Building disability-inclusive health systems

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Health systems often fail people with disabilities, which might contribute to their shorter life expectancy and poorer health outcomes than people without disabilities. This Review provides an overview of the existing evidence on health inequities faced by people with disabilities and describes existing approaches to making health systems disability inclusive. Our Review documents a broad range of health-care inequities for people with disabilities (eg, lower levels of cancer screening), which probably contribute towards health differentials. We identified 90 good practice examples that illustrate current strategies to reduce inequalities. Implementing such strategies could help to ensure that health systems can expect, accept, and connect people with disabilities worldwide, deliver on their right to health, and achieve health for all.

Introduction

The most commonly used definition for disability-from the UN Convention on the Rights of Persons with Disabilities-states that people with disabilities are "...those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others".1 Ultimately, disability arises from a combination of an impairment (eg, visual) and environmental, societal, or personal barriers. WHO estimates that 1.3 billion people globally have a disability, and this number will continue to increase as the world's population grows and ages.^{2,3} We recently estimated that all-cause mortality was 2.24 times (95% CI 1.84-2.72) higher in people with disabilities than among people without disabilities.⁴ People with disabilities are more likely to have poor health and higher mortality because of their underlying impairment or health condition, higher prevalence of risk factors (eg, malnutrition), and barriers in access to health care. Social determinants of health are likely to be key drivers of inequities.^{2,5,6}

Disability is extremely diverse, yet, across the world, people with disabilities report similar barriers when seeking health care. Attitudinal barriers can hamper care-seeking and the receipt of appropriate services,78 such as exclusion from reproductive health care. $^{\scriptscriptstyle 9\!-\!12}$ People with disabilities also often do not have autonomy in decision making about their health,13 which can delay or prevent care-seeking. Affordability of health care is another commonly reported concern, exacerbated by the frequently higher health-care costs for people with disabilities.9,14,14 Barriers can also arise from the health service, such as inadequate knowledge and training of providers,^{10-13,15} poor availability of disability-related health services (eg, rehabilitation),16 or inaccessible health facilities.9-13,15 As a consequence, coverage and quality of health-care services are often worse for people with disabilities than people without disabilities, and probably contribute to the life expectancy gap.²

Health systems need to improve to meet the needs of people with disabilities, to reduce health inequities and the life expectancy gap. Moreover, countries will fail to achieve global goals, such as universal health coverage (which ensures that all people have access to the full range of quality health services they need, without financial hardship) and Sustainable Development Goal 3 (to ensure healthy lives, and promote wellbeing for all, at all ages) if people with disabilities continue to face inequities.¹⁷ Additionally, excluding people with disabilities from health care affects fulfilment of their right to health, as set out in the UN Convention on the Rights of Persons with Disabilities.^{118,19}

The Missing Billion framework describes the components required to create a disability-inclusive health system (panel; figure; table 1). Health services must have accessible facilities and well trained staff with the skills and knowledge to provide acceptable and quality care. Health systems must supply required services, including rehabilitation, assistive technology (eg, hearing aids, wheelchairs, and spectacles), and specialist services that are accessible for people with

Panel: A framework for a disability-inclusive health system

We used the definition from WHO of a health system as "all organizations, people and actions whose primary intent is to promote, restore or maintain health".²⁰ First, we reviewed key literature on health-care needs and barriers faced by people with disabilities.²¹ Next, we reviewed two different conceptual frameworks describing access to health care—WHO Building Blocks²² and Primary Health Care Performance Initiative framework²³—to consider whether and how they were relevant to the experience of people with disabilities. These frameworks were chosen because they are widely used, and were considered potentially appropriate for disability inclusion in health systems. We developed a new frameworkthe Missing Billion disability-inclusive health system framework—incorporating aspects of these models (figure). The framework was presented to a range of experts through a series of individual meetings, including governmental stakeholders, UN officials, health systems experts, academics specialising in disability studies, and disability rights organisations. The expert reference group included people with disabilities. This expert group was asked about the relevance of the categories, and suggestions were sought for improvements.



Figure: Missing Billion disability-inclusive health system framework

disabilities. Patients with disabilities need autonomy and awareness to make health-care decisions and adequate financial protection. Systems-level building blocks must also be in place to ensure good service delivery, including good policies and laws to protect the right to health care for people with disabilities, leadership on disability within a country's Ministry of Health, sufficient allocation of finances, and availability of data and evidence to inform and monitor action.²⁴

Existing evidence shows that there are currently large gaps in the performance of health systems with respect to disability inclusion. For instance, only 50 (26%) of the national constitutions of 193 UN member states explicitly guarantee the rights of people with disabilities to health.²⁵ Furthermore, across the 27 EU Member States, just 14 have legislation that both prohibits disability discrimination and requires reasonable accommodation for people with disabilities in health care, and five make no provisions in either domain.26 Gaps also exist in training of health-care workers on disability across the world, even though it is clear that they frequently do not have the knowledge, skills, and attitudes to provide acceptable and quality health care for people with disabilities.^{2,27,28} For instance, in Australia, medical school curricula contain only a median of 2.55 h of compulsory intellectual disability content.29 Accessibility of health-care facilities is frequently inadequate, as shown by surveys in both high-resource and low-resource settings.^{30,31} Affordability of health care is also often low, in part due to poor access to health insurance and limited coverage of services in schemes, particularly for disability-related health care.14,32,33 There are frequently large gaps in the provision of rehabilitation services and assistive technology, particularly in low-income and middle-income countries (LMICs) and outside of urban areas.^{2,16,34} Good practice examples are needed to illustrate how these issues can be overcome, both to guide practice and offer inspiration for action.

The aim of this Review is to provide an overview of the existing evidence on health inequities faced by people with disabilities, and describe approaches to making health systems disability inclusive.

Search strategy and selection criteria

First, an umbrella review was undertaken to explore evidence of whether people with disabilities experience inequities in accessing health-care services compared with people without disabilities. We searched PubMed with the search terms "(Health inequality OR health inequalities) AND disability AND review" on July 4, 2023. Eligible papers were reviews that compared health access (eg, utilisation, coverage, adherence, or financial protection) or health-care outcomes between people with disabilities and people without disabilities or with the general population. We restricted eligible papers to those published in peer-reviewed journals, in English, from January, 2007, onwards (after the UN Convention on the Rights of Persons with Disabilities was opened for signing).¹ We searched the references of included papers and the recent WHO Global Report on Health Equity for Persons with Disabilities (hereafter referred to as the WHO Global report),² to identify additional eligible systematic review and meta-analysis papers, subject to the same inclusion criteria as the initial serarch. Data were extracted on the target group, health access measures, countries included, review type, and main outcome, with 14 papers ultimately identified.

Next, good practice examples were identified to provide illustrations of potential interventions that might improve the inclusion of people with disabilities for the different components of health systems (table 1; figure). Eligible good practices were those that sought to improve health-care access for people with disabilities. Good practices that focused on preventing the onset of impairment were excluded, as they were outside the scope of this Review. Three sources of good practices Practice Compendium,35 the WHO Global Report,2 and UNICEF's evidence and gap map on inclusive

were chosen (the Missing Billion Initiative's Good interventions for children with disabilities living in LMICs³⁶), as these sources all collated examples using explicit or implied criteria for inclusion.

	Good practice
System level	
Governance	International regulations are matched by appropriate country-specific laws and policies that protect the right to health care for people with disabilities and outlaw discrimination on the basis of disability; accountability mechanisms must be in place to enforce this right
Leadership	Issues around disability are clearly represented in the Ministry of Health, health sector structures, and coordination mechanisms; dedicated structures and leadership are implemented in times of crisis or disaster
Health system financing	Health financing, health insurance coverage, or both, are available to support access to health care for people with disabilities, including assistive technologies, specialised services, and other accommodations for routine services; health insurance mechanisms allow adjustments to support effective service delivery
Data and evidence	Routine data are available on the health situation of people with disabilities; evidence is generated to understand and improve delivery of health services for this group
Service level: demand	
Autonomy and awareness	People with disabilities make their own decisions about health care, and are aware of their rights and options
Affordability	People with disabilities can afford health-care access (eg, transportation, carer costs)
Service level: supply	
Human resources	Health-care workforce is knowledgeable about disability, and has the skills and flexibility to provide quality care to people with disabilities
Health facilities	Health facility infrastructure is accessible for people with disabilities
Rehabilitation, assistive technology, and other specialist services	Rehabilitation health services (eg, physiotherapy and assistive technology) are available, affordable, and of good quality for people with disabilities

Table 1: Missing Billion framework components for disability-inclusive health systems, by health system component

	Target group	Access measure	Number of eligible studies (number in LMICs)	Review type	Main outcome
General access					
Wisdom et al (2010) ³⁷	Women with disabilities	Health service use	Four studies (0)	Systematic review	Two studies showed women with disabilities had higher general health-care service usage than women without disabilities, and a third showed no difference in usage
Bright and Kuper (2018) ²¹	People with disabilities in LMICs	General health-care services	50 studies (50): 20 on use (20); 22 on coverage (22); three on adherence (3); and five on insurance (5)	Systematic review	17 of 20 studies on use of general health-care services showed higher use of primary, secondary, and tertiary services for people with disabilities; seven of 22 studies showed lower service coverage for people with disabilities; three studies on adherence to treatment showed mixed results; and one study showed lower insurance coverage for people with disabilities, and four showed no difference
Dunn et al (2018)44	People with intellectual disabilities	Hospital admissions for physical conditions	Seven studies (0)	Systematic review	All studies showed that people with intellectual disabilities had a higher frequency of hospital admissions, and there was also a different pattern of causes (eg, more medical or dental) compared with people without disabilities
Cancer services					
Wisdom et al (2010) ³⁷	Women with disabilities	Health service use	13 studies (0): nine on cancer screening (0); and four on service use for cancer treatment (0)	Systematic review	All nine studies related to cancer screening showed women with disabilities were less likely to attend screening; results for cancer treatment were inconsistent
Andresen et al (2013) ³⁸	Women with disabilities	Breast and cervical cancer screening	Five studies (0)	Systematic review	Four of five studies showed evidence of lower use of cervical screening for women with disabilities; three of five studies showed lower use of mammography screening with increasing levels of disability; three of five studies showed lower use of clinical breast examination for women with disabilities
Stirling et al (2021) ⁴⁵	Adults with intellectual disabilities, developmental disabilities, or both	Cancer outcomes and inequities	12 studies (0); nine on screening (0); one on diagnosis (0); two on treatment (0)	Scoping review	Eight of nine studies showed significantly lower cancer screening participation or adherence to recommended screening timelines among people with intellectual disabilities; people with intellectual disabilities were less likely to receive diagnostic tests after an abnormal cancer screen; women with intellectual disabilities, developmental disabilities, or both, had longer hospital stays, and were more likely to receive mastectomy instead of conserving surgery
Andiwijaya et al (2022) ³⁹	Women with disabilities	Breast and cervical cancer screening	29 studies (0)	Meta-analysis	Meta-analysis showed women with disabilities had lower odds of attending breast cancer screening (OR 0-78, 95% Cl 0-72–0-84) and cervical cancer screening (0-63, 0-45–0-88)
McWilliams et al (2022) ⁴⁰	Women with disabilities	Breast cancer screening	Seven studies (0)	Meta-analysis	Meta-analysis showed women with disabilities had lower odds of attending breast cancer screening (OR 0-59, 95% CI 0-47–0-74)

	Target group	Access measure	Number of eligible studies (number in LMICs)	Review type	Main outcome			
(Continued from previous page)								
Maternal services								
Williamson et al (2017) ⁴⁶	Adults with intellectual disabilities in the USA	Maternal care access	One study (0)	Scoping review	Women with intellectual disabilities were less likely to receive prenatal care in the first trimester, and had a higher risk of adverse pregnancy outcomes			
Tarasoff et al (2020)⁴	Women with disabilities	Maternal outcomes	23 studies (0)	Meta analysis	Meta-analysis showed women with disabilities generally had higher likelihood of pregnancy complications. Adjusted analyses found increased odds of caesarean section (OR 1.49, 95% Cl 1.20-1.85), and unadjusted analyses found increased odds of hypertension (1.45, 1.16–1.82), and elevated but non-significant odds of gestational diabetes (women with sensory disabilities: 2.85, 0.79–10.31; women with intellectual and developmental disabilities: 1.10, 0.76–1.58); non-pooled results also showed higher risk of postpartum emergency department and hospital visits			
Louch et al (2021) ⁴⁷	People with learning disabilities	Patient safety outcomes	Five studies, all on maternal or infant outcomes (0)	Scoping review	All five studies provided some evidence that women or infants had poorer safety outcomes (eg, safety incidents such as low birthweight and pre-eclampsia, avoidable hospitalisation)			
Ransohoff et al (2022) ⁴²	Women with intellectual and developmental disabilities	Prenatal care; postnatal care	Ten studies (0): seven on prenatal care (0); three on prenatal and postnatal care (0)	Scoping review	Five studies showed uptake of prenatal care was lower, and was received later, than women without intellectual and developmental disabilities, and seven studies showed poor satisfaction with current prenatal care; of the postnatal studies, three of four papers found poorer outcomes (eg, longer post-delivery stay or decreased satisfaction with care) for women with intellectual or developmental disabilities			
Other services								
Horner-Johnson et al (2019) ⁴³	Women with disabilities	Contraceptive use	14 studies (0)	Systematic review	Ten of 14 studies reported lower use of reversible contraception among women with disabilities			
Louch et al (2021)47	People with learning disabilities	Patient safety outcomes	16 studies (0)	Scoping review	Ten of 16 studies found that people with learning disabilities were more likely to have adverse events from surgery or other medical interventions (eg, longer duration of hospital stay or more postoperative complications); three of 14 studies found lower risk of medical complications; and two studies found no difference in risk of medical complications between people with learning disabilities and people without learning disabilities			
Bayati et al (2022) ⁴⁸	People with severe disabilities	COVID-19 vaccination	One study (0)	Systematic review	Vaccination rates were lower in people with severe disabilities			
Velepucha-Iniguez et al (2022) ⁴⁹	People with intellectual disabilities	Palliative care access	Three studies (0)	Scoping review	All three studies showed lower use of palliative care for people with intellectual disabilities			
Comparator group is people without disabilities, unless otherwise stated. LMICs=low-income and middle-income countries. OR=odds ratio.								

Table 2: Systematic reviews and meta-analyses on access to health care or health-care outcomes among people with disabilities compared with people without disabilities, identified by our umbrella review

We identified good practice examples for the Missing Billion *Good Practice Compendium* through consultations (eg, with organisations of people with disabilities, academics, and inclusive health experts), and an open online survey targeting disability experts. Potential examples were included if they fulfilled at least one of the following criteria: participation of people with disabilities was explicit in the design, implementation, monitoring, and evaluation of interventions; good practice was based on a human rights perspective;' an impact or process evaluation of the intervention had been conducted; and the approach was considered to be sustainable (eg, embedded in a government structure or plan).

See Online for appendix

We extracted relevant information on the intervention through interviews with the good practice implementers or review of official documents (eg, government reports), which were summarised and peer-reviewed by inclusive health experts, academics, or good practice implementers. We identified additional good practice examples from those selected for presentation in the recent WHO Global report,² and the UNICEF evidence and gap map (ie, either an impact evaluation or a systematic review).³⁶

Across these three sources, information on each good practice was extracted and summarised, and categorised according to the component of the Missing Billion Initiative framework that it addressed (eg, governance or leadership).

Health access inequities: review of the needs

Our review of the literature identified 462 titles, of which 46 abstracts and 13 full texts were screened. Nine reviews were included, and a further five were identified from reference tracing (table 2; appendix p 1). Seven reviews focused specifically on women with disabilities,³⁷⁻⁴³ and the remainder on both men and women with

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disabilities.^{21,44-49} Six papers addressed people with learning or intellectual disabilities,^{42,44-47,49} one addressed what they termed severe disabilities,⁴⁸ and seven addressed people with disabilities in general.^{21,37-41,43} Three reviews considered general access to health care,^{21,37-41,43} Three considered access to cancer care,^{37-40,45} four considered maternity services,^{41,42,46,47} and four considered other health-care access (eg, vaccination or palliative care).^{43,47-49} Few reviews retrieved studies from LMICs (as defined by the World Bank classification), indicating a scarcity of published evidence from these settings.⁵⁰

Included reviews showed that people with disabilities had higher increased use of health-care services.^{21,37,44} People with disabilities have an increased need for health-care services, but few studies assessed differences in service use according to need between people with disabilities and people without disabilities. Four of five reviews showed that people with disabilities were less likely to receive cancer screening than people without disabilities,^{37,39,40,45} whereas the fifth review had inconsistent results.³⁸ Of these five reviews, the largest meta-analysis showed that women with disabilities had substantially lower odds of attending breast cancer screening (odds ratio [OR] 0.78, 95% CI 0.72-0.84) or cervical cancer screening (OR 0.63, 95% CI 0.45-0.88) than women without disabilities, across 29 studies.³⁹ Four reviews found evidence that women with disabilities were less likely to receive prenatal care, and more likely to have adverse pregnancy and postnatal outcomes than pregnant women without disabilities.^{41,42,46,47} Other reviews also showed evidence of inequitable health care and access for people with disabilities, in terms of lower coverage of reversible contraception (for women only), poorer patient safety outcomes, lower vaccination rates, and lower levels of referral to palliative care, compared with people without disabilities.43,47-49

Pathways for action

We identified 90 good practice examples (33 from the Missing Billion Initiative, 35 from the UNICEF evidence and gap map, 20 from the WHO Global report, and two from both the Missing Billion Initiative and WHO; table 3; appendix pp 2–22). Of these examples, the majority focused on improving rehabilitation, assistive technology, or specialist services (n=31), human resources for inclusive health services (n=14), autonomy and awareness of people with disabilities (n=12), or governance (n=11). Two good practice examples were difficult to classify into one main component, as they were multi-faceted. Most examples came from middle-income countries (n=44), and few from low-income countries (n=6). In terms of individual countries, the largest number of examples came from India (n=10), the UK (n=5), Kenya (n=5), Ireland (n=4), and Australia (n=4). The target of the intervention was most commonly all people with disabilities (n=34), or children with disabilities (n=25). The main actor for the

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intervention was most often health-care workers (n=38), or governments or ministries (n=24).

Governance

11 governance good practice examples of laws and policies were identified, which protect the right to health care for people with disabilities, outlaw discrimination on the basis of disability, or both.^{34,35} Eight examples focused on setting out obligations or plans for improving inclusive health care for people with disabilities. For instance, the Uruguay policy on the right to equality and non-discrimination of people with disabilities established the minimum requirements to guarantee access to health care for people with disabilities (eg, health-care worker training, universal design of health facilities, and subsidising direct and indirect costs that people with

disabilities face when accessing care).³⁵ Two examples addressed accessibility specifically, and one addressed the specific needs of older people with disabilities. There were few examples of accountability mechanisms to monitor and enforce these commitments.

Leadership

Four good practice examples were identified to illustrate disability leadership-strengthening approaches. Two good practice examples demonstrated how issues around disability could be represented in a country's Ministry of Health or health sector structures. One was a disability leadership mechanism created within the Irish Ministry of Health through the National Clinical Programme for People with Disabilities.35 The second example, outlined in a systematic review, was on how to build the capacity of policy makers to improve disability-related (ie, mental health) services (eg, training and mentorship, and establishment of support networks).51 Two examples were identified of inclusion of people with disabilities in structures or leadership positions in times of crisis (COVID-19 response disability advisory committees in Australia and Canada).35

Health system financing

Five good practice examples were identified for health financing. Four examples outlined how adjustments in health insurance mechanisms could support coverage of disability-related services (eg, assistive technologies) and disability-inclusive services (eg, accessible information), or the introduction of fee waivers.^{2,35} The fifth example (from Germany) describes how adjustments can be made to the financing of health care to accommodate people with disabilities. In this example, dentists receive additional reimbursements for the dental care of people with intellectual disabilities to compensate for the longer time needed for each appointment.²²

Data and evidence

Three examples of the availability of routine data on the health situation of people with disabilities were identified-two focused on people with learning disabilities in England, UK. The first example from England was the creation of a register of people with learning disabilities, which allows annual data collection on health and health access indicators to produce an annual review, and has also provided rich data on health inequities to help guide interventions.53 The second example was the Learning Disabilities Mortality Review, which reports on deaths among people with learning disability or autism in England, and identifies avoidable deaths.54 The third good practice example was from the Centre of Research Excellence in Disability and Health, at the University of Melbourne, VIC, Australia, which generates necessary evidence to understand and improve the health of people with disabilities in Australia, through the conduct of research.²

Autonomy and awareness

12 good practice examples were identified with respect to autonomy and awareness, which tried to ensure that people with disabilities can make their own decisions about health care, and are aware of their rights and options. Eight examples addressed improving information or awareness, including a systematic review of several other interventions.55 Of these examples, five considered improving oral health education, either targeting the child or their caregiver, and mostly through providing alternative formats for information (eg, braille or sign language).⁵⁶⁻⁵⁹ The remaining three included providing health passports for people with intellectual disabilities to facilitate communication, using smartphones to improve access to eye services, annual health checks for people with learning disabilities, and a programme to strengthen informal care.^{2,35,60} One example, within the systematic review, illustrated how the creation of self-help groups might be effective at improving autonomy and awareness.⁶¹ In the self-help group example, groups of people with disabilities were established in the Philippines, and specific individuals (without disabilities) were allocated to provide support to these groups to help them understand their health needs and seek sexual and reproductive health care.62

Affordability

Only two good practice examples were identified that help to ensure that people with disabilities can afford health-care access, even though affordability was identified as a key issue. This component is distinct to health financing, as it addresses the additional costs that would be incurred (eg, transport costs) even if health care was free. The examples illustrate different approaches to improving affordability. The first was a scheme introduced in Toronto, ON, Canada, to provide free, accessible transportation to COVID-19 vaccination clinics for people with disabilities.³⁵ The second, in Viet Nam, was a disability allowance with subsidised health insurance offered for people with disabilities, which can be used to access health care (eg, transportation costs).³⁵

Human resources

14 good practice examples illustrated how to improve human resources to strengthen disability inclusion, all of which focused on training health-care providers. There was variation as to whether training was on disability in general (eg, disability training in Ethiopia, Mozambique, and Rwanda),³⁵ or focused on providing accommodations for specific disability types (eg, sign language training in Kenya),² particular health concerns (eg, sexual and reproductive health of women with disabilities in Ecuador),³⁵ or specific cadres of health-care workers (eg, community health assistants in Zambia).³⁵ There was also a range of teaching methods used, including using a handbook, online material, lessons, and workshops.^{2,35} inclusion of people with disabilities in the design or delivery (eg, learning disability and autism training in the UK).³⁵

Health facilities

Six good practice examples described changes that could be made to improve the accessibility of health facilities for people with disabilities. Four examples illustrated strategies for improving accessibility, whether through provision of sign language services (Chile and Uruguay), national audits of accessibility (Brazil), or setting accessibility standards (international).35 The remaining two examples focused on providing outreach health services for people with disabilities (home-testing for COVID-19 for people with disabilities in the United Arab Emirates, and establishment of local children's disability network teams in Ireland).^{2,35} A key approach to improving accessibility is through audits of facilities to monitor and enforce accessibility standards, yet there has been a shortage of a standardised toolkit, particularly for LMICs. An accessibility standards and audit pack, developed by the non-governmental organisation Sightsavers, could addresses this gap.63 Moreover, audits are rarely undertaken, and approaches to encourage uptake and reporting are needed. One example of auditing good practice is the inclusion of facility accessibility as part of the pay-for-performance scheme in the Brazilian health service, which led to national audits of all 38 812 of the primary health-care facilities in the country.³¹

Rehabilitation, assistive technology, and other specialist services

By far the highest number of good practice examples were identified in relation to improving provision of access to rehabilitation, assistive technology, or other specialist services—31 in total. Of these examples, 15 presented strategies for improving provision of rehabilitation, early intervention, or both; three examples were on assistive technology; ten examples were on screening for impairments; and the remaining five were for improved access to specialist care (ie, eye care, feeding, and mental health). Good practice examples mostly used digital technology (eg, smartphone screening)^{64–66} and task-shifting towards non-specialists or lay workers (eg, training community health workers or carers).^{67–70}

Discussion

Our review highlighted that people with disabilities have higher use of health-care services than people without disabilities, yet have worse coverage, including access to general health care, cancer care, maternal care, and other services. There was high heterogeneity in the included reviews for health outcome or access measure considered, and the target group (eg, variation in gender or impairment type), making it difficult to compare findings. Collecting more internationally comparable data on health inequities for people with disabilities is therefore an urgent priority and should include measures of quality and affordability of services. Nevertheless, there was a consistent pattern of inequities faced by people with disabilities, which are likely