and economic poverty. While these findings can only provide evidence of correlation, there is some reason to believe an at least partially causative effect, potentially in both directions.

First, this observed relationship remained significant after authors adjusted for traditional confounders of disability or poverty, such as age, gender, area of residence and level of education. Second, the association was consistent across countries, impairment types, study designs and age groups. Third, many studies (44 of 55, 80%) found a gradient in effect: namely, the strength of the association between disability and poverty increased with increasing level of poverty/severity of disability. Finally, as explained through the disability-poverty cycle, there are plausible mechanisms to explain how disability could lead to economic poverty and vice versa.

Only three studies found a significant negative association and these can be at least partially explained by mitigating factors. For example, You et al found a significant negative relationship between myopia and poverty. However, as a known risk factor for myopia is eyestrain from close work such as reading or using a computer[133] (activities from which individuals living in poverty may not be frequently engaged), a negative association is not all-together surprising. Similarly, Gureje et al. found a negative association between depression and poverty,[104] but, as the analysis was bivariate, it is possible this relationship could have changed if potential confounders were accounted for.

Fifteen studies found no significant association between disability and economic poverty. However, thirteen of these fifteen studies found evidence of a positive relationship with other broader indicators of poverty (e.g. education, malnutrition, employment) not covered in this review. Associations in five of these studies[56, 70, 72, 73, 95] were significant in the unadjusted analysis, but became non-significant after controlling for potential confounders such as education, area of residence and marital status. Disaggregated by disability type and age,

the highest proportion of non-significant findings were found in studies of cognitive impairment in older adults (6 of 13, 46%, of studies in that category).

There are some limitations that should be taken into account when interpreting the findings of this review. Firstly, if studies showing a negative or no association were less likely to be published – resulting in publication bias – the association between poverty and disability could be overestimated. However, as many included papers were not focused explicitly on exploring the relationship between economic poverty and disability and instead either investigated this association as a secondary measure or as part of a multivariable analysis, it is unlikely that this source of potential bias was significant. Secondly, as some authors have suggested the need for an adjusted poverty line for people with disabilities to account for additional costs associated with disability (e.g. assistive devices, personal supports, extra transport, higher medical/rehabilitation expenses),[134, 135] it is possible that the findings in this review underestimate the magnitude of association between disability and poverty. Thirdly, we only focussed on economic definitions of poverty and did not include more multidimensional measures.

The high proportion of studies showing a positive relationship between disability and poverty observed in this review stands slightly in contrast to other reviews[34, 35] where findings were more mixed. Several factors may explain this difference. The search strategy for this study which used terms for both general disability as well as specific impairments/conditions and used systematic searching across multiple databases led to the inclusion of substantially more studies than either of the other reviews, thus greatly broadening the pool from which to draw evidence. Additionally, as the others used multidimensional conceptualizations of poverty whereas this review focused solely on the economic component, the divergence in findings may simply underscore the difference in definitions.

PART B: Economic Costs of Exclusion and Gains of Inclusion

©CBM/argum/Einberger

Overview

Part A highlighted the evidence of the link between poverty and disability. In Part B we investigate this relationship further to understand how the exclusion of people with disabilities may lead to economic costs for individuals, their families and societies at large. This section details theoretical and evidence-based pathways through which exclusion in the areas of health, education and work/employment can generate these costs. Additionally, this section also explores how creating inclusive societies may reverse these costs and even lead to economic gains.

1 EDUCATION

© CBM

1.1 Evidence of Exclusion

Article 24 of the UNCRPD establishes the right to education for people with disabilities. While recognizing the need for individual supports, it emphasizes the importance of inclusive education – rather than segregation in separate classes or schools – as the best policy not only for providing a quality, affordable education to children with disabilities but also for helping to build more accommodating, tolerant societies.[136]

Yet despite widespread ratification of UNCRPD and introduction of other similar national policies, exclusion from education is pervasive. In low income countries, children with disabilities are significantly less likely to complete primary school and have fewer years of education than their non-disabled peers.[2] A recent study of children sponsored by Plan International found that, across 30 countries, children with disabilities included in the sponsorship programme were often ten times less likely to attend school as children without a disability.[137] This influence of disability on school attendance is stronger than for other factors that are linked to limited participation in education, such as gender and socioeconomic status.[2] Even when children with disabilities do enrol, their dropout rates are higher than for any other vulnerable group and they are at a lower level of schooling for their age.[2]

Without the inclusion of children with disabilities, the aim of universal access to primary education advocated by Millennium Development Goal 2 will not be realised.[28] While the existing figures are already bleak, the full extent of exclusion likely is underestimated, as children with disabilities may not be counted in official statistics.[30] Understanding and mitigating the barriers that hinder participation is key to ensuring children with disabilities benefit from the social and economic opportunities afforded through education.

1.1.1 Exclusion through physical/communication barriers

Physical access to schools is a key first step to facilitate the education of children with disabilities. The built environment of many schools hinders inclusion: narrow doorways, multiple storeys without ramps or lifts, and inaccessible toilet facilities create barriers, especially for individuals with mobility impairments.

Within classrooms, it is important to identify the preferred communication mode for children with disabilities and to cater to these individual requirements. Without adjustments in teaching style and provision of alternative communication options, such as materials in Braille, large print, and pictorial, audio or sign-language versions, children with disabilities are often excluded from the learning process.

Additionally, even if the built and teaching environments are accessible, if schools are located far away or lack transportation links, children with disabilities will continue to be excluded. This is especially true when options for education are limited to segregated special schools. Typically, a remote village will only have one school and special schools tend to be located in urban areas, limiting access for the more than 80% of children with disabilities living in rural areas.[136, 138]

1.1.2 Exclusion through attitudinal barriers

Misconceptions and negative attitudes also prevent individuals with disabilities from accessing equal educational opportunities. Attitudinal barriers work at all levels – from planning to enrolment to retention – to exclude people with disabilities.

Stigmatization of disability is often deeply engrained and poses a significant barrier to inclusive education. Bullying, maltreatment and even acts of violence towards children with disabilities –by teachers and peers– are frequently reported in schools and the low self-esteem they engender can compel children to dropout.[2] The fear of abuse can also deter parents from enrolling their children.[139]

Even if attitudes are supportive and well-intentioned, people with disabilities frequently encounter limitations due to low-expectations.[2] Teachers, parents, peers and even individuals themselves often underestimate people with disabilities' abilities and capacity for learning.[140] As the benefits of education for children with disabilities are seen as limited, opportunities for higher education or more challenging coursework are not offered, placing a ceiling on potential academic achievement.[2] Moreover, teachers feel they lack the time, training and resources to address the needs of students with disabilities and fear their

inclusion in mainstream schools will slow down the progress of the rest of the class.[2]

1.1.3 Exclusion through financial barriers

In low income settings where resources are scarce, funding for the provision of even the most basic education is frequently inadequate. Governments are therefore reluctant to add any more items to budget lines, particularly when they perceive spending on education for children with disabilities to be a poor investment.[30]

Without national provision of inclusive education, however, the responsibility of payment falls on families, for whom costs such as tuition at a special school or individual provision of accessible teaching materials, are almost always prohibitive.[141] In addition to these direct costs, children with disabilities who are not in school frequently remain in the home [138] and thus these families may also experience foregone labour.

1.1.4 Exclusion through policy barriers

Education for children with disabilities is often managed by different government bodies with separate policies than those for general education, promoting segregated rather than inclusive approaches.[2] In many countries, special education is under the jurisdiction of ministries for health or social welfare rather than the ministry of education, if seen as a governmental responsibility at all.[136, 142] Furthermore, while targets for enrolment, attendance and scholastic achievement – often tied to various incentive schemes – are common features of international and national education policies, similar plans for children with disabilities are lagging.[2, 136] Without clear, comprehensive strategies that include measurable and monitored aims and objectives, providing quality education for people with disabilities is liable to neglect.

Even when students with disabilities do attend mainstream schools, inflexible curricula and evaluation procedures may cause exclusion.[139] Adherence to strict benchmarks of academic achievement may be inappropriate for many children (including those with disabilities), who would be better served if assessments measured individual progress instead.[2]

1.2 Economic costs of exclusion and gains of inclusion in education

Exclusion of children with disabilities from education can generate costs to individuals, families, communities and even nations as a whole. These costs may not be immediately apparent, but can work insidiously to propagate poverty and stagnate economic growth. On the flip side, promoting inclusion in education has the potential to generate substantial financial and social gains at the individual, family, community state levels. In the discussion that follows, the different pathways by which exclusion and inclusion of children with disabilities in education may generate economic consequences are explored. These pathways are summarised in flow charts (figure 1 and 2).

1.2.1 Pathway 1: Earnings and Labour Productivity

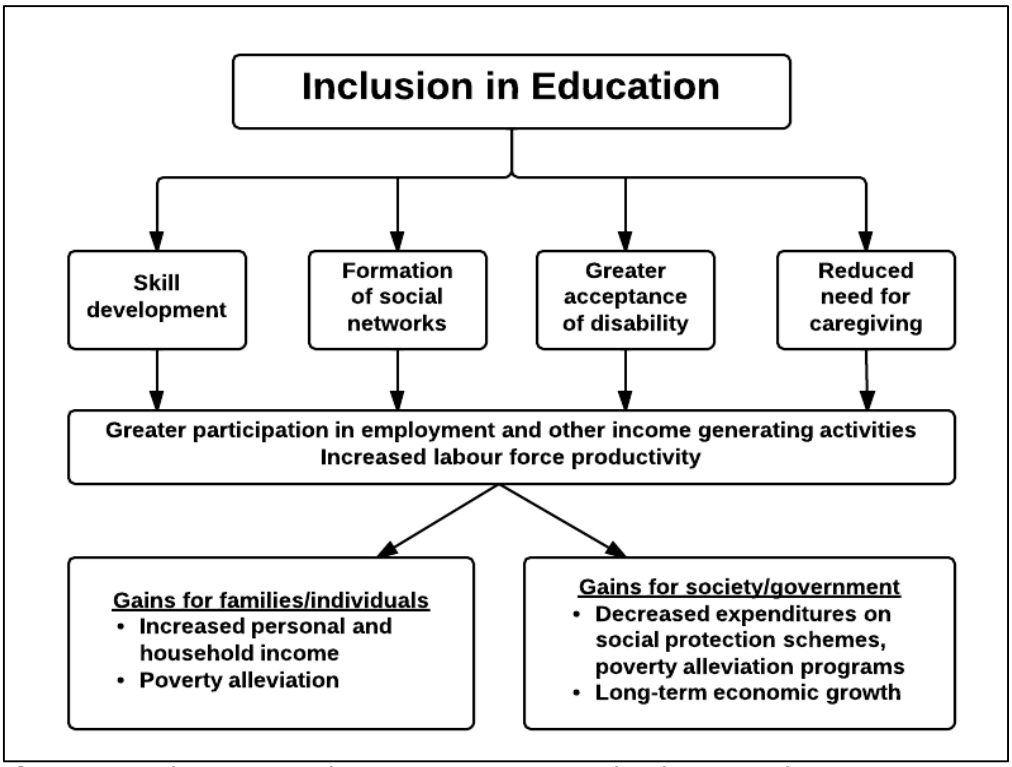


Figure 1. *Education pathway 1: Earnings and Labour Productivity*

The positive effect of schooling on future job opportunities and earnings is well documented.[143, 144] It therefore follows that excluding people with disabilities from education can produce substantial monetary losses to both the individual and the societies in which they live. Through greater attainment of quality, inclusive education, people with disabilities stand to benefit from improved employment opportunities, higher incomes and an improved standard of living, contributing to both personal and national poverty alleviation and economic development.

There is clear evidence from general population studies that educational attainment is strongly linked to employment and income generation. Education supports skill development, which in turn can improve an individual's competitiveness in the labour market. Additionally, schools are an important setting for developing social networks, which are influential in making linkages that can lead to job opportunities or promote entrepreneurship.[145] It is not surprising then that across countries, better educated individuals are more likely to be employed and have higher incomes.[143, 146] In a multi-country study, each additional year of schooling led on average to a 10% increase in personal earnings; this figure was even higher in low-income countries, where low levels of schooling create a high demand for those with the requisite skills.[143, 147]

On a national level, investments in education can foster economic growth.[143] In theory, education increases individuals' capabilities, creating a more skilled labour force that is more efficient, better able to innovate and adapt to new technologies and more attractive to outside investors.[143] Additionally, employment decreases reliance on social protection schemes (where provided),

leading to decreased government spending on these programs. Empirical evidence appears to back these assumptions: in an analysis of factors explaining the long-term growth in GDP/capita in 88 countries, primary school enrolment showed the greatest impact.[148] Another study found that for each additional year of schooling added to a country's average, there was a 0.58% increase in long-term economic growth.[143] As with individual gains, returns appear greatest in low income settings.[143]

The above findings focus on trends in the general population. There are relatively few studies in LMICs exploring the economic consequences of education specifically for children with disabilities. However, the studies that have been undertaken suggest similar financial implications exist for people with disabilities.

Firstly, in studies assessing the difference in poverty rates between people with and without disabilities, much (though not all) of this gap is reduced once education is controlled for.[2] For example, across 13 LMICs, households containing an adult with a disability were 5.0-14.5% more likely to belong to the poorest two quintiles.[79] However, for each additional year of schooling, this probability was reduced by 2-5%, turning the association between disability and poverty from consistently positive and significant to statistically insignificant in many countries.[79]

Secondly, there is evidence from studies using modelling approaches, that wage returns to education for individuals with disabilities are substantial. In Nepal, the inclusion of people with sensory or physical impairments in schools was estimated to result in a rate of return of around 20%.[5] In a similar study in the Philippines, increased schooling was associated with higher earnings among people with disabilities, generating an economic rate of return to education of more than 25%.[149] In China, estimates indicated that each additional year of schooling for people with disabilities leads to a wage increase of approximately 5% for rural areas and 8% for urban areas.[6]

Thirdly, there is some evidence that exclusion of people with disabilities in education generates costs to the state. In Bangladesh, the World Bank estimated that reductions in wage earnings attributed to lower levels of education among people with disabilities cost the economy US$26million per year.[4] They estimate that a further US$28 million is lost from children who forgo schooling to care for a disabled person.[4] This figure indicates the substantial economic losses at state level associated with exclusion from education, although it is unclear exactly how these estimates are derived.

Some care is needed in calculating and interpreting estimates of wage returns and earnings. Firstly, many individual level factors besides education can influence a person's future earnings.[6, 143] Some of these factors such as sex, marital status, area of residence are relatively easy to measure and adjust for in estimates of wage returns and were included in the above estimates from Nepal, Philippines and China. Others, such as scholastic abilities and personal motivation for learning are more challenging and require more complicated

methodological approaches.[6, 143] If these are not taken into account, the impact of education may be over or under-estimated.[150]

Secondly, returns to education estimates for people with disabilities are subject to selection biases.[143, 151] Given that people with disabilities currently tend to have low participation rates in both education and the labour force in LMICs, only a restricted sample of all people with disabilities will be contributing to the data used to determine the increase in wages associated with schooling.[2, 29] The returns accrued by this select group may not be representative of potential gains should all individuals with disabilities be included in education. Not accounting for this may bias the estimates of returns to education.

There is some evidence that not accounting for these limitations actually underestimates returns to education for people with disabilities. In using the standard wage returns equation with added controls for sex, marital status and place of residence, Liao et al. found a rate of return between 5.3-7.6% for individuals with disabilities in China.[6] Lamichhane et al. had a more extensive approach: when using an approach similar to Liao's, returns to education were estimated at 5.9-6.5% in Nepal; however, after employing tools to account for selection bias and other potential limitations, gains jumped to 22.7-25.6%.[29]

Jemimah's Story

In Jemimah's rural Massai community, being a woman and having a physical impairment prevented her from accessing local schools. However, as her parents were committed to ensuring their daughter received an education, they found a boarding school in another city for her to attend.

Despite the social exclusion she faced as the only student with a disability, Jemimah successfully completed primary and secondary school. Afterwards, Jemimah joined CBM's partner the Association for the Physically Disabled of Kenya (APDK), where she initially received training in tailoring. Jemimah's passion then led her to go to college to complete a full three year secretarial course. Returning to APDK after completion of her courses, Jemimah's skills and motivation led to a series of progressive promotions from receptionist to an executive secretary to the executive officer. An online course in business training further propelled her career to personal assistant to the executive officer and a temporary acting coordinator for microfinance. In addition to her successful office career, Jemimah is active in her community, modelling in mainstream fashion competitions to showcase the work of designers with disabilities whilst advocating for the rights for persons with disabilities.

Jemimah's story demonstrates that access to inclusive education can help individuals with disabilities develop the skills, experience and empowerment needed to follow their passions, develop rewarding careers and become financially independent. Additionally, Jemimah serves as a visible example that people with disabilities can be successful, which can go a long way towards changing long-held prejudices and fostering further social, economic and political inclusion.

Reproduced with permission from CBM (Original story can be found in:
*C*BM(2013). Resource Book Tanzania/Kenya. CBM Germany.)

A third area of consideration is that most of the studies presented above are concerned with years of schooling, with no reference to quality. Maximum economic gains will be present when individuals receive a quality education that boosts useful skills, leading to a more innovative, productive workforce.[143] Hanushek et al. found that the relationship between cognitive skills of the population were much more powerfully linked to individual earnings, distribution of income and national economic growth than simple years of schooling.[143] Simply boosting attendance rates will thus likely have minimal impact in decreasing inequalities between people with and without disabilities if efforts are not made simultaneously to ensure equality within schools as well.

1.2.2 Pathway 2: Non-Employment Costs and Benefits

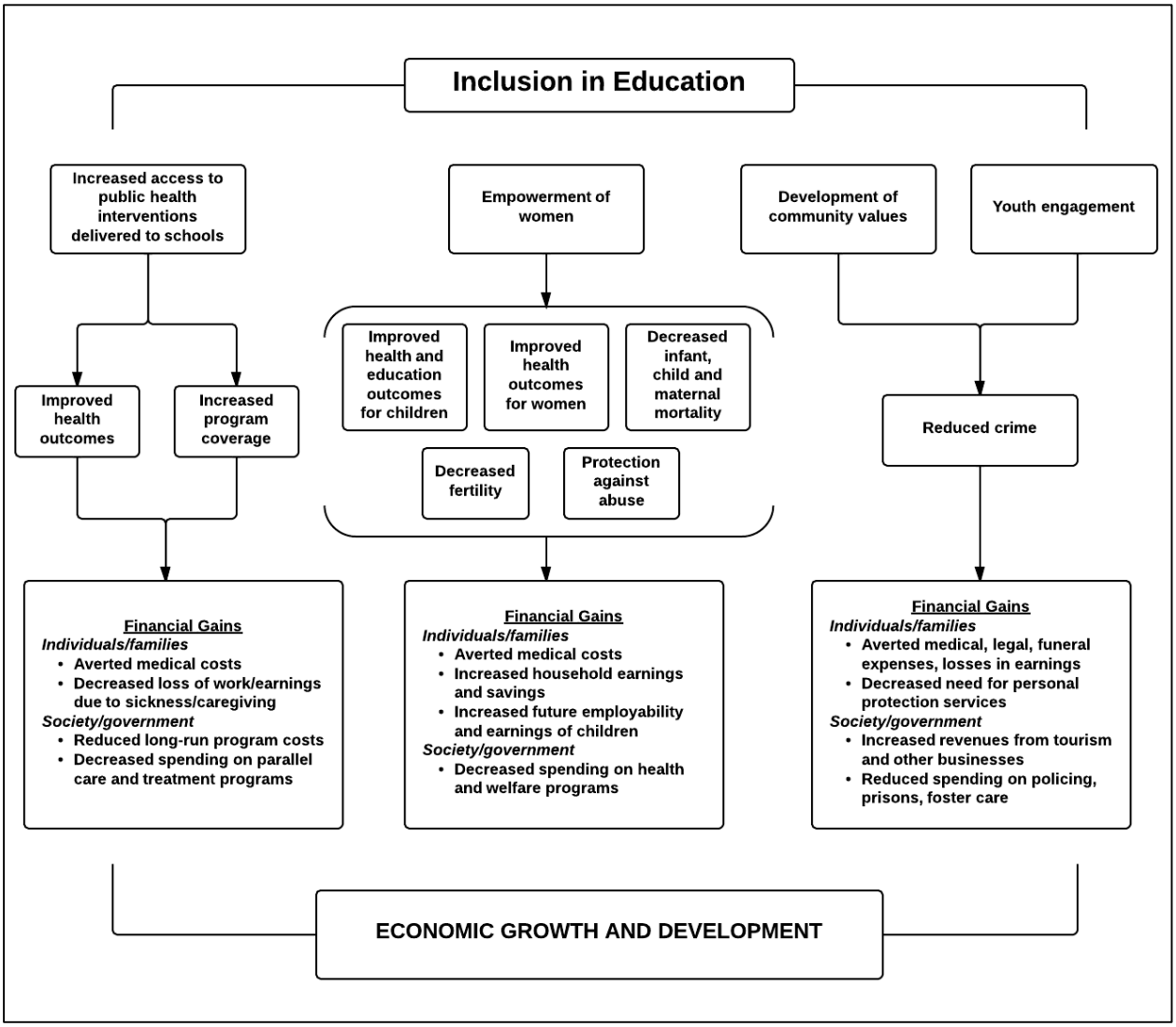


Figure 2. *Education pathway 2: Non-employment costs and benefits*

Education also has positive impacts in areas such as crime, population growth, health, citizen participation and gender empowerment, which in turn have financial and social consequences.[143] Empirical data on this for people with disabilities are lacking but some of the theoretical routes are highlighted below.

Many public health and development initiatives use schools as their point of delivery, particularly if children are the target population. Examples include mass drug treatments for diseases such as intestinal worms, nutritional supplementation programmes, bed-net provision for malaria prevention, and sexual and reproductive health education.[152, 153] Exclusion from these valuable programs can result in worse health outcomes, including the development of secondary disabilities. Poor health in turn can lead to an array of costs, as highlighted in section 3, further trapping individuals with disabilities in the cycle of poverty.

Similarly, many social assistance and welfare programmes – notably cash transfers – are increasingly requiring recipients fulfil certain conditions to receive benefits. As conditionality is meant to address the drivers of poverty, enrolment of children in primary school is a particularly popular requirement for participation. However, if schools are inaccessible to children with disabilities, families may be excluded from programmes that have proven successful at reducing poverty and spurring development.[134]

Education of women is well established to generate multiple benefits. These include: lower infant, child and maternal mortality, decreased transmission of HIV, increased autonomy, greater protection against abuse and improved health and educational outcomes for their children.[154] While the social benefits on their own merit investment in education for women, such advances would also bring high financial savings: for example, decreasing reproduction rates in low income countries has been linked to national economic growth and increased household savings, preventing HIV averts costs for care and treatment, and investment in children is instrumental for breaking the intergenerational cycle of poverty.[154, 155] By excluding women with disabilities from education, they are less likely to share in and contribute to these gains.

The impact of exclusion from education may, in turn, contribute to lower educational attainment for the next generation. In a study in Vietnam, children of parents with disabilities were less likely to attend school compared to children of parents without disabilities. Lower education levels among the parents with disabilities was a possible explanatory factor in this association.[156]

Finally, education is one of the most significant factors in preventing crime.[157] In addition to the losses in human life and suffering, crime is very costly for society: spending on legal and medical fees, policing, funerals, personal protection and prisons, reductions in revenues for tourism and other businesses and the losses in potential earnings and productivity of both the victims and perpetrators, cause significant declines in economic growth.[157, 158] To reduce the burden of crime, increasing school attendance and fostering a sense of community within schools have been found to have the most impact on crime – reducing violent activity by 55-60% in one multi-country study.[158] Inclusive education, by providing avenues for more productive lifestyles as well as promoting community values, may therefore generate economic gains through crime reduction.

1.3 Non-Financial Impact

Exclusion of children with disabilities from education also has many non-financial associated costs. Schools are a primary place where children develop friendships; denial of this opportunity for social networking and community participation can lead to isolation, decreased autonomy, and lower quality of life. For caregivers, the increased dependency burden can heighten risk for depression and limits their own independence.[159] At a societal level, exclusion from mainstream education helps propagate discriminatory attitudes, creating further barriers to participation in other domains.[160] Further, efforts to increase the quality of education to ensure effective learning for those most in need (e.g. children with disabilities) arguably has the potential to improve teaching abilities overall. Finally, as education can provide individuals with the skills, experience and empowerment to vocalize their opinions, inclusion in education can be a first step towards increasing political participation and social justice for people with disabilities. Although education in segregated settings may teach children with disabilities the requisite academic material, it fails to provide many of these other non-financial gains, which in the future could translate into economic gains. Inclusive education for children with disabilities therefore can improve individual and family well-being while encouraging greater acceptance of diversity and the formation of more tolerant, equitable and cohesive societies.

2 WORK AND EMPLOYMENT[d]

©CBM/argum/Einberger

2.1 Evidence of Exclusion

Article 27 of the UNCRPD highlights the rights of people with disabilities to inclusive work and employment. By prohibiting discrimination at all stages of employment – from hiring to career advancement to wage setting – and promoting access to reasonable accommodations when needed, the UNCRPD seeks to ensure work environments are open, inclusive and accessible. With these reforms, people with disabilities can be productive members of the labour force, earning livelihoods and contributing to national economic growth and development.

However, despite the potential individual and societal benefits from inclusion, exclusion of people with disabilities from employment remains widespread. By some estimates, 80-90% of people with disabilities are not participating in the labour force.[18] Though opportunities for formal employment in many LMICs are limited for all individuals,[7] people with disabilities are particularly disadvantaged: in South Africa, for example, the employment rate for people with disabilities is less than a third of that of people without disabilities.[16] Individuals with multiple

[d] For the purpose of this report, work and employment refers to any activities that are contributing towards an individual or household's economy. This can include informal or formal work, self-employment, work for wages paid in cash or kind.

disabilities frequently experience even higher gaps in employment, as do those with mental health and intellectual disabilities.[2, 161]

Even when people with disabilities do find work, they tend to have longer hours, lower pay, less job security and fewer opportunities for promotion.[31] Women with disabilities are particularly marginalized: compared to men with disabilities, not only are they half as likely to work but when they do, they earn half the income for similar jobs.[162]

A sustainable, gainful livelihood is essential for ensuring individuals with disabilities are economically empowered, can fulfil their basic needs and contribute financially to their families, communities and society at large. Without greater inclusion of people with disabilities in employment, the vicious cycle of poverty will continue to be perpetuated, hampering the realization of Millennium Development Goal 1.[27] Understanding and mitigating the barriers that hinder participation in employment is key to ensuring individual and societal economic and social development.

2.1.1 Barriers to formal employment

Exclusion from employment is often indicative of exclusion in other downstream areas. Most notably, barriers to participation in education and training prevent the acquisition of skills needed for many jobs (see section 1.1). In the formal sector[e] of most LMICs' economies, limited opportunities leads to high competition; consequently low-skilled workers are at disadvantage and few are able to access the typically higher paying, more stable formal sector jobs.[7, 163]

However, even when individuals with disabilities have the requisite skills for successful employment, other factors significantly hinder participation. For example, the social isolation of people with disabilities limits the development of networks, which can be helpful in finding jobs and career advancement.[2] Additionally, discriminatory attitudes and misconceptions create significant barriers. This includes the belief among employers that an employee with a disability will be less productive and less qualified than one without a disability.[2] Prejudice towards disability typically varies by impairment type, with those with mental health conditions experiencing the most disadvantage.[2] For example, in a 27 country study, almost a third of individuals with schizophrenia reported discrimination in finding or retaining a job.[164] Moreover, people with disabilities themselves and their families may have low expectations of their capabilities and employability, discouraging them from seeking work altogether.[2]

Inaccessible work environments and lack of accommodations can also bar inclusion in employment. Physical and communication barriers at vocational services, during interviews, in the work setting and at social events with colleagues can impede individuals with disabilities from obtaining a job or reaching their maximum potential once hired.[2] Though these challenges can be overcome with appropriate accommodations – often at low or no cost –

[e] The formal sector is the part of the economy that is taxed, government monitored and included in gross national product, as opposed to the informal economy. In LMICs, the informal economy can make up as much of 40% of economic activity and upwards of 75% of the labour force. (ILO 2002)

employers may not implement the necessary adjustments due to incorrect overestimation of costs, lack of information or genuinely limited resources.[2]

Finally, certain laws may hinder inclusion. Sometimes legislation openly discriminates against people with disabilities, such as in Cambodia, where individuals with any type of impairment are prohibited from becoming teachers.[160] Even when policies are well-meaning, they can sometimes create disincentives to work. For example, if disability benefits – available in some MICs but rarely in LICs – are tied to unemployment and are greater or equal to the value of expected wages, people with disabilities may choose not to work in order to maintain this source of steady income.[2, 135]

2.1.2 Barriers to self-employment/informal labour

In developing countries, 80% of people with disabilities who are working are self-employed, almost entirely in the informal sector.[7, 163] Self-employment in this context is a broad term, encompassing a wide-range of livelihoods engaging in activities such as farming, agriculture, shop keeping and small-scale production of a variety of goods and services, where remuneration may be in cash or kind. [48] Though it should not be promoted as the only option for economic inclusion, self-employment can be a good alternative, particularly in LMICs where there is a general dearth of opportunities for formal sector jobs.

A key requirement to successful entrepreneurship is access to credit. However, potential lenders frequently are reluctant to loan to people with disabilities, as they are perceived to be high risk clients: as people with disabilities also tend to be poor, they often lack collateral, guarantors or records of past repayments that are traditionally needed to satisfy more formal lending agreements.[48,165] People with disabilities are often also excluded from microfinance schemes, whose purpose is to extend credit and other financial services to low-income individuals or those barred from more formal banking institutions. [48,166] In a multi-country study conducted by Handicap International of over 100 microfinance organizations, people with disabilities made up on average only 0-0.5% of clientele. [48,] Given the disproportionately high rates of poverty and the fact that self-employment is often the only option for people with disabilities in LMICs to earn a sustainable livelihood, these figures represent a gross underrepresentation from an avenue that has proved effective in mitigating poverty for millions of individuals. Self-exclusion, negative attitudes of staff and inaccessible facilities were cited as major contributors. [48,166]

As with individuals in formal employment, people with disabilities in self-employment and informal work may require supports such as assistive devices, social protection programmes and vocational training and rehabilitation to succeed.[7] In addition to the previously mentioned physical, communication, attitudinal and economic barriers that can impede access, many self-employed individuals with disabilities may encounter further barriers due to their lack of legal standing. As legislative reforms rarely cover the informal sector, people with disabilities may be excluded from beneficial policies and programs.[135] For example, insurance programs can help individuals maintain stability during an economic shock and allow entrepreneurs to take some calculated risks necessary to grow their enterprise. [48] Exclusion from such protection programmes leaves

individuals vulnerable to financial ruin and can stifle potentially profit-generating innovations.

2.2 Costs of Exclusion and Potential Gains from Inclusion in Work and Employment

Exclusion in work and employment is frequently the culmination of downstream marginalization in areas such as health and education. As the association between employment and economic costs/gains is more direct than for these other areas, most studies attempting to quantify the financial impact of inclusion or exclusion measure it through employment-related pathways. Inclusion in work can lead to increased individual and household level earnings (pathway 1), while at a societal level, including people with disabilities from employment can lead to increased labour productivity, contributing to GDP (pathway 2) and lower spending on social protection programmes (pathway 3). Finally, including people with disabilities in the workforce can increase profits for businesses (pathway 4). These pathways and supporting evidence will be discussed in turn.

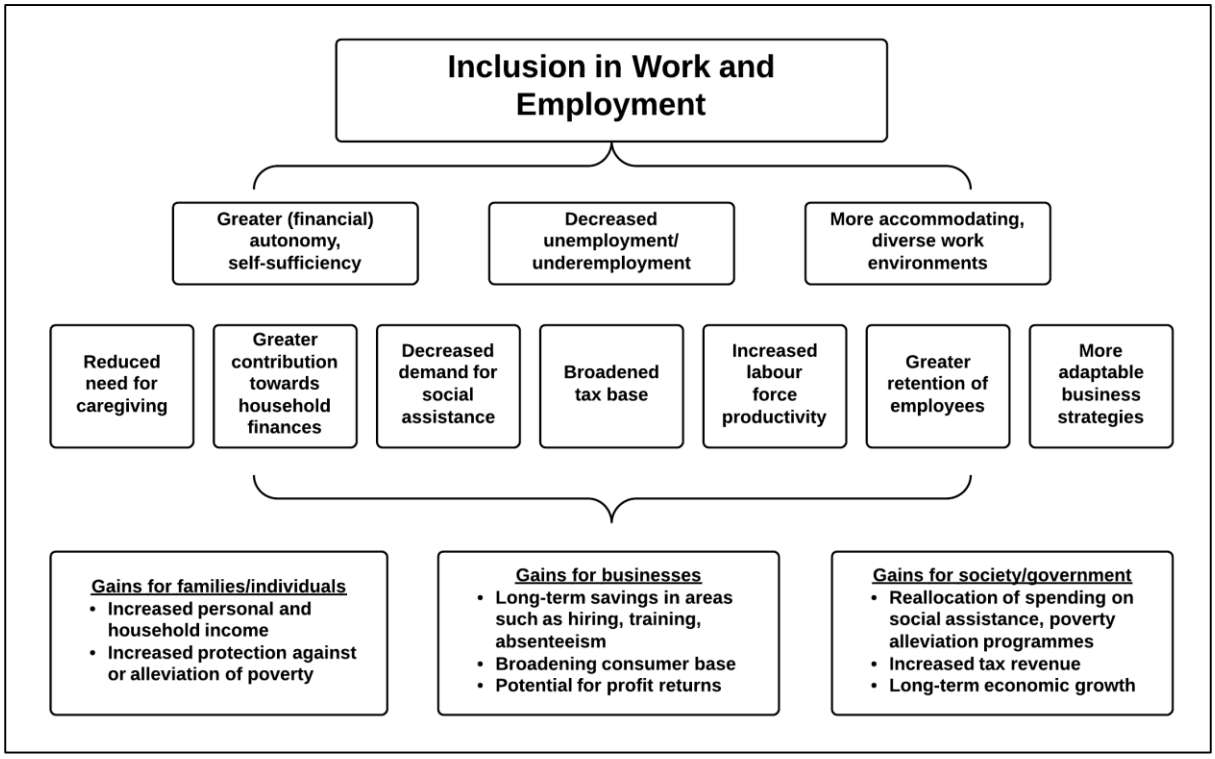


Figure 3. *Employment Pathways 1-4: Economic gains of inclusion in work and employment*

2.2.1 Pathway 1: Individual Earnings and Household Income

Results from the systematic review (see Part A), indicate a strong link between disability and lower employment and income, at both the individual and household level. Exclusion from employment of individuals with disabilities may lead to lower income due to disproportionately high levels of underemployment or unemployment as well as lower pay-scales for performing the same work as

individuals without disabilities.[2] Additionally, caregivers may forgo work opportunities to assist family members with disabilities. [2, 31]

Several country-level studies have attempted to quantify the impact on earnings due to exclusion/inclusion of people with disabilities from work. For example, Awan et al. estimated that in Pakistan, rehabilitating people with incurable blindness would lead to gross aggregate gains in household earnings of US$71.8 million per year.[10] This calculation is based on the assumption of 0% employment prior to rehabilitation and 100% afterwards among blind individuals. Increased earnings among caregivers were also incorporated, based on survey results of time devoted to providing care to individuals with disabilities. It is not entirely clear in this study, however, what "rehabilitating the blind" actually entails, other than the assumption it would allow the entire blind population (30-59 years of age) to earn an income at the country's average annual salary.

In looking at severe depression and anxiety disorders in South Africa, Lund et al. calculated that lost earnings averaged US$4,798 per adult per year (about half of GDP per capita) or US$3.6 billion when aggregated to the national level.[9] These figures were obtained from survey data in which a sample of individuals with and without these mental disorders were asked to report their income from employment. The impact on earnings was obtained by subtracting observed earnings among individuals with depression and anxiety disorders from "expected earnings" (i.e. average from survey respondents without disability), after adjusting for factors such as age, gender, education and marital status. Using estimated prevalence of severe depression and anxiety disorders in South Africa, lost income from this sample was extrapolated to determine total population level annual costs.

Turning to general disability, a World Bank study estimated that exclusion from the labour market results in a total loss of US$891 million/year in Bangladesh and that income losses among adult caregivers add an additional loss of US$234 million/year.[4] To obtain these figures, it was assumed that 10% of severely impaired, 50% of moderately impaired and 0% of individuals with multiple impairments were in the labour force. By comparing labour force characteristics of the general population with those generated for people with disabilities, it was determined that almost a quarter of individuals were excluded from employment due to their disability. Additionally, it was assumed that one million individuals with disabilities required full time assistance from a family caregiver. Average income in Bangladesh was then applied to total work days lost by both people with disabilities and their caregivers to obtain population-level losses.

A Moroccan-based study by *Le Collectif pour la promotion des droits des personnes en situation de handicap* [Collective for the promotion of the rights of persons with disabilities] estimated costs of exclusion at 9.2 billion dirhams (approximately US$1.1 billion), or 2% of GDP.[8] Figures were derived by subtracting the estimated total income among the population of people with disabilities from that of the general population. These estimates were obtained by stratifying both populations by age, sex and rural versus urban residence, and applying corresponding average salaries and rates for

employment/unemployment in each category. From these groupings, it was determined that men with disabilities living in urban areas accounted for almost half of reported losses. Obtaining these disaggregated estimates, however, relied heavily on extrapolations, assumptions and modelling of limited data from multiple surveys.

While all these studies indicate large reductions in earnings due to exclusion of people with disabilities from employment, it is unclear the extent to which losses can be recovered if barriers to inclusion were removed. All of these studies assume that employment rates will match those of the general population except Awan et al., which assumes 100% employment of the blind. While Awan's assumption is certainly unattainable even in the best circumstances, even assuming equivalent employment rates between people with and without disabilities is likely an overestimate. However, determining a maximum threshold is methodologically challenging and contentious.

Additionally, other potential costs and gains along this pathway were not captured through these studies. For example, they all focused on lost earnings due to decreased employment; however, for reasons such as wage discrimination or barriers to career advancement, even employed individuals with disabilities may not net the same income as they would in a less exclusive environment.[31] Additionally, these estimates focus on wage earnings. In many LMIC settings, however, payment for work may be a mix of in kind rather than cash.[167] Though it can be difficult to quantify in-kind wages, as they may be a dominant form of payment – particularly in agricultural settings – methods for including this type of income would greatly improve the accuracy of estimates.

Finally, increases in household income benefit not only the direct recipients, but

Chaka's Story

After sustaining an injury during an accident at his previous job, Chaka suffered permanent paralysis: his future looked uncertain. As the sole breadwinner and provider for his mother, the loss of employment and steady income threatened to push them into perpetual poverty.

However, after undergoing rehabilitation and counselling at the Nairobi Spinal Injury Centre, Chaka began to adapt to his new circumstances. He filed civil proceedings against his former employer and the compensation from the suit allowed Chaka to buy a piece of land and construct a decent home and shop. Chaka then took a course in Income Generating Skills from CBM's partner he Association for the Physically Disabled of Kenya (APDK), which helped him develop a business plan for his shop. Additionally, Chaka received several microloans that allowed him to complete construction of his real estate investment. Chaka now owns a successful store that generates enough income to support himself, his mother and his newly wedded wife. Through his success, Chaka has earned the respect of others in the community and helped change perceptions about the capabilities of people with disabilities.

Chaka's story demonstrates that providing socio-economic support that allows individuals with disabilities to engage in employment and other income-generating activities can make the difference between a life of poverty, social isolation and dependency and one with a satisfying career, financial stability and community participation.

Reproduced with permission from CBM (Original story can be found at: http://kenya.cbm.org/Freedom-from-disability-Chaka-s-story-413046.php)

can also benefit the entire community. Larger disposable incomes often mean increased consumption, which, if goods and services are bought from local suppliers, leads to a spreading of resources to others. Additionally, extra income beyond the subsistence level allows small-scale entrepreneurs to invest in their enterprises, which may include more spending in the community, such as by buying capital inputs or hiring workers.[168]

2.2.1.1 Unpaid productive activities

While the aforementioned pathways have focused on work that directly generates an income, increasing participation of people with disabilities in unpaid productive activities can also be an important mechanism for improving household economies.

Many households in LMICs rely on subsistence farming to meet basic food needs.[169] In a Ugandan study, households headed by an individual with a disability were more than twice as likely to rely on this source of livelihood compared to households not headed by a person with a disability.[80] As subsistence living leaves households vulnerable to devastation if production falls even slightly, any increase in participation in agricultural activities can be significant in providing a buffer to ensure the maintenance of minimal consumption levels. Additionally, domestic work and caregiving are essential to supporting the functioning of a household, allowing other household members to partake in activities that may more directly augment a household's economy.

Little is known about the current participation of people with disabilities in unpaid productive activities. In a multi-site study in Kenya, Bangladesh and the Philippines, individuals with visual impairment caused by cataracts were significantly less likely to partake in and spent less hours per day on unpaid productive activities compared to individuals with normal vision in each country.[170] After removing cataracts, the proportion of individuals and time spent participating in these activities rose to levels more comparable to those with consistently normal vision. However, cataract surgery amounts to a "removal" of impairment and the impact of interventions to facilitate people with disabilities to participate equally in these activities remains unknown.

Quantifying unpaid productive work is notoriously challenging. However, a 1995 UNDP report estimated that, if "treated as market transactions at prevailing wages they would yield huge monetary valuations – a staggering $16 trillion, or about 70% more than the officially estimated $23 trillion of global output."[171] From this perspective, increasing participation of people with disabilities in unpaid productive activities can go a long way towards improving household economies.

2.2.2 Pathway 2: Labour Productivity and Contribution to GDP

As a group, people with disabilities often have lower labour productivity[f] - or contribution to a country's GDP - compared to individuals without disabilities.

[f] Labour productivity is used as a measure of economic growth of a country, as it indicates the average economic output of individuals within that country. It is usually computed as GDP or GNP divided by the size of a country's working age population (typically ages 15-64 years). Although labour productivity is typically measured at the

This is mainly due to excess unemployment and economic inactivity[g] among people with disabilities, as individuals who are not working are not contributing to the economy. Additionally, even when employed, individuals with disabilities may not reach their maximum output level due to factors such as attitudinal, communication and physical barriers in the workplace and failure to provide appropriate accommodations and supports.[12] Measuring macroeconomic costs – namely in the form of GDP losses – arising from the reduced labour productivity of people with disabilities is useful for gaining an approximation of the societal costs of their exclusion from employment.

The first known study to use this approach to produce global, cross-disability estimates was undertaken by Metts in a report for the World Bank.[11] Using data from 1996-1997, Metts calculated that GDP losses in LMICs amounted to between US$473.9-672.2 billion a year. At the state level, losses in GDP reached as high as 45% for some countries. These figures were derived by multiplying each individual country's general unemployment rate by its GDP and then applying minimum and maximum "disability impact factors" to obtain a range of annual GDP losses. These disability impact factors were derived from findings of a 1993 Canadian study, in which the minimum and maximum percentages of GDP lost due to disability were divided by the unemployment rate in Canada for that year.

In a critique of Metts's approach, particularly concerning the transferability of Canadian disability impact factors to structurally disparate contexts, Buckup developed another method to measure GDP losses from exclusion of people with disabilities (and corresponding gains of inclusion) in 10 LMICs.[12] These estimates of economic costs were significantly lower than those produced by Metts, amounting to approximately 1-7% of GDP (vs. 2-31% in Metts's analysis for the same countries). To obtain these figures, Buckup created productivity weights, stratified by level of disability, to estimate the current output of people with disabilities and their potential output, should barriers to exclusion be removed. For example, it was assumed that in the current environment, an individual with a severe disability had average productivity of 25% but if barriers to inclusion were removed, that figure could reach 55%. For each level of disability (i.e. mild to very severe), the difference between optimal and current productivity was multiplied by the size of the working age population within that category of disability and the average productivity per person in the general population of that country. To obtain the relevant numbers for these calculations, Buckup relied on a mix of extrapolated survey data, modelling and assumptions.

Turning to specific impairments, Smith et al. first estimated the global annual productivity cost of blindness was $168 billion in 1993.[13] This study assumed 0% of blind individuals were contributing to the economy at the time and that these

---

country level, it can also be disaggregated to capture the economic activity of groups of individuals.

[g] Though definitions can vary, typically unemployment refers to individuals in the labour force who are available for and seeking employment. Economically inactive individuals are those that are not in the labour force at all (i.e. working age population minus both employed and unemployed).

individuals had the potential to match productivity rates of the general population. Consequently, averages of individual productivity[h] and prevalence for low, middle and high income countries were multiplied to produce total global losses. In a more recent study, Frick et al. produced "conservative estimates" on the costs of unaccommodated blindness and low vision, amounting to $42 billion in 2000.[14] Including productivity loss from caregivers of blind individuals increased the total by $10 billion. In calculating these figures, Frick et al. adjusted country averages of individual productivity[i] by the corresponding Disability Adjusted Life Year (DALY) weights for blindness and low vision. For costs of informal care, it was assumed that every blind individual required 10% of a sighted person's time.

All these studies indicate high losses to GDP due to exclusion of people with disabilities from employment. However, with the exception of the Buckup study, to date there is no research on the extent to which these losses could be recouped through inclusion-promoting interventions. Additionally, it should be emphasized that all the adjustment factors that were created to account for reduced output among people with disabilities as compared to individuals without disabilities were set by assumption and not based on empirical data. Consequently, while the overall trend of reduced output among people with disabilities in the current environment likely holds, the full extent of impact is challenging to quantify and remains unknown.

2.2.3 Pathway 3: Impact on social assistance spending and tax revenue

When analysing the impact of interventions that promote inclusion of people with disabilities in employment, it is important to take into account not only the direct economic gains from increased incomes and labour productivity, but also more indirect benefits in areas such as reduced spending on social assistance programmes and increased tax revenues.

Without the economic autonomy gained through work, individuals with disabilities may become more reliant on social assistance programmes[j]. Although still relatively limited in coverage, availability of such programmes is increasing across LMICs as part of the broader umbrella of social protection, which is gaining recognition as an effective tool for economic and social development.[172] In addition to mainstream schemes offered to those in the general population, several LMICs – such as Brazil, South Africa and Liberia - have implemented social assistance programmes specifically targeting people with disabilities.[134, 135] Determining total expenditures on recipients with disabilities is not possible, due

[h] Average individual productivity was taken as GNP/capita averages for low, middle and high income countries. Since the denominator includes the whole population, rather than just the portion that is of working age, this figure assumes all adults and children are contributing to the economy.

[i] Defined as GDP/capita adjusted to include only working individuals (population 15-64 years multiplied by labour force participation rate and unemployment rate), using country-level or World Development Report regional averages.

[j] Social assistance (also referred to as social safety nets) are "non-contributory transfers in cash, vouchers or in-kind." These programmes may be provided publicly or privately, and funded by domestic governments or private donors.[172]

to lack of data on the number of beneficiaries with disabilities particularly in mainstream programmes.[134] Looking solely at disability targeted programmes, spending amounted to US$139 million in South Africa in 2008.[134]

While social assistance programmes should always be available to protect against economic shocks and extreme poverty, the absence of alternative means of generating a sustainable livelihood can lead to inefficient schemes that ultimately do little to promote long-term economic growth and development. Due to the current high levels of poverty among people with disabilities – especially when considering that many individuals also have to contend with extra disability related expenses[k] - social assistance, when available, is frequently inadequate in terms of both coverage and content.[135] By promoting avenues for work, fewer people with disabilities would be in need of social assistance, thus lessening the demand on often financially-constrained programmes. Consequently, programme expenditures[l] could be reallocated to reach others requiring assistance or provide greater support to individuals facing significant barriers to economic self-sufficiency. In order to capture these benefits, however, it is important to ensure that social assistance programmes do not create a disincentive to work: for example, there is some evidence that decreases in labour force participation among people with disabilities in South Africa were driven in large part by stipulations of disability grants that recipients be unable to work.[134]

Furthermore, increasing labour force participation of both people with disabilities and their caregivers increases a country's potential tax base. Though the tax systems of many LMICs lack coverage and efficiency – particularly in their ability to capture taxes from the informal sector – any additions to the tax base, in theory, lead to increases in government revenue. For example, in the Philippines, it was estimated that excess unemployment among individuals with unrepaired cleft lip and palate cost the government between US$8-9.8 million dollars in lost tax revenue.[15] Such budgetary increases attained through the addition of people with disabilities and their caregivers to the tax base could in turn help free up funds for other public projects.

In HICs, investing in programmes that promote the employment of people with disabilities can lead to net economic gains from reduced social assistance spending and increased tax revenue. For example, analysis of a Scotland-based supported employment project found that every £1 spent on the programme lead to a savings of £5.87 due in large part to decreased need for disability/welfare benefits and increased tax income.[2] In the US, cost-benefit analysis of 30 supported employment programs indicated a net gain, due primarily to reductions in benefit spending.[173, 174] While social assistance and tax systems are certainly much more extensive in HICs, LMICs may also experience

[k] Some authors have suggested the need for an adjusted poverty line for people with disabilities to account for additional costs associated with disability (e.g. assistive devices, personal supports, extra transport, higher medical/rehabilitation expenses).[134, 135]

[l] In LMICs, social assistance programmes may be funded by a mix of public and private investments – though in LICs the latter is more likely to predominate.[172]

returns in these areas from investments in inclusive employment. At the present at least, this may be more relevant to MICs, as many LICs aren't spending on social assistance and have very weak mechanisms for tax collection.

2.2.4 Pathway 4: Profitability for Businesses

Employers are often reluctant to hire people with disabilities out of fear that they will be an expensive investment with limited returns.[2, 175, 176] However, there is good evidence that inclusion of people with disabilities is a smart business decision: with the proper job matching and the right accommodations, employees with disabilities can be just as productive as other workers and their inclusion may even increase overall profit margins.

Many companies in HICs have found that employees with disabilities have greater retention rates, higher attendance and better safety records than those without a disability.[17, 18] Moreover, their performance is consistently rated as on par or better than their peers without disabilities.[177] Although costs for accommodations may be incurred, the savings from the reduced need for recruitment, hiring, training, lower absenteeism and decreased insurance pay-outs, frequently more than offset initial expenses.[177] Even in LMICs where upfront resources for covering accommodations may be limited, companies that have hired people with disabilities have realised significant gains. For example, Titan, India's largest timepiece manufacturer, found that employees with disabilities had greater company loyalty and focus on the job, as well as equivalent productivity and quality of work, compared to employees without disabilities.[178] Similarly, in a survey of 120 Indian corporations, not a single company rated the performance of their employees with disabilities as somewhat dissatisfactory, while two-thirds ranked performance as completely satisfactory.[178]

Additionally, inclusion of people with disabilities can improve diversity, skills and the general work environment.[179] Studies have shown that employing people with disabilities can increase morale and teamwork among all staff, which in turn can increase productivity.[180] Also, creating structures and systems to accommodate people with existing disabilities can facilitate the retention and return to work of other workers who develop impairments or other limitations during the course of their employment – a growing concern with aging labour forces.[175] Furthermore, the provision of reasonable accommodations may include technology that is provided by local companies, potentially increasing jobs and increasing sales in other sectors of the economy.

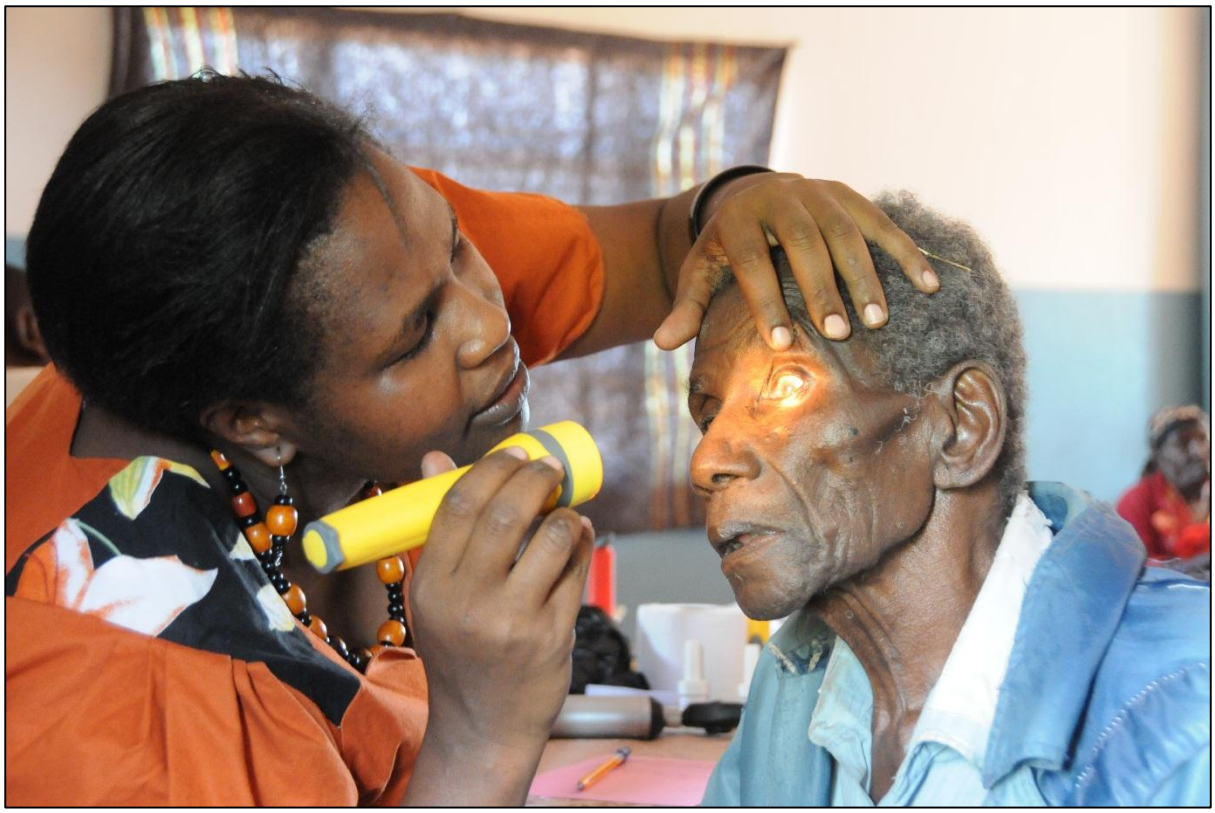
Finally, as people with disabilities comprise 15% of the population, they represent a largely untapped consumer market.[19] Employing people with disabilities can bring an improved understanding of the needs and wants of these potential consumers, allowing companies adapt strategies to better compete in a diverse marketplace.[20, 180] By ensuring products and services are accessible, businesses may attract more customers with disabilities, leading to increased sales and profits. Furthermore, hiring people with disabilities can improve a company's corporate responsibility image, which can then attract customers and promote brand loyalty.[181]

Although limited, evidence from HICs has quantified some of these economic benefits. In the US, concerted efforts by major companies Walgreens and Verizon to employ significant numbers of people with disabilities saw gains such as a 20% increase in productivity and a 67% return on investment, respectively.[19, 20] In Australia, the total cost of sickness absences for workers with a disability was less than half and the number of workers compensation pay-outs a quarter of that accrued by employees without a disability.[17] Though there is a dearth of evidence quantifying the business advantages to hiring people with disabilities in all countries, let alone LMICs, similar gains may be attainable if investments are made to create accommodating workplaces.

2.3 Non-Financial Impact

In addition to economic impact, employment serves many non-financial functions. For example, at the individual level, work provides a sense of purpose and belonging in society, leading to improved self-esteem, greater autonomy and an enriched quality of life.[2, 162] For families, having another adult contributing financially to the household lowers the dependency burden, decreasing stress and strain on relationships.[182, 183] At a societal level, exclusion of people with disabilities from mainstream work settings propagates negative stereotypes, segregation and discriminatory attitudes.[2] While sheltered employment may contribute towards improving the economic situation of people with disabilities and their families, it fails to capture many of these non-financial benefits – which likely lead at least in the long-term to economic benefits. Inclusive employment can thus lead not only to social and economic empowerment of individuals, but also help shape more cohesive, tolerant societies that value the diverse abilities of all its citizens.

3 HEALTH



© CBM

3.1 Evidence of Exclusion

Article 25 of the UNCRPD expresses the right of people with disabilities to the "enjoyment of the highest attainable standard of health without discrimination on the basis of disability." To fulfil this mandate, it highlights the need for countries to ensure not only that people with disabilities are included within mainstream health services, but also that disability-specific programmes are in place to address unique health concerns.

However, while almost all countries have endorsed these principles, people with disabilities still experience exclusion in health. In mainstream health services, people with disabilities may face inequities in access, quality and delivery of care, leading to poorer overall treatment outcomes.[2] For example, the 2002-2004 World Health Surveys conducted in 51 countries found that, although people with disabilities reported seeking care more often than people without disabilities, they were more likely to be denied needed treatment.[2]

Additionally, programmes and services targeted specifically towards people with disabilities are often a neglected in setting health sector priorities. For example, due to the lack of investment in rehabilitation, only 5-15% of people with disabilities in LMICs receive assistive devices that could greatly improve their level of functioning.[184] Similarly, people with mental health conditions face widespread exclusion in accessing appropriate services. In a survey of seven LMICs, only 2-15% of individuals with a mental disorder had received any type of treatment in the preceding 12 months; of those that did access care, only 10-

25% received treatment meeting minimum adequacy standards.[185] Given that mental health conditions account for over 10% of the global burden of disease,[186] financing for mental health is severely lagging: mental health allocations in national health budgets amount to 0.5% in LICs and about 2% in MICs.[187, 188]

There is increasing evidence that this exclusion from care and treatment for both general and disability-specific health needs leads to poorer health outcomes among people with disabilities.[2] Furthermore, by overlooking the needs of people with disabilities in health policy and planning, many of the numerous initiatives aimed at improving population health will likely fall short. Understanding the barriers that limit access to services for people with disabilities is essential not only for improving individual health status but also for creating healthier, more equitable societies that promote the social and economic participation of all citizens.

3.1.1 Exclusion through physical/communication barriers

Often, health facilities are ill-equipped to accommodate people with disabilities. In a Brazilian study of 41 cities, it was found that 60% of basic health centres had architectural barriers that prevented access for individuals with physical disabilities.[189] Furthermore, many facilities lack the facilities for certain disabilities - particularly sensory or intellectual disabilities - needed for communicating of important information, such as provision of medical history, explanations of diagnoses, treatment plans and recommendations for follow-up.[2]

Lack of accessible, affordable transportation can also prevent people with disabilities from seeking treatment. This has been cited in studies in Cambodia,[190] India[191] and Southern Africa[2] as one of the major barriers faced by people with disabilities in accessing care. Given the urban bias in the location of health facilities, rural inhabitants with disabilities are particularly disadvantaged.[2]

3.1.2 Exclusion through financial barriers

Affordability is often cited as the primary reason people with disabilities do not seek or receive needed health services: in a multi-country study, approximately 60% of people with disabilities reported that inability to finance the cost of a visit prevented treatment.[3] Compared to their counterparts without disabilities, men and women with disabilities were respectively 46% and 72% more likely to cite cost as a reason for lack of care in low income countries.[3]

There is some evidence that people with disabilities encounter higher than average out-of-pocket costs when seeking care: in a study conducted in Afghanistan, people with disabilities were more likely to incur expenses in the highest quintile than people without disabilities when visiting a range of different health providers.[192] Combined with these high costs of treatment, other studies have indicated that in LMICs, people with disabilities are less likely to receive payment exemptions or special rates for health care compared to people without disabilities. [3]

3.1.3 Exclusion through attitudinal and institutionalized barriers

Misconceptions and stigma surrounding disability can hinder provision of appropriate care. At the household level, sometimes the cause of disability is attributed to curse, sin or witchcraft, which can direct families away from pursuing conventional medical treatment or rehabilitation.[193] Similarly, signs of illness may be mistakenly viewed as disability-related, leading to potentially life-threatening delays in seeking treatment.[2] Furthermore, when resources are severely constrained, spending on health services for a child with a disability may be seen as economically irresponsible, as that child is deemed unlikely to provide for the family in the future.[165]

Even when care is sought, discrimination by health care providers may limit provision of appropriate services. In a multi-country survey, people with disabilities reported negative attitudes by health providers as a cause for lack of care two to four times more often than people without disabilities.[194] Additionally, health care providers may incorrectly assume that people with disabilities do not need certain services: for example, the commonly held – but incorrect – belief that people with disabilities are sexually inactive limits provision of sexual and reproductive health care.[27, 195, 196]

3.2 Economic Costs of Exclusion and Potential Gains from Inclusion in Health

Exclusion of people with disabilities from needed health services carries many potential direct and indirect costs to individuals, their households and even societies at large. These costs may be incurred through a number of different pathways, although studies quantifying the economic consequences are lacking. First, high out-of-pocket medical costs can exacerbate poverty (pathway 1). Second, failing to include people with disabilities in public health campaigns can reduce programme efficiency and desired impact (pathway 2). Finally, poor health can lead to participation restrictions in areas such as employment and schooling, which in turn limit development of human capital, reduce household earnings and even limit national economic growth (pathway 3). By addressing these forms of exclusion, significant savings may be realized.

3.2.1 Pathway 1: Spiralling medical costs and the poverty cycle

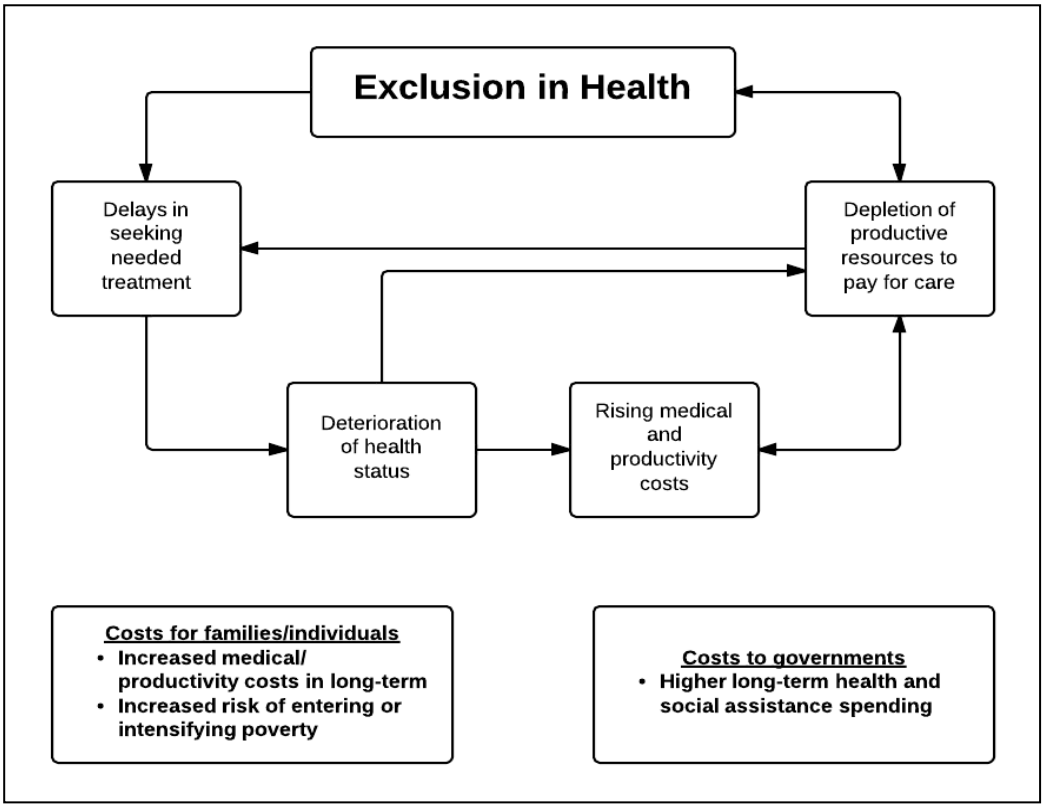


Figure 4. *Health Pathway 1: Spiralling medical costs and the poverty cycle*

People with disabilities often have a diverse range of health needs and consequently, there is some evidence that, as a group, they require more health care than the general population.[2, 197] In addition to treatment and rehabilitation for their specific impairment, people with disabilities often have higher risks of developing secondary conditions (e.g. pain, depression) and co-morbidities (e.g. diabetes, high blood pressure for certain disabilities) compared to individuals without disabilities.[2] Furthermore, there is some evidence that people with disabilities have higher rates of health risk behaviours (e.g. smoking, sedentary lifestyles, drug/alcohol use) and are at greater risk of being exposed to violence.[2, 198] Sexual abuse for example is higher among people with disabilities, particularly for individuals with intellectual disabilities.[2, 199-201]

These additional medical expenses places further demands on household budgets: on average, households with disabilities in LMICs spend 15% of their income on health care – 36% more than households without a member with a disability.[2, 202] Given that individuals with disabilities are also more likely to be living in poverty (see Part A), these expenditures pose a significant burden and can prevent or delay seeking health care.[2] Additionally, even when individuals with disabilities do access care, they are less likely to receive routine checks (e.g. blood pressure tests, measurement of weight) and reports of poor health may not be as thoroughly investigated as for individuals without a disability.[203, 204] For example, people with intellectual disabilities and mental health problems have been shown to experience "diagnostic overshadowing", whereby complaints or symptoms of illness are attributed to their disability.[203, 204] Failure to offer

comprehensive health assessments can then lead to inadequate or delayed treatment.

Inability or delay to access and receive appropriate health care may result in continuously poor or worsening levels of functioning – including the development of additional disabling conditions – that lead to higher medical and productivity costs in the long term.[205] It may lead to critical health conditions that require urgent care, ultimately generating higher medical costs. Families may be forced to take drastic measures to finance urgent treatment, such as selling assets, taking out loans or reducing consumption of other necessary household items.[21] Results from the World Health Surveys indicate that individuals with disabilities in LMICs were significantly more likely to fund medical care through these avenues compared to people without disabilities.[2] These decisions, while often the only option, nonetheless deplete households of resources that could be used to invest in family enterprises, education and other productive avenues to push households beyond a subsistence level.

In addition to the substantial costs borne by individuals, failure to adequately subsidize medical costs for people with disabilities who cannot afford to pay also carries costs for the broader society. As health system financing typically involves a mix of public and private contributions, rising costs associated with preventable deteriorations in health status may also be felt in health sector budgets, potentially leading to spending cuts for other health programmes.[206] Furthermore, individuals with disabilities who fall into poverty as a result of medical expenses may become reliant on social assistance programmes.

3.2.2 Pathway 2: Impact on Public Health Interventions

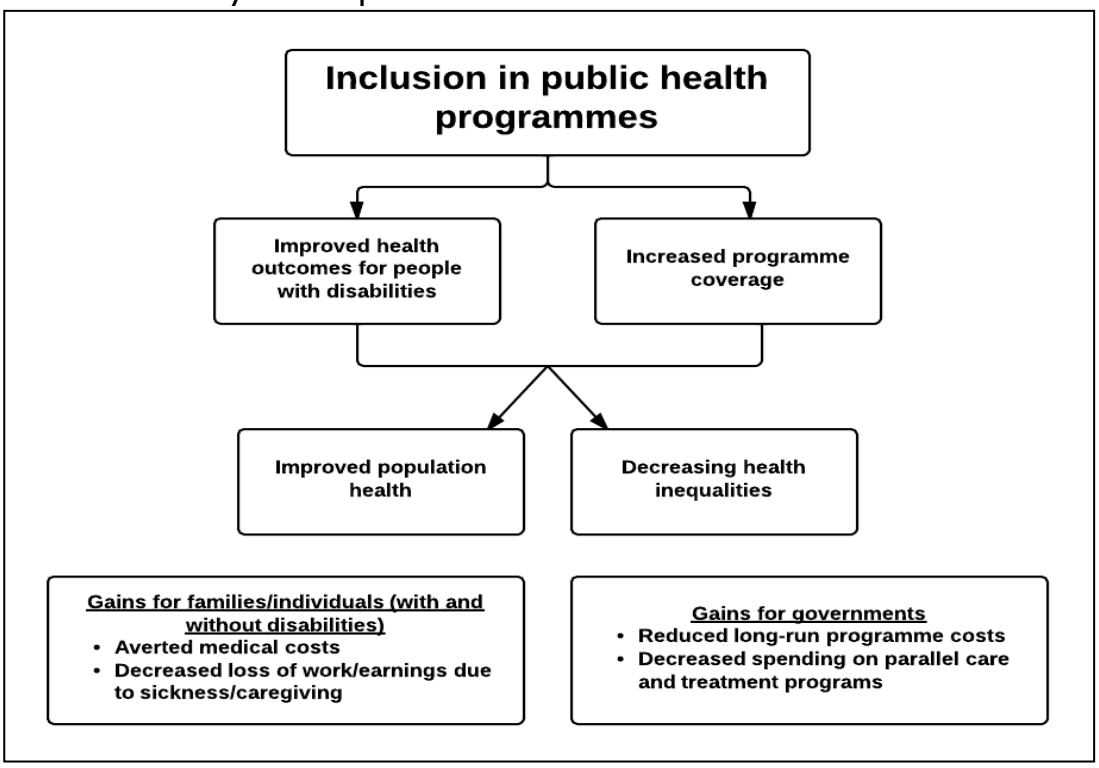


***Figure 5**. Health Pathway 2: Impact on public health interventions*

Failure to include people with disabilities can impede the effectiveness and efficiency of public health programmes (figure 5). On an individual level, exclusion from such programmes leads to the continued propagation of health inequalities between people with and without disabilities, with the associated negative economic consequences. Additionally, many health interventions require broad coverage and widespread participation in order to be successful: thus, not including people with disabilities can jeopardize the health of entire communities. Consequently, though making interventions inclusive may involve extra initial costs, savings through more efficient health sector spending and reduced burden of disease may more than offset the investment in the long-term.

For example, it has been widely reported that people with disabilities face widespread exclusion from sexual and reproductive health services, which could potentially lead to very high individual and societal costs.[2, 195, 207] Using HIV to illustrate this point, treatment for HIV in LMICs amounts to $8,900 per person over the life-course in contrast to an estimated US$11 to prevent one case of HIV.[208, 209] The numerous other social and economic costs associated with HIV – including increased incidence and propagation of infection – amplifies the costs of exclusion from HIV prevention efforts substantially. As there is increasing evidence that people with disabilities are at increased risk of contracting HIV – but are frequently overlooked in preventative measures – greater inclusion in sexual and reproductive health programmes could lead to significant individual and population level health and financial gains.[196, 201]

Similar parallels can be drawn with interventions such as immunizations, nutrition programmes and water, sanitation and hygiene (WASH) projects: though data is limited, reports suggest widespread exclusion of people with disabilities.[210, 211] Exclusion of people with disabilities from these initiatives leaves individuals susceptible to preventable illness, further disablement or even death.[160, 211] Furthermore, failure to include people with disabilities can reduce potential improvements in population health: for example, lack of provision of nutritional supplementation in pregnant women with disabilities can lead to negative health consequences for unborn babies;[212, 213] for WASH and vaccinations, high population uptake is needed to halt the spread of infection and thus when people with disabilities are excluded, gaps in targets for coverage may persist.[210, 211]

Inadequate attention to the specific requirements of people with disabilities in the planning stages of public health interventions can hamper the realization of programme goals and lead to inefficient spending. For all of these examples, though adaptations to make programs accessible will lead to some additional costs, in the long-run the rates of return on investment are likely to be higher when considering the financial, as well as social, implications of reducing individual and population burden of disease.

3.2.3 Pathway 3: Downstream Effects of Poor Health

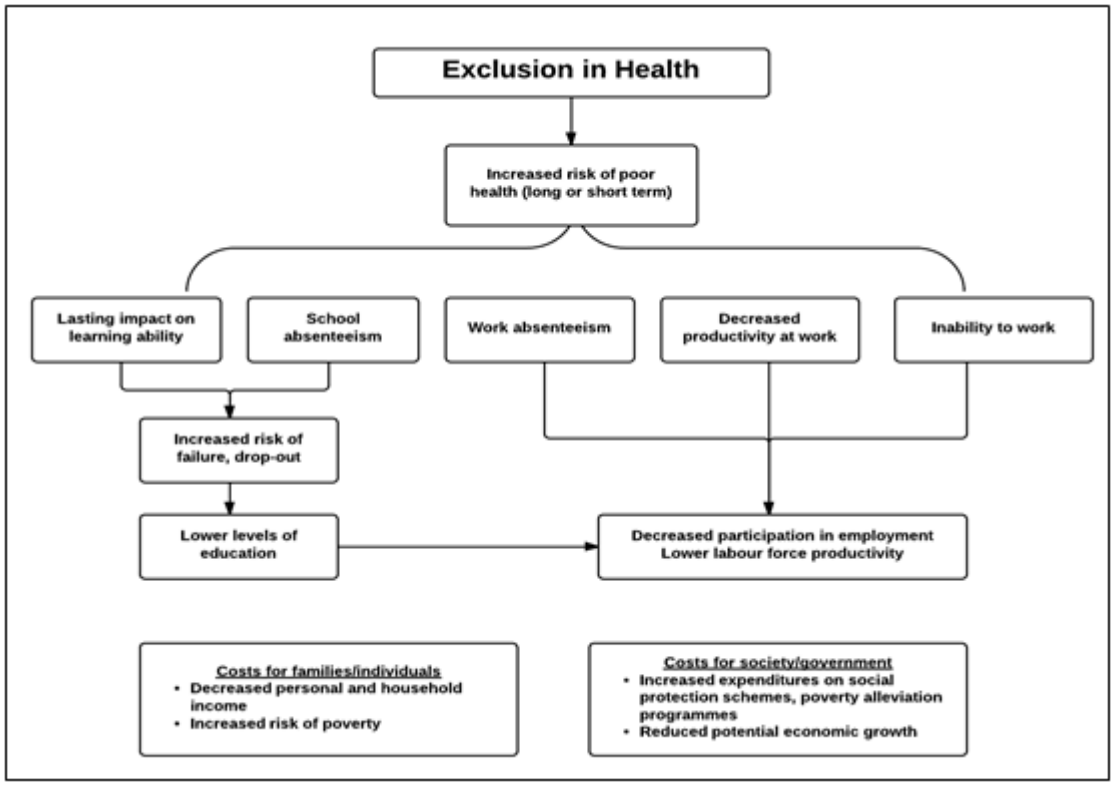


Figure 6. *Health pathway 3: Downstream Effects of Poor Health*

While improving health is an important goal in its own right, it can also have positive impacts in areas such as education, employment and even national economic growth.[23] Reducing inequalities and barriers to inclusion thus may not only lead to health gains amongst people with disabilities, but also can increase their social, cultural and economic participation. This broader integration can then in turn lead to reductions in poverty and marginalization while also promoting human and economic development.

3.2.3.1 Health and education

Looking first at education, poor health can both directly and indirectly affect level of schooling and acquisition of skills.[23, 214, 215] Episodes of illness can cause students to miss school and frequent absences may have long-term consequences: high absenteeism has been linked to increased failure rates, grade repetitions and drop-out rates.[216] Furthermore, health conditions such as malnutrition, intestinal worms, HIV and malaria, can have lasting impacts on cognitive development and learning ability, which in turn affect scholastic achievement and skills acquisition.[172, 216, 217]

Exclusions in health may contribute to the educational inequalities between people with and without disabilities (see section 1.1). For example, people with disabilities may be particularly vulnerable to fluctuations in health status and may be more likely to experience delays in receiving needed treatment - if

received at all.[2] Additionally, though evidence is lacking, people with disabilities may be at increased risk for adverse health events that can impact learning ability: for example, children with disabilities may be more likely to suffer from malnutrition, due in part to complications associated with certain impairments (e.g. feeding challenges in children with cerebral palsy) and exclusion from nutritional programmes.[218]

The synergy between health and education can lead to a range of individual and societal costs.[23] As highlighted in section 1.1, educational attainment is strongly linked to career opportunities and wages; consequently adults with low levels of schooling, due to poor childhood health or otherwise, are at a disadvantage in the labour market and more prone to poverty. At a national level, low levels of education is associated with losses in GDP.[143]

3.2.3.2 Health and work

Health status can also directly impact work opportunities and earning potential. Sickness can reduce an individual's physical and mental capacities, decreasing their productivity at work.[219] Additionally, bouts of illness can cause individuals to miss time at work, leading to disruptions in production, decreased output and losses in income. If poor health is persistent, individuals may be fired, forced to cut-down hours or stop working altogether.[23] Family members also often forgo work and income in order to care for a sick individual. Finally, high costs of health care can cut into household savings, impeding productive investments in family enterprises that could push households out of poverty.[219] Aggregated to the national level, the economic losses from the influence of poor health on employment can be substantial.[23, 220] For example, one study demonstrated that health differentials between countries account for approximately 17% of the variation in output per worker.[221] In another, every 1% increase in adult survival rates resulted in a 2.8% increase in labour productivity.[219] As the productivity of the workforce is key to fostering economic growth, improving the overall health of populations, inclusive of people with disabilities, can promote national level gains.

3.2.3.3 Economic gains of health and rehabilitation interventions

Although research in this area is generally lacking,[222] there are a few studies from LMIC that show that efforts to improve the health status of individuals with disabilities can lead to greater participation in employment and education, resulting in economic gains. For example, in a randomized control trial involving individuals with schizophrenia in China, Xiong et al. found that those who received individualised family-based interventions (consisting of counselling and drug supervision) worked 2.6 months more per year than those who did not receive the treatment.[24] Taking into account the costs of providing the intervention with the gains in increased income and reduced hospital costs, this program netted savings of US$149 per family treated. Another study based in Bangladesh found that children who were provided with assistive devices (hearing aids or wheelchairs) were more likely to have completed primary school compared to those who did not receive any supports.[25]

More evidence is needed to better understand how exclusion in health impacts both educational and employment outcomes in people with disabilities, and the subsequent economic and social costs. Similarly, exploring how interventions that promote greater inclusion in health affect these downstream indicators could provide further impetus to address health inequalities and barriers to care experienced by people with disabilities.

3.3 Non-financial costs

Health inequalities between people with and without disabilities carry many costs beyond the purely economic. At the individual level, good health is essential for participation in many activities: persistent poor health can be physically and emotionally draining, leading to social isolation, poorer quality of life and loss of autonomy.[223, 224] Additionally, for caregivers, the dependency burden of an incapacitated family member can cause stress and strain on relationships.[183, 225] Finally, the reduced involvement of people with disabilities in the community due to poor health plays a role in propagating misconceptions on disability that contribute towards economic and social marginalization. Narrowing health gaps through inclusive programmes can thus have far-reaching benefits beyond simply monetary gains.

Soba's Story

As a talented young scholar with a passion for literature, Soba's future seemed bright: after successfully completing secondary school, he began college in pursuit of higher education. However, severe headaches and gradual behaviour changes indicated the onset mental illness. In hopes of alleviating their son's worsening condition, Soba's parents brought him to a traditional healer. When his mental health showed no signs of improving, they turned to a local mental health institution, where Soba was prescribed 33 pills per day without having ever had a proper evaluation and diagnosis. Furthermore, Soba was subjected to brutal treatment while institutionalized, such as being chained and locked to a bed.

Then, Soba's case came to the attention of Koshish, a CBM-supported organization that provides support for people with mental disorders in Nepal, which succeeded in removing him from institutionalisation. Set up with a new psychiatrist, Soba began a new treatment plan that included a revised medication schedule (down to 3 pills a day) and counselling. With this proper case management, Soba has seen remarkable improvements in his mental health. No longer segregated and subjected to inhuman treatment in an institution, Soba has reconnected with his family and is integrated back into the community. He is now continuing his education and using his talents for poetry to bring awareness to the challenges of living with a mental health condition and the need for improved care and treatment. Furthermore, Soba serves on the board for Koshish to use his experience to help others in similar situations.

Soba's story demonstrates the difference inclusive access to health for people with disabilities can make for individuals, their families and societies. For Soba, failure to provide appropriate treatment and supports led to worsening health status, degradation and isolation from his family and friends; in contrast, proper case management allowed him to continue his education, participate in the community and engage in economically and socially gainful activities.

(Adapted from CBM website: http://www.cbm.org/A-scholar-released-from-chains-269990.php)

4 METHODOLOGICAL CHALLENGES

This review highlights that although there is a strong theoretical basis for substantial economic gains associated with inclusion of people with disabilities, the empirical evidence base is relatively limited. The paucity of such estimates is perhaps unsurprising given the inherent methodological challenges. Further, undertaking these studies requires sensitivity, as the findings have potentially significant and unintended policy implications: while the economic costs and benefits of inclusive policies should be a consideration in policy decisions, there is a concern that a singular focus on the financial could lead to the devaluation of the less easily quantifiable social, cultural and political impacts of exclusion/inclusion.

Estimating the costs, gains and cost-effectiveness of exclusion and inclusion requires a variety of information and data. This includes disability specific data (e.g. prevalence of disability, extent and impact of exclusion) as well as costing data (e.g. cost of implementing inclusive strategies and the economic losses and gains associated with exclusion and inclusion). Unfortunately, there is a general dearth of such figures and therefore calculations rely either on incomplete or inaccurate existing information or assumptions and extrapolation, which carry limitations.

4.1 Disability data

The collection of data on disability is essential for understanding the prevalence and scope of functional limitations within a population and the impact on individuals, their families and societies.[226] Without such information, it is difficult to measure the extent, magnitude and consequences of exclusion and thus design, prioritize, budget for and implement services and policies that foster inclusion of people with disabilities. However, high quality, comprehensive, up-to-date data on disability are inadequate, particularly in LMICs.

Collecting such data is complicated by a range of methodological as well as socio-political challenges. As people with disabilities are amongst the most severely marginalised, they are often overlooked as a research priority.[30, 165] Even when attempts are made to gather information, coverage may be poor due to social isolation, stigmatization and use of research methods that exclude people with certain impairments.[30]

Furthermore, the wide array of definitions and means of assessing disability can impede the collection of reliable, comparable, representative figures of measures as basic as prevalence.30 This may improve in years to come as several groups, such as the Washington Group, are attempting to synergise efforts to collect disability disaggregated data.

In addition to the challenges in ascertaining even the prevalence of disability, measurements on social, political and economic participation of people with disabilities relative to the general population are lacking in most LMICs. While it is well established that people with disabilities experience exclusion, without

accurate, comprehensive data, it is difficult to quantify the full extent of disparities and thus identify priorities for interventions. Statistics comparing the proportion of people with and without disabilities engaged in work, for example, are rare. Part of this lack of evidence reflects widespread challenges in collecting employment data: most notably, work done in the informal sector, which comprises the majority of employment in many LMICs, is often not captured.[12]

Due to the lack of data, studies must rely on other methods to estimate levels of exclusion. While some studies use relatively high quality survey data extrapolated to a national level to inform estimates (e.g. Lund et al.[9]) others must rely on less accurate methods. At the extreme end, some authors[10, 13] assume 0% of people with disabilities are engaged in economically productive activities – most certainly an underestimation even in the most exclusive environments. Others apply higher estimations of employment rates, but these are nonetheless "best guesses" rather than based on any empirical evidence.

A further challenge is that the extent and impact of exclusion is likely to vary significantly by impairment type, level of support needed and age, but such disaggregated data are rarely available. Studies therefore either apply uniform estimates for all people with disabilities, or make assumptions about levels of exclusion in different groups. For example, in his estimates of costs of exclusion in the labour market the World Bank, Buckup assumed that 10% of severely impaired, 50% of moderately impaired and 0% of individuals with multiple impairments were in the labour force.[12] The empirical basis for these assumptions and impact on the study findings is unclear.

The impact of different assumptions on the estimates of economic impact is highlighted in two studies of the costs of exclusion of people with disabilities from work in LMICs. Metts applied disability impact factors derived from a Canadian study.[11] Buckup questioned the transferability of the Canadian weights to such different contexts and derived new weights stratified by level of disability.[12] These two approaches resulted in very different estimates of GDP losses: approximately 1-7% of GDP in the Buckup estimates compared to 2-31% in Metts's analyses for the same countries.

4.2 Cost data

Empirical data on the economic costs of exclusion and gains of inclusion are also lacking. There is a need for longitudinal studies assessing economic changes for people with disabilities over time (disaggregated by type and severity of impairment) following the introduction of inclusive programmes/policies and practices. For example, examining changes over time in employment, productivity and income generation of people with disabilities after the introduction of inclusive labour practices. A significant challenge facing such studies, however, is the likely long term follow-up needed to evaluate gains.

Furthermore, though it is often challenging to capture, inclusive policies can lead to gains for the general population: for example, providing pictorial and audio forms of communication can help disseminate information and incorporate

individuals who are illiterate; fostering inclusive attitudes can lead to greater acceptance and economic and social integration of other marginalized groups, such as women and ethnic minorities; and efforts to expand programmes to include people with disabilities can increase coverage for the entire population. While it will not be possible to quantify the impact of all of these possible gains, it is important to at least consider them when assessing the merits of various interventions.

4.3 Inclusive societies

An additional complexity, not taken into account in existing studies, is the fact that the economic impacts of exclusion and inclusion in health, education and employment are likely to be interdependent. Improving levels of education for children with disabilities for example, will likely have limited impact on economic growth and wage returns if investments in education are not matched with future job opportunities for people with disabilities.[172] Inclusion of people with disabilities in all aspects of society is thus needed for the maximum benefits to be realised.

CONCLUSION

From a human rights and social justice perspective, the widespread exclusion of people with disabilities from society is unequivocally indefensible. With the evidence presented in this report, it is clear that exclusion is also untenable from an economic perspective: not only does exclusion create a significant economic burden for individuals and their families, but it also carries high costs to societies at large. While creating inclusive societies will involve financial investments, the costs of inaction – economic and otherwise - dwarf any programmatic expenses.

To start, failure to address the nexus between disability and poverty will undoubtedly stall progress towards national and international economic growth and development. With an overwhelming 87% of studies reporting a link between poverty and disability, the results of the systematic review provide a robust empirical basis to support theorized disability-poverty cycle. Furthermore, as people with disabilities often incur additional expenses related to their disability (e.g. assistive devices, extra transportation) and thus may require a higher minimum threshold to meet basic needs,[134] these findings likely underestimate the true extent of poverty among people with disabilities. Considering people with disabilities comprise upwards of 15% of the global population,[2] neglecting to make poverty alleviation and development programmes disability inclusive bars access to a substantial proportion of the population, significantly reducing their potential impact and propagating inequalities.

Understanding the pathways through which exclusion of people with disabilities generates economic costs – and where inclusion can result in gains – can help highlight areas for intervention to break the cycle between disability and poverty. This report details widespread economic impact across areas of health, education and work/employment that leads to costs at the individual, family and even national level. Furthermore, pathways through which inclusion can not only mitigate these costs but also lead to long-term gains are presented. While there is a strong theoretical basis to support these pathways – backed by several epidemiological and modelling studies – additional empirical research is needed to provide further details on the extent, magnitude and scope of exclusion costs and the impact of inclusive interventions. As fostering inclusive societies will in many instances require extensive, simultaneous interventions across a range of domains, measuring long-term progress rather than immediate results will be needed.

Finally, it is important to emphasize that while this report focused on the economic implications of disability, this is not to say they should take precedence over the numerous social, political and cultural impacts as well. To maximize benefits and truly create inclusive societies, we should aim to combat all types of exclusion in all aspects of social life.

References

1. UN Enable. UN Enable: Latest Developments 2014. Available from: http://www.un.org/disabilities/.
2. World Health Organization. World report on disability: World Health Organization; 2011. Available from: http://whqlibdoc.who.int/publications/2011/9789240685215_eng.pdf.
3. World Health Organization. Towards a Common Language for Functioning, Disability and Health: The International Classification fo Functioning, Disability and Health. Geneva: 2002.
4. Project appraisal document on a proposed credit to the People's Republic of Bangladesh for a disability and children-at-risk project project. Washington: World Bank; 2008.
5. Lamichhane K. Disability and barriers to education: evidence from Nepal. Scandinavian Journal of Disability Research. 2013;15(4):311-24
6. Liao J, Zhao J. Rate of Returns to Education of Persons with Disabilities in Rural China. 2013
7. Handicap International. Good practices for the economic inclusion of people with disabilities in developing countries: funding mechanisms for self-employment. Lyon, France: 2006.
8. Collectif pour la promotion des droits des personnes en situation de handicap. Etude sur le coût économique de l'exclusion du marché du travail des personnes en situation de handicap au Maroc. 2011
9. Lund C, Myer L, Stein DJ, Williams DR, Flisher AJ. Mental illness and lost income among adult South Africans. Soc Psychiatry Psychiatr Epidemiol. 2013 May;48(5):845-51
10. Awan H, Khan N, Malik S. The economic burden of blindness in Pakistan: A socio-economic and policy imperative for poverty reduction strategies. Indian Journal of Ophthalmology. 2012 01 Sep;60(5):358-64
11. Metts RL. Disability Issues, Trends and Recommendations for the World Bank. 2000.
12. Buckup S. The price of exclusion: the economic consequences of excluding people with disabilities from the world of work. Geneva: International Labour Office,, 2009.
13. Smith AF, Smith JG. The economic burden of global blindness: price too high! British Journal of Ophthalmology. 1996;80:276-7
14. Frick KD, Foster A. The magnitude and cost of global blindness: an increasing problem that can be alleviated. American Journal of Ophthalmology. 2003;135(4):471-6
15. Muntz HR, Meier JD. The financial impact of unrepaired cleft lip and palate in the Philippines. Int J Pediatr Otorhinolaryngol. 2013 Sep 20
16. Durie S, Wilson L. Six Mary's place: social return on investment report. Edinburgh: 2007.
17. Australia Chamber of Commerce and Industry. Employ outside the box - the business case of employing people with disabilities. 2012.
18. UN Enable. Employment of persons with disabilities 2007
19. International Labour Organization. Disability in the Workplace and the ILO Global Business and Disability Network 2011. Available from: http://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_ent/@multi/documents/meetingdocument/wcms_159137.pdf.
20. Houtenville A, Kalargyrou V. People with Disabilities Employers' Perspectives on Recruitment Practices, Strategies, and Challenges in Leisure and Hospitality. Cornell Hospitality Quarterly. 2012;53(1):40-52
21. McIntyre D, Thiede M, Dahlgren G, Whitehead M. What are the economic consequences for households of illness and of paying for health care in low-and middle-income country contexts? Social science & medicine. 2006;62(4):858-65
22. Peters DH, Garg A, Bloom G, Walker DG, Brieger WR, Hafizur Rahman M. Poverty and access to health care in developing countries. Annals of the New York Academy of Sciences. 2008;1136(1):161-71

23. Sachs J. Macro-Economics and Health: Investing in Health for Economic Development. Geneva: WHO, 2001.
24. Xiong W, Phillips MR, Hu X, Wang R, Dai Q, Kleinman J, et al. Family-based intervention for schizophrenic patients in China. A randomised controlled trial. The British Journal of Psychiatry. 1994;165(2):239-47
25. Borg J, Ostergren PO, Larsson S, Rahman AA, Bari N, Khan AN. Assistive technology use is associated with reduced capability poverty: a cross-sectional study in Bangladesh. Disability & Rehabilitation Assistive Technology. 2012;7(2):112-21
26. WHO. Disability and health 2013. Available from: http://www.who.int/mediacentre/factsheets/fs352/en/.
27. United Nations. Disability and the Millennium Development Goals: A Review of the MDG Process and Strategies for Inclusion of Disability Issues in Millennium Development Goal Efforts. New York: 2011.
28. Mulligan D, Gooding K. The Milllennium Development Goals and People with Disabilities: Sightsavers International; 2009. Available from: http://www.cbm.org/article/downloads/82788/MDG_and_people_with_disabilities_Sightsavers.pdf .
29. Lamichhane K, Sawada Y. Disability and returns to education in a developing country. Tokyo: University of Tokyo Research Center for Advanced Science and Technology. 2009
30. Yeo R. Chronic poverty and disability. Chronic Poverty Research Centre Working Paper. 2001 (4)
31. Elwan A. Poverty and disability: A survey of the literature: Social Protection Advisory Service; 1999.
32. Trani J-F, Loeb M. Poverty and disability: A vicious circle? Evidence from Afghanistan and Zambia. Journal of International Development. 2012 Jan;24:S19-S52
33. Mitra S, Posarac A, Vick B. Disability and Poverty in Developing Countries: A Multidimensional Study. World Development. 2013 Jan;41:1-18
34. Groce N, Kembhavi G, Wirz S, Lang R, Trani J, Kett M. Poverty and disability - a critical review of the literature in low and middle-income countries. Leonard Cheshire Disability, 2011.
35. Simkiss DE, Blackburn CM, Mukoro FO, Read JM, Spencer NJ. Childhood disability and socio-economic circumstances in low and middle income countries: systematic review. BMC Pediatrics. 2011;11:119
36. World Bank. How we classify countries 2014. Available from: http://data.worldbank.org/about/country-and-lending-groups.
37. Ataguba JE, Akazili J, McIntyre D. Socioeconomic-related health inequality in South Africa: Evidence from General Household Surveys. International Journal for Equity in Health. 2011;10(48)
38. Dandona L, Dandona R, Srinivas M, John RK, McCarty CA, Rao GN. Ocular trauma in an urban population in southern India: the Andhra Pradesh Eye Disease Study. Clinical & Experimental Ophthalmology. 2000;28(5):350-6
39. Dandona L, Dandona R, Srinivas M, Giridhar P, Vilas K, Prasad MN, et al. Blindness in the Indian state of Andhra Pradesh. Investigative Ophthalmology & Visual Science. 2001;42(5):908-16
40. Dandona R, Dandona L, Srinivas M, Giridhar P, Prasad MN, Vilas K, et al. Moderate visual impairment in India: the Andhra Pradesh Eye Disease Study. British Journal of Ophthalmology. 2002;86(4):373-7
41. You Q, Wu L, Duan J, Luo Y, Liu L, Li X, et al. Factors associated with myopia in school children in China: the Beijing Childhood Eye Study. PLoS ONE. 2012;7(12)
42. Emamian MH, Zeraati H, Majdzadeh R, Shariati M, Hashemi H, Fotouhi A. The gap of visual impairment between economic groups in Shahroud, Iran: a Blinder-Oaxaca decomposition. American Journal of Epidemiology. 2011;173(12):1463-7

43. Emamian MH, Zeraati H, Majdzadeh R, Shariati M, Hashemi H, Jafarzadehpur E, et al. Economic inequality in presenting near vision acuity in a middle-aged population: a Blinder-Oaxaca decomposition. British Journal of Ophthalmology. 2013;97(9):1100-3
44. Zainal M, Masran L, Ropilah AR. Blindness and visual impairment amongst rural Malays in Kuala Selangor, Selangor. Medical Journal of Malaysia. 1998;53(1):46-50
45. Cockburn N, Steven D, Lecuona K, Joubert F, Rogers G, Cook C, et al. Prevalence, causes and socio-economic determinants of vision loss in Cape Town, South Africa. PLoS ONE. 2012;7(2)
46. Kuper H, Polack S, Eusebio C, Mathenge W, Wadud Z, Foster A. A case-control study to assess the relationship between poverty and visual impairment from cataract in Kenya, the Philippines, and Bangladesh. PLoS Medicine / Public Library of Science. 2008;5(12):e244
47. Ploubidis GB, Mathenge W, De Stavola B, Grundy E, Foster A, Kuper H. Socioeconomic position and later life prevalence of hypertension, diabetes and visual impairment in Nakuru, Kenya. International Journal of Public Health. 2013;58(1):133-41
48. Béria JU, Raymann BCW, Gigante LP, Figueiredo ACL, Jotz G, Roithman R, et al. Hearing impairment and socioeconomic factors: a population-based survey of an urban locality in southern Brazil. Deficiencia auditiva y factores socioeconómicos: estudio de base poblacional en una localidad urbana del sur de Brasil. 2007;21(6):381-7
49. Taha AA, Pratt SR, Farahat TM, Abdel-Rasoul GM, Albtanony MA, Elrashiedy AL, et al. Prevalence and risk factors of hearing impairment among primary-school children in Shebin El-kom District, Egypt. American Journal of Audiology. 2010;19(1):46-60
50. Lin T, Li N, Du W, Song X, Zheng X. Road traffic disability in China: prevalence and socio-demographic disparities. Journal of public health (Oxford, England). 2013 Feb 5
51. Rischewski D, Kuper H, Atijosan O, Simms V, Jofret-Bonet M, Foster A, et al. Poverty and musculoskeletal impairment in Rwanda. Transactions of the Royal Society of Tropical Medicine & Hygiene. 2008;102(6):608-17
52. Acuna-Gonzalez G, Medina-Solis CE, Maupome G, Escoffie-Ramirez M, Hernandez-Romano J, Marquez-Corona Mde L, et al. Family history and socioeconomic risk factors for non-syndromic cleft lip and palate: a matched case-control study in a less developed country. Biomedica : revista del Instituto Nacional de Salud. 2011 Jul-Sep;31(3):381-91
53. Hosseinpoor AR, Bergen N, Mendis S, Harper S, Verdes E, Kunst A, et al. Socioeconomic inequality in the prevalence of noncommunicable diseases in low- and middle-income countries: results from the World Health Survey. BMC Public Health. 2012;12:474
54. Kilzieh N, Rastam S, Ward KD, Maziak W. Gender, depression and physical impairment: an epidemiologic perspective from Aleppo, Syria. Social Psychiatry & Psychiatric Epidemiology. 2010;45(6):595-602
55. Melzer D, Parahyba MI. Socio-demographic correlates of mobility disability in older Brazilians: results of the first national survey. Age & Ageing. 2004;33(3):253-9
56. Blay SL, Fillenbaum GG, Andreoli SB, Gastal FL. Prevalence and concomitants of arthritis in the elderly in Rio Grande do Sul, Brazil. PLoS ONE [Electronic Resource]. 2012;7(9):e45418
57. Avan BI, Kirkwood B. Role of neighbourhoods in child growth and development: Does 'place' matter? Social Science & Medicine. 2010 Jul;71(1):102-9
58. De Moura DR, Costa JC, Santos IS, Barros AJD, Matijasevich A, Halpern R, et al. Risk factors for suspected developmental delay at age 2 years in a Brazilian birth cohort. Paediatric and Perinatal Epidemiology. 2010 May;24(3):211-21
59. Halpern R, Barros AJD, Matijasevich A, Santos IS, Victora CG, Barros FC. Developmental status at age 12 months according to birth weight and family income: A comparison of two Brazilian birth cohorts. Cadernos de Saude Publica. 2008;24(SUPPL.3):S444-S50
60. Islam S, Durkin MS, Zaman SS. Socioeconmic status and the prevalence of mental retardation in Bangladesh : International perspectives in mental retardation. Mental retardation (Washington, DC). 1993 1993;31(6):412-7

61. Kumar R, Aggarwal AK, Kaur M, Iyengar SD. Factors influencing psychosocial development of preschool children in a rural area of Haryana, India. Journal of Tropical Pediatrics. 1997 Dec;43(6):324-9
62. Ozkan M, Senel S, Arslan EA, Karacan CD. The socioeconomic and biological risk factors for developmental delay in early childhood. European journal of pediatrics. 2012 Dec;171(12):1815-21
63. Pheula GF, Rohde LA, Schmitz M. Are family variables associated with ADHD, inattentive type? A case—control study in schools. European child & adolescent psychiatry. 2011 2011;20(3):137-45
64. Xie ZH, Bo SY, Zhang XT, Liu M, Zhang ZX, Yang XL, et al. Sampling survey on intellectual disability in 0 approximately 6-year-old children in China. Journal of Intellectual Disability Research. 2008;52(12):1029-38
65. Zheng X, Chen R, Li N, Du W, Pei L, Zhang J, et al. Socioeconomic status and children with intellectual disability in China. Journal of Intellectual Disability Research. 2012;56(2):212-20
66. Chen R, Hu Z, Wei L, Ma Y, Liu Z, Copeland JR. Incident dementia in a defined older Chinese population. PLoS ONE [Electronic Resource]. 2011;6(9):e24817
67. Chen R, Ma Y, Wilson K, Hu Z, Sallah D, Wang J, et al. A multicentre community-based study of dementia cases and subcases in older people in China-the GMS-AGECAT prevalence and socio-economic correlates. International Journal of Geriatric Psychiatry. 2011 Jul;27(7):692-702
68. Dorsi E, Xavier A, Schneider I, Corseuil M, Ramos L. Factors associated with cognitive impairment in older adults: A population based survey, South Brazil. Alzheimer's and Dementia. 2011 July;1):S370
69. Esmayel EM, Eldarawy MM, Hassan MM, Mahmoud AA. Mental and social health correlates in elderly medical inpatients in a university hospital in Egypt. European Geriatric Medicine. 2013 September;4:S201-S2
70. Fei M, Qu YC, Wang T, Yin B, Bad JX, Ding QH. Prevalence and Distribution of Cognitive Impairment no Dementia (CIND) Among the Aged Population and the Analysis of Socio-demographic Characteristics The Community-based Cross-sectional Study. Alzheimer Disease & Associated Disorders. 2009 Apr-Jun;23(2):130-8
71. Herrera E, Jr., Caramelli P, Silveira AS, Nitrini R. Epidemiologic survey of dementia in a community-dwelling Brazilian population. Alzheimer Disease & Associated Disorders. 2002;16(2):103-8
72. Keskinoglu P, Giray H, Pcakcefe M, Bilgic N, Ucku R. The prevalence and risk factors of dementia in the elderly population in a low socio-economic region of Izmir, Turkey. Archives of Gerontology and Geriatrics. 2006;43(1):93-100
73. Lopes MA, Hototian SR, Bustamante SE, Azevedo D, Tatsch M, Bazzarella MC, et al. Prevalence of cognitive and functional impairment in a community sample in Ribeirao Preto, Brazil. International Journal of Geriatric Psychiatry. 2007;22(8):770-6
74. Saha SK, Debasish S, Agnihotri B, Ranjan B, Neepamanjari B, Anindya M. A study on cognitive status of 50 years and above aged non-demented women in a rural area of West Bengal. Journal of the Indian Medical Association. 2010;108(11):726-9
75. Scazufca M, Menezes PR, Araya R, Di Rienzo VD, Almeida OP, Gunnell D, et al. Risk factors across the life course and dementia in a Brazilian population: Results from the Sao Paulo Ageing & Health Study (SPAH). International Journal of Epidemiology. 2008 August;37(4):879-90
76. Scazufca M, Menezes PR, Vallada HP, Crepaldi AL, Pastor-Valero M, Coutinho LM, et al. High prevalence of dementia among older adults from poor socioeconomic backgrounds in Sao Paulo, Brazil. International Psychogeriatrics. 2008;20(2):394-405
77. Singh RB, Singh Rao R, Thakur AS, Srivastav S, Niaz MA, Shinde SN. Prevalence and risk factors of cognitive deficits and dementia in relation to socioeconomic class in an elderly population of India. Journal of Anti-Aging Medicine. 1999;2(2):141-7

78. Sosa AL, Albanese E, Stephan BC, Dewey M, Acosta D, Ferri CP, et al. Prevalence, distribution, and impact of mild cognitive impairment in Latin America, China, and India: a 10/66 population-based study. PLoS Medicine / Public Library of Science. 2012;9(2):e1001170
79. Filmer D. Disability, poverty, and schooling in developing countries: Results from 14 household surveys. World Bank Economic Review. 2008 2008;22(1):141-63
80. Hoogeveen JG. Measuring welfare for small but vulnerable groups: Poverty and disability in Uganda. Journal of African Economies. 2005;14(4):603-31
81. Mont D, Nguyen VC. Disability and Poverty in Vietnam. World Bank Economic Review. 2011;25(2):323-59
82. Palmer MG, Nguyen Thi Minh T, Quach Thi Ngoc Q, Dang Sy D, Hoang Van H, Berry HL. Disability measures as an indicator of poverty: A case study from Viet Nam. Journal of International Development. 2012 Jan;24:S53-S68
83. Kawakatsu Y, Kaneko S, Karama M, Honda S. Prevalence and risk factors of neurological impairment among children aged 6-9 years: from population based cross sectional study in western Kenya. BMC Pediatrics. 2012;12:186
84. Kumar R, Anupama B, Roli B, Agarwal GG. Prevalence and risk factors for neurological disorders in children aged 6 months to 2 years in northern India. Developmental Medicine & Child Neurology. 2013;55(4):348-56
85. Natale JE, Joseph JG, Bergen R, Thulasiraj RD, Rahmathullah L. Prevalence of childhood disability in a southern Indian city: independent effect of small differences in social status. International Journal of Epidemiology. 1992;21(2):367-72
86. Hosseinpoor AR, Stewart Williams JA, Gautam J, Posarac A, Officer A, Verdes E, et al. Socioeconomic inequality in disability among adults: a multicountry study using the World Health Survey. American Journal of Public Health. 2013;103(7):1278-86
87. Beydoun MA, Popkin BM. The impact of socio-economic factors on functional status decline among community-dwelling older adults in China. Social Science & Medicine. 2005;60(9):2045-57
88. Falkingham JC, Chepngeno-Langat G, Kyobutungi C, Ezeh A, Evandrou M. Does socioeconomic inequality in health persist among older people living in resource-poor urban slums? Journal of Urban Health. 2011;88 Suppl 2:S381-400
89. Fillenbaum GG, Blay SL, Andreoli SB, Gastal FL. Prevalence and Correlates of Functional Status in an Older Community-Representative Sample in Brazil. Journal of Aging and Health. 2010 Apr;22(3):362-83
90. Guerra RO, Alvarado BE, Zunzunegui MV. Life course, gender and ethnic inequalities in functional disability in a Brazilian urban elderly population. Aging-Clinical & Experimental Research. 2008;20(1):53-61
91. Gureje O, Ogunniyi A, Kola L, Afolabi E. Functional disability in elderly Nigerians: Results from the Ibadan Study of Aging. Journal of the American Geriatrics Society. 2006;54(11):1784-9
92. Liu J, Chi I, Chen G, Song X, Zheng X. Prevalence and correlates of functional disability in Chinese older adults. Geriatrics & gerontology international. 2009;9(3):253-61
93. Razzaque A, Nahar L, Akter Khanam M, Kim Streatfield P. Socio-demographic differentials of adult health indicators in Matlab, Bangladesh: self-rated health, health state, quality of life and disability level. Global health action. 2010 2010 Sep;3
94. Xavier Gomez-Olive F, Thorogood M, Clark BD, Kahn K, Tollman SM. Assessing health and well-being among older people in rural South Africa. Global Health Action. 2010;3(Suppl 2):23-35
95. Abas MA, Broadhead JC. Depression and anxiety among women in an urban setting in Zimbabwe. Psychological medicine. 1997;27(1):59-71
96. Ball HA, Siribaddana SH, Kovas Y, Glozier N, McGuffin P, Sumathipala A, et al. Epidemiology and symptomatology of depression in Sri Lanka: a cross-sectional population-based survey in Colombo District. Journal of Affective Disorders. 2010;123(1/3):188-96
97. Chen L, Wang L, Qiu XH, Yang XX, Qiao ZX, Yang YJ, et al. Depression among Chinese university students: prevalence and socio-demographic correlates. PLoS One. 2013;8(3):e58379

98. Hamad R, Fernald LC, Karlan DS, Zinman J. Social and economic correlates of depressive symptoms and perceived stress in South African adults. J Epidemiol Community Health. 2008 Jun;62(6):538-44
99. Ibrahim AK, Kelly SJ, Glazebrook C. Analysis of an Egyptian study on the socioeconomic distribution of depressive symptoms among undergraduates. Soc Psychiatry Psychiatr Epidemiol. 2012 Jun;47(6):927-37
100. Blay SL, Andreoli SB, Fillenbaum GG, Gastal FL. Depression morbidity in later life: prevalence and correlates in a developing country. American Journal of Geriatric Psychiatry. 2007;15(9):790-9
101. Chen RL, Wei L, Hu Z, Qin X, Copeland JRM, Hemingway H. Depression in older people in rural China. Archives of Internal Medicine. 2005 Sep 26;165(17):2019-25
102. Esmayel EM, Eldarawy MM, Hassan MM, Mahmoud AA, Mohamed SY. Mental health problems and sociodemographic correlates in elderly medical inpatients in a university hospital in egypt. Current gerontology and geriatrics research. 2013 2013;2013:923710-
103. Guerra M, Ferri CP, Sosa AL, Salas A, Gaona C, Gonzales V, et al. Late-life depression in Peru, Mexico and Venezuela: The 10/66 population-based study. British Journal of Psychiatry. 2009;195(6):510-5
104. Gureje O, Kola L, Afolabi E. Epidemiology of major depressive disorder in elderly Nigerians in the Ibadan Study of Ageing: a community-based survey. Lancet. 2007 Sep 15;370(9591):957-64
105. Li N, Pang L, Chen G, Song X, Zhang J, Zheng X. Risk factors for depression in older adults in Beijing. Canadian journal of psychiatry Revue canadienne de psychiatrie. 2011 Aug;56(8):466-73
106. Malhotra R, Chan A, Ostbye T. Prevalence and correlates of clinically significant depressive symptoms among elderly people in Sri Lanka: findings from a national survey. International Psychogeriatrics. 2010;22(2):227-36
107. Mendes-Chiloff CL, Ramos-Cerqueira ATA, Lima MCP, Torres AR. Depressive symptoms among elderly inpatients of a Brazilian university hospital: Prevalence and associated factors. International Psychogeriatrics. 2008 October;20(5):1028-40
108. Patil PB, Gaonkar V, Yadav VS. Effect of socio-demographic factors on depression of the elderly [L'effet des facteurs socio-démographiques sur la dépression des personnes âgées]. Man in India. 2003 2003;83(1-2):173-81
109. Rajkumar AP, Thangadurai P, Senthilkumar P, Gayathri K, Prince M, Jacob KS. Nature, prevalence and factors associated with depression among the elderly in a rural south Indian community. International Psychogeriatrics. 2009;21(2):372-8
110. Anselmi L, Barros FC, Minten GC, Gigante DP, Horta BL, Victora CG. [Prevalence and early determinants of common mental disorders in the 1982 birth cohort, Pelotas, Southern Brazil]. Rev Saude Publica. 2008 Dec;42 Suppl 2:26-33
111. Coelho FM, Pinheiro RT, Horta BL, Magalhaes PV, Garcias CM, Silva CV. Common mental disorders and chronic non-communicable diseases in adults: a population-based study. Cad Saude Publica. 2009 Jan;25(1):59-67
112. Lima MS, Beria JU, Tomasi E, Conceicao AT, Mari JJ. Stressful life events and minor psychiatric disorders: an estimate of the population attributable fraction in a Brazilian community-based study. The International Journal of Psychiatry in Medicine. 1996;26(2):211-22
113. Ludermir AB, Lewis G. Links between social class and common mental disorders in Northeast Brazil. Soc Psychiatry Psychiatr Epidemiol. 2001 Mar;36(3):101-7
114. Menil Vd, Osei A, Douptcheva N, Hill AG, Yaro P, de-Graft Aikins A. Symptoms of common mental disorders and their correlates among women in Accra, Ghana: a populationbased survey. Ghana Medical Journal. 2012;46(2):95-103
115. Patel V, Todd C, Winston M, Gwanzura F, Simunyu E, Acuda W, et al. Common mental disorders in primary care in Harare, Zimbabwe: associations and risk factors. The British Journal of Psychiatry. 1997;171(1):60-4
116. Patel V, Kirkwood BR, Pednekar S, Weiss H, Mabey D. Risk factors for common mental disorders in women. Population-based longitudinal study. Br J Psychiatry. 2006 Dec;189:547-55

117. Rocha SV, de Almeida MM, de Araujo TM, Virtuoso JS, Jr. Prevalence of common mental disorders among the residents of urban areas in Feira de Santana, Bahia. Revista brasileira de epidemiologia = Brazilian journal of epidemiology. 2010 Dec;13(4):630-40
118. Stewart RC, Bunn J, Vokhiwa M, Umar E, Kauye F, Fitzgerald M, et al. Common mental disorder and associated factors amongst women with young infants in rural Malawi. Soc Psychiatry Psychiatr Epidemiol. 2010 May;45(5):551-9
119. Anselmi L, Menezes AMB, Hallal PC, Wehrmeister F, Goncalves H, Barros FC, et al. Socioeconomic changes and adolescent psychopathology in a Brazilian birth cohort study. (Special Issue: Health from birth to adolescence: findings from the 1993 Pelotas, Brazil, Birth Cohort Study.). Journal of Adolescent Health. 2012;51(6, Suppl):S5-S10
120. Shams G, Foroughi E, Esmaili Y, Amini H, Ebrahimkhani N. Prevalence rates of obsessive-compulsive symptoms and psychiatric comorbidity among adolescents in Iran. Acta Medica Iranica. 2011;49(10):680-7
121. Awas M, Kebede D, Alem A. Major mental disorders in Butajira, southern Ethiopia. Acta Psychiatrica Scandinavica, Supplementum. 1999;397:56-64
122. Blue I. Individual and contextual effects on mental health status in Sao Paulo, Brazil. Revista Brasileira de Psiquiatria. 2000 Setembre;22(3):116-23
123. Islam M, Ali M, Ferroni P, Underwood P, FaruqAlam M. Prevalence of psychiatric disorders in an urban community in Bangladesh. General hospital psychiatry. 2003 2003;25(5):353-7
124. Kawakami N, Abdulghani EA, Alonso J, Bromet EJ, Bruffaerts R, Caldas-de-Almeida JM, et al. Early-life mental disorders and adult household income in the World Mental Health Surveys. Biological psychiatry. 2012 Aug 1;72(3):228-37
125. Levinson D, Lakoma MD, Petukhova M, Schoenbaum M, Zaslavsky AM, Angermeyer M, et al. Associations of serious mental illness with earnings: results from the WHO World Mental Health surveys. Br J Psychiatry. 2010 Aug;197(2):114-21
126. Li N, Pang L, Du W, Chen G, Zheng X. Association between poverty and psychiatric disability among Chinese population aged 15-64 years. Psychiatry Research. 2012;200(2-3):917-20
127. Ma X, Xiang Y-T, Cai Z-J, Lu J-Y, Li S-R, Xiang Y-Q, et al. Generalized Anxiety Disorder in China: Prevalence, Sociodemographic Correlates, Comorbidity, and Suicide Attempts. Perspectives in Psychiatric Care. 2009 Apr;45(2):119-27
128. Medina-Mora ME, Borges G, Lara C, Benjet C, Blanco J, Fleiz C, et al. Prevalence, service use, and demographic correlates of 12-month DSM-IV psychiatric disorders in Mexico: results from the Mexican National Comorbidity Survey. Psychol Med. 2005 Dec;35(12):1773-83
129. Mokhtari M, Dehghan SF, Asghari M, Ghasembaklo U, Mohamadyari G, Azadmanesh SA, et al. Epidemiology of mental health problems in female students: a questionnaire survey. Journal of epidemiology and global health. 2013 Jun;3(2):83-8
130. Myer L, Stein DJ, Grimsrud A, Seedat S, Williams DR. Social determinants of psychological distress in a nationally-representative sample of South African adults. Soc Sci Med. 2008 Apr;66(8):1828-40
131. Norris FH, Murphy AD, Baker CK, Perilla JL, Rodriguez FG, Rodriguez Jde J. Epidemiology of trauma and posttraumatic stress disorder in Mexico. Journal of abnormal psychology. 2003 Nov;112(4):646-56
132. Xiang Y-T, XinMa, Cai Z-J, Li S-R, Xiang Y-Q, Guo H-L, et al. Prevalence and socio-demographic correlates of schizophrenia in Beijing, China. Schizophrenia research. 2008 2008;102(1-3):270-7
133. Mayo Clinic Staff. Diseases and Conditions: Nearsightedness 2012. Available from: http://www.mayoclinic.org/diseases-conditions/nearsightedness/basics/risk-factors/con-20027548.
134. Gooding K, Marriot A. Including persons with disabilities in social cash transfer programmes in developing countries. Journal of International Development. 2009;21(5):685-98
135. Mitra S. Disability and social safety nets in developing countries. 2005
136. UNESCO. Towards inclusive education for children with disabilities: a guideline. Bangkok: Calderbank, Daniel; 2009.

137. Plan International, London School of Hygiene and Tropical Medicine. Include us! A study of disability among Plan International's sponsored children. Surrey, UK: 2013.
138. Save the Children. Schools for all: Including disabled children in education London2002. Available from: http://www.eenet.org.uk/resources/docs/schools_for_all.pdf.
139. Save the Children. Making schools inclusive: How change can happen - Save the Children's Experience. In: International Save the Children Alliance, editor. London2008.
140. National Disability Authority. Literature Review on Attitudes towards Disability 2007. Available from: http://www.ucd.ie/issda/static/documentation/nda/nda-literature-review.pdf.
141. Epari CFG, Mse GFM. Did the financing of special needs education improve with the introduction of free primary education in Kenya? Evidence from Schools African Educational Research Network. 2007;7(1):71
142. Stubbs S. Inclusive education: where there are few resources. In: The Atlas Alliance, editor. Oslo, Norway2008.
143. Hanushek E, Wößmann L. The role of education quality for economic growth. World Bank Policy Research Working Paper. 2007 (4122)
144. Bakhshi P, Kett M, Oliver K. What are the impacts of approaches to increase the accessibility to education for people with a disability across developed and developing countries and what is known about the cost-effectiveness of different approaches? In: EPPI-Centre, editor. London: Institute of Education, University of London; 2013.
145. Allen WD. Social networks and self-employment. Journal of Socio-Economics. 2000;29(5):487-501
146. Glewwe P. Schools and skills in developing countries: Education policies and socioeconomic outcomes. Journal of economic literature. 2002;40(2):436-82
147. Psacharopoulos G, Patrinos HA. Returns to investment in education: a further update. Education economics. 2004;12(2):111-34
148. Doppelhofer G, Miller R, Sala-i-Martin X. Determinants of Long-Term Growth: A Bayesian Averaging of Classical Estimates (BACE) Approach. American Economic Review. 2003
149. Mori S, Yamagata T. A note on income and poverty of persons with disabilities in Metro Manila. Poverty Reduction for the Disabled in the Philippines-Livelihood Analysis from the Data of PWDs in Metro Manila IDE-JETRO. 2009
150. Laplagne P, Glover M, Shomos A. Effects of Health and Education on Labour Force Participation. In: Australian Government Productivity Commission, editor. Melbourne2007.
151. Gauri V. Social rights and economics: Claims to health care and education in developing countries. World Development. 2004;32(3):465-77
152. Hotez P. Mass drug administration and integrated control for the world's high-prevalence neglected tropical diseases. Clinical Pharmacology & Therapeutics. 2009;85(6):659-64
153. World Health Organization. Methods for achieving universal coverage with long-lasting insecticidal nets in malaria control. In: Malaria Policy Advisory Committee, editor. Geneva2013.
154. Tembon M, Fort L. Girls' Education in the 21st Century: Gender Equality, Empowerment, and Economic Growth: World Bank Publications; 2008.
155. United Nations Population Fund. Linking Population, Poverty and Developmnet: Reducing Poverty and Achieving Sustainable Development. Available from: http://www.unfpa.org/pds/poverty.html.
156. Resource Book Tanzania/Kenya. CBM Germany, 2013.
157. USAID. Education's role in preventing youth crime and violence in LAC. Available from: http://www.gem2.org/sites/default/files/Youth%20and%20Violence%20in%20LAC_SEPT_19%20FINAL.pdf.
158. United Nations Office on Drugs and Crime, World Bank. Crime, Violence, and Development: Trends, Costs, and Policy Options in the Caribbean (Report No. 37820). New York2007.
159. Braich PS, Lal V, Hollands S, Almeida DR. Burden and depression in the caregivers of blind patients in India. Ophthalmology. 2012;119(2):221-6

160. UNICEF. The state of the world's children 2013: Children with disabilities New York: 2013.
161. Mizunoya S, Mitra S. Is There a Disability Gap in Employment Rates in Developing Countries? World Development. 2013 Feb;42:28-43
162. Leymat A. Inclusive employment: how to develop projecs which promote the employment of people with disabilities and other vulnerable populations. 2011.
163. International Labour Organization. Women and Men in the Informal Economy: A Statistical Picture. Geneva: 2002.
164. Thornicroft G, Brohan E, Rose D, Sartorius N, Leese M. Global pattern of experienced and anticipated discrimination against people with schizophrenia: a cross-sectional survey. The Lancet. 2009;373(9661):408-15
165. Yeo R, Moore K. Including disabled people in poverty reduction work: "Nothing about us', without us". World Development. 2003 Mar;31(3):571-90
166. Labie M, Méon P-G, Mersland R, Szafarz A. Discrimination by microcredit officers: Theory and evidence on disability in Uganda. Université Libre de Bruxelles CEB Working Papers. 2010:10-007
167. Ito T, Kurosaki T. Weather risk, wages in kind, and the off-farm labor supply of agricultural households in a developing country. American journal of agricultural economics. 2009;91(3):697-710
168. Zimmerman J, Banerjee S. Promoting Savings as a Tool for International Development. Washington, DC: New America Foundation,, 2009.
169. International Fund for Agricultural Development. Rural poverty report 2011. Rome: 2010.
170. Polack S, Eusebio C, Mathenge W, Wadud Z, Rashid M, Foster A, et al. The impact of cataract surgery on activities and time-use: results from a longitudinal study in Kenya, Bangladesh and the Philippines. PLoS ONE [Electronic Resource]. 2010;5(6):e10913
171. UNDP. UNDP Human Development Report: Valuing women's health. 1995.
172. Gentilini U, Omamo SW. Social protection 2.0: Exploring issues, evidence and debates in a globalizing world. Food Policy. 2011;36(3):329-40
173. Mawhood L, Howlin P. The outcome of a supported employment scheme for high-functioning adults with autism or Asperger syndrome. Autism. 1999;3(3):229-54
174. McCaughrin WB, Ellis WK, Rusch FR, Heal LW. Cost-effectiveness of supported employment. Mental Retardation. 1993
175. UN Enable. Employing persons with disabilities: fears and realities. 2007.
176. Daone L, Scott R. Ready, willing and disabled: investigating attitudes and other obstacles to employing disabled people. London: Scope, 2003.
177. International Labour Organization. Employment and Disabled Persons: Information Sheet. Available from: http://www.hpod.org/pdf/employment-disabled.pdf.
178. World Bank. People with disabilities: from commitments to outcomes. Human Development Unit, South Asia Region, 2007.
179. ILO. EmployAbility: a resource guide on disability for employers in Asia and the Pacific. In: Regional Office for Asia and the Pacific, editor. Geneva: Debra A. Perry; 2007.
180. International Labour Organization. Disability in the Workplace: Company Practices. In: Bureau for Employers' Activities and Skills and Employability Department, editor. Geneva2010.
181. Siperstein GN, Romano N, Mohler A, Parker R. A national survey of consumer attitudes towards companies that hire people with disabilities. Journal of Vocational Rehabilitation. 2006;24(1):3-9
182. Ambikile JS, Outwater A. Challenges of caring for children with mental disorders: Experiences and views of caregivers attending the outpatient clinic at Muhimbili National Hospital, Dar es Salaam - Tanzania. Child and Adolescent Psychiatry and Mental Health. 2012 04 May;6(16)
183. Balaji M, Chatterjee S, Brennan B, Rangaswamy T, Thornicroft G, Patel V. Outcomes that matter: a qualitative study with persons with schizophrenia and their primary caregivers in India. Asian Journal of Psychiatry. 2012;5(3):258-65
184. World Health Organization. Assistive devices/technologies: what WHO is doing 2014. Available from: http://www.who.int/disabilities/technology/activities/en/.

185. Wang PS, Aguilar-Gaxiola S, Alonso J, Angermeyer MC, Borges G, Bromet EJ, et al. Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. The Lancet. 2007;370(9590):841-50
186. Murray CJ, Vos T, Lozano R, Naghavi M, Flaxman AD, Michaud C, et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. The Lancet. 2013;380(9859):2197-223
187. WHO. Investing in Mental Health: Evidence for Action. Geneva: 2013.
188. Mental Health ATLAS 2011. Geneva: WHO, 2011.
189. Sigueria F, Facchini L, da Silva D, Piccini R, Thumé E, Thomasi E. Architectonic barriers for elderly and physically disabled people: an epidemiological study of the physical structure of health service units in seven Brazilian states. Cien Saude Colet. 2009;14(1):39-44
190. VanLeit B, Rithy P, Channa S. Secondary prevention of disabilities in the Cambodian Provinces of Siem Reap and Takeo: perceptions of and use of the health system to address health conditions associated with disability in children. Brussels, Handicap International. 2007
191. O'Keefe P, Unit HD, Region dEA. People with disabilities from India: from commitments to outcomes. Human Development Unit, South East Asia Region, The World Bank. 2007:157
192. Trani J-F, Bakhshi P, Noor AA, Lopez D, Mashkoor A. Poverty, vulnerability, and provision of healthcare in Afghanistan. Social Science & Medicine. 2010 Jun;70(11):1745-55
193. Groce NE, Zola IK. Multiculturalism, chronic illness, and disability. Pediatrics. 1993;91(5):1048-55
194. Bilgin S, Coban GI, Tanriverdi D. Reliability and validity of the family needs scale in a Turkish population. Rehabilitation Nursing Journal. 2013;38(5):247-53
195. Spratt JM. A Deeper Silence: The unheard experiences of women with disabilities - sexual and reproductive health and violence against women in Kiribati, Solomon Islands and Tonga. Suva, Fiji: United Nations Population Fund Pacific Sub-Regional Office, 2013.
196. Groce NE. HIV/AIDS and individuals with disability. Health and Human Rights: an international journal. 2005;8(2):215-24
197. CBM. Inclusion Made Easy.
198. Amosun SL, Mutimura E, Frantz JM. Health promotion needs of physically disabled individuals with lower limb amputation in Rwanda. Disability & Rehabilitation. 2005;27(14):837-47
199. Yousafzai AK, Dlamini PJ, Groce N, Wirz S. Knowledge, personal risk and experiences of HIV/AIDS among people with disabilities in Swaziland. International journal of rehabilitation research. 2004;27(3):247-51
200. Hassouneh-Phillips D, Curry MA. Abuse of Women with Disabilities State of the Science. Rehabilitation Counseling Bulletin. 2002;45(2):96-104
201. Hanass-Hancock J. Disability and HIV/AIDS-a systematic review of literature on Africa. Journal of the International AIDS Society. 2009;12(1):34
202. Fritz D, Miller U, Gude A, Pruisken A, Rischewski D. MAKING POVERTY REDUCTION INCLUSIVE: EXPERIENCES FROM CAMBODIA, TANZANIA AND VIETNAM. Journal of International Development. 2009 Jul;21(5):673-84
203. Kerr M, Felce D, Felce J. Equal treatment: closing the gap. Final report from the Welsh Centre for Learning Disabilities. 2005
204. Mason J, Scior K. 'Diagnostic overshadowing'amongst clinicians working with people with intellectual disabilities in the UK. Journal of Applied Research in Intellectual Disabilities. 2004;17(2):85-90
205. Falkingham J. Poverty, out-of-pocket payments and access to health care: evidence from Tajikistan. Social Science & Medicine. 2004;58(2):247-58
206. Lagarde M, Palmer N. The impact of health financing strategies on access to health services in low and middle income countries. The Cochrane Library. 2008
207. Groce NE. Adolescents and youth with disability: issues and challenges. Asia Pacific Disability Rehabilitation Journal. 2004;15(2):13-32

208. International AIDS Vaccine Initiative. AIDS Vaccines: Exploring the Potential Cost/Benefit 2012. Available from: http://www.iavi.org/Information-Center/Publications/Documents/Costs%20Impact%20Brief.pdf.
209. Creese A, Floyd K, Alban A, Guinness L. Cost-effectiveness of HIV/AIDS interventions in Africa: a systematic review of the evidence. The Lancet. 2002;359(9318):1635-42
210. Groce N, Bailey N, Lang R, Trani JF, Kett M. Water and sanitation issues for persons with disabilities in low- and middle-income countries: a literature review and discussion of implications for global health and international development. Journal of Water & Health. 2011;9(4):617-27
211. UNICEF. Disability Prevention Efforts and Disability Rights: Finding Common Ground on Immunization Efforts Available from: http://www.unicef.org/disabilities/files/UNICEF_Immunization_and_Disability_Paper_FINAL.pdf.
212. Kerac M, Postels DG, Mallewa M, Alusine AJ, Voskuijl WP, Groce N, et al., editors. The interaction of malnutrition and neurological disability in Africa. Seminars in Pediatric Neurology; 2014: Elsevier.
213. Smith E, Murray S, Yousafzai A, Kasonka L. Barriers to accessing safe motherhood and reproductive health services: the situation of women with disabilities in Lusaka, Zambia. Disability & Rehabilitation. 2004;26(2):121-7
214. Currie J. Healthy, wealthy, and wise: Socioeconomic status, poor health in childhood, and human capital development. National Bureau of Economic Research, 2008.
215. Schultz TP. Health and schooling investments in Africa. The Journal of Economic Perspectives. 1999:67-88
216. Sachs J, Malaney P. The economic and social burden of malaria. Nature. 2002;415(6872):680-5
217. Sherr L, Mueller J, Varrall R. A systematic review of cognitive development and child human immunodeficiency virus infection. Psychology, health & medicine. 2009;14(4):387-404
218. Groce NE, Kerac M, Farkas A, Schultink W, Bieler RB. Inclusive nutrition for children and adults with disabilities. The Lancet Global Health. 2013;1(4):e180-e1
219. Bloom DE, Canning D, Sevilla J. Health and economic growth: reconciling the micro and macro evidence. Center on Democracy, Development and the Rule of Law Working Papers. 2005
220. Bhargava A, Jamison DT, Lau LJ, Murray CJ. Modeling the effects of health on economic growth. Journal of health economics. 2001;20(3):423-40
221. Well DN. Accounting for the effect of health on economic growth. The quarterly journal of economics. 2007;122(3):1265-306
222. Iemmi V, Kumar KS, Blanchet K, Hartley S, Murthy GV, Patel V, et al. Community-Based Rehabilitation for People with Disabilities in Low-and Middle-Income Countries.
223. Kao YC, Liu YP, Cheng TH, Chou MK. Subjective quality of life and suicidal behavior among Taiwanese schizophrenia patients. Social psychiatry and psychiatric epidemiology. 2012 Apr;47(4):523-32
224. Souza L, Coutinho E. The quality of life of people with schizophrenia living in community in Rio de Janeiro, Brazil. Social Psychiatry & Psychiatric Epidemiology. 2006;41(5):347-56
225. Arango-Lasprilla JC, Lehan T, Drew A, Moreno A, Deng X, Lemos M. Health-related quality of life in caregivers of individuals with dementia from Colombia. American Journal of Alzheimer's Disease & Other Dementias. 2010;25(7):556-61
226. Mont D. Measuring disability prevalence. World Bank Social Protection Discussion Paper. 2007;706

Appendix A: Systematic Review Search String

Search strategy for OVID databases

Low and Middle Income Countries	
1	((Developing or Low-income or low income or Middle-income or Middle income or (Low and middle income) or (Low- and middle-income) or Less-Developed or Less Developed or Least Developed or Under Developed or underdeveloped or Third-World) adj5 (countr* or nation* or world or econom*)).sh,ti,ab
2	exp Developing countries/
3	(LIC or LICs or MIC or MICs or LMIC or LMICs or LAMIC or LAMICs or LAMI countr* or third world).sh,ti,ab
4	(Transitional countr* or Transitional econom* or Transition countr* or Transition econom*).sh,ti,ab
5	(Africa or Asia or Caribbean or West Indies or Latin America or Central America or South America).sh,ti,ab
6	exp Africa South of the Sahara/ or exp Africa/ or exp Asia, Central/ or exp Asia, South East/ or exp Asia, Western/ or exp Latin America/ or exp Caribbean/ or exp Central America/ or exp South America/
7	(Afghanistan or Albania or Algeria or American Samoa or Angola or Antigua or Barbuda or Argentina or Armenia or Azerbaijan or Bangladesh or Belarus or Byelarus or Byelorussia or Belorussia or Belize or Benin or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Bosnia-Herzegovina or Bosnia-Hercegovina or Botswana or Brazil or Brasil or Bulgaria or Burkina or Upper Volta or Burundi or Urundi or Cambodia or Republic of Kampuchea or Cameroon or Cameroons or Cape Verde or Central African Republic or Chad or Chile or China or Colombia or Comoros or Comoro Islands or Comores or Congo or DRC or Zaire or Costa Rica or Cote d'Ivoire or Ivory Coast or Cuba or Djibouti or Obock or French Somaliland or Dominica or Dominican Republic or Ecuador or Egypt or United Arab Republic or El Salvador or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Georgia or Ghana or Gold Coast or Grenada or Guatemala or Guinea or Guinea-Bissau or Guiana or Guyana or Haiti or Honduras or India or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kenya or Kiribati or Republic of Korea or North Korea or DPRK or Kosovo or Kyrgyzstan or Kirghizstan or Kirgizstan or Kirghizia or Kirgizia or Kyrgyz or Kirghiz or Kyrgyz Republic or Lao or Laos or Latvia or Lebanon or Lesotho or Basutoland or Liberia or Libya or Lithuania or Macedonia or Madagascar or Malagasy Republic or Malawi or Nyasaland or Malaysia or Malaya or Malay or Maldives or Mali or Marshall Islands or Mauritania or Mauritius or Mayotte or Mexico or Micronesia or Moldova or Moldovia or Mongolia or Montenegro or Morocco or Mozambique or Myanmar or Burma or Namibia or Nepal or Nicaragua or Niger or Nigeria or Pakistan or Palau or Palestine or Panama or Papua New Guinea or Paraguay or Peru or Philippines or Romania or Rumania or Roumania or Russia or Russian Federation or USSR or Soviet Union or Union of Soviet Socialist Republics or Rwanda or Ruanda-Urundi or Samoa or Samoan Islands or Sao Tome or Principe or Senegal or Serbia or Montenegro or Yugoslavia or Seychelles or Sierra Leone or Solomon Islands or Somalia or South Africa or Sri Lanka or Ceylon or Saint Kitts or St Kitts or Saint Christopher Island or Nevis or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Sudan or Suriname or Surinam or Swaziland or Syria or Syrian Arab Republic or Tajikistan or Tadzhikistan or Tadjikistan or Tanzania or Thailand or Timor-Leste or East Timor or Togo or Togolese Republic or Tonga or Tunisia or Turkey or Turkmenistan or Turkmenia or Tuvalu or Uganda or Ukraine or Uruguay or Uzbekistan or Vanuatu or New Hebrides or Venezuela or Vietnam or Viet Nam or West Bank or Gaza or Yemen or Zambia or Zimbabwe or Rhodesia).sh,ti,ab
8	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7

9	(income not income setting* not income countr* not income nation* not income econom*).ab,ti
10	(Poverty OR income OR earning* OR wage* OR economic* disadvantage* OR salar* OR asset* OR ((personal or household or per capita) adj3 (consumption or expenditure*)) OR financial status* OR wealth* OR socio?economic status OR social class OR social rank*).sh,ti,ab
11	Exp poverty/ or exp income/
12	9 OR 10 OR 11 OR 12
13	(person* with disabilit* or people with disabilit* or ((disable* or Disabilit* or Handicap*) adj5 (person* or people))).sh,ti,ab
14	(Physical* adj5 (impair* or deficienc* or disable* or disabili* or handicap*)).sh,ti,ab
15	(Cerebral pals* or Spina bifida or Muscular dystroph* or Arthriti* or Osteogenesis imperfecta or Musculoskeletal abnormalit* or Musculo-skeletal abnormalit* or Muscular abnormalit* or Skeletal abnormalit* or Limb abnormalit* or Amputation* or Clubfoot or Poliomyeliti* or Paraplegi* or Paralys* or Paralyz* or Hemiplegi*).sh,ti,ab
16	((Hearing or Acoustic or Ear$3) adj5 (loss* or impair* or deficienc* or disable* or disabili* or handicap*)).sh,ti,ab
17	((Visual* or Vision or Eye$3) adj5 (loss* or impair* or deficienc* or disable* or disabili* or handicap*)).sh,ti,ab
18	(Deaf* or Blind*).sh,ti,ab
19	exp Hearing impairment/ or exp vision disorders/ or exp Deafness/ or exp Blindness/
20	(Schizophreni* or Psychosis or Psychoses or Psychotic Disorder* or Schizoaffective Disorder* or Schizophreniform Disorder* or Dementia* or Alzheimer*).sh,ti,ab
21	exp "schizophrenia and disorders with psychotic features"/ or exp Dementia/ or exp Alzheimer disease/
22	((Intellectual* or Mental* or Psychological* or Developmental) adj5 (impair* or retard* or deficienc* or disable* or disabili* or handicap* or ill?6)).sh,ti,ab
23	((communication or language or speech or learning) adj5 disorder*).sh,ti,ab
24	(Autis* or Dyslexi* or Down* Syndrome or Mongolism or Trisomy 21).sh,ti,ab
25	exp children with disabilities/ or exp learning disabilities/ or exp people with mental disabilities or exp people with physical disabilities/
25	13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25
26	10 AND 15 AND 25
27	Limit 26 to English language, publication type=conference paper, journal article, annual report, journal issue, thesis, miscellaneous

Appendix B: Quality Assessment Criteria

All studies

- Study design and sampling method appropriate to study question
- Adequate sample size/sample size calculation undertaken.
- Response rate reported and acceptable (e.g. >70%)
- Disability/impairment measure – clearly defined and reliable
- Economic measure – clearly defined and reliable
- Potential confounders taken into account in analysis
- Confidence intervals presented

Case control studies:

- Comparable cases and controls
- Clear case control definitions

Cohort studies

- Groups being studied comparable at baseline
- Losses to follow up presented and acceptable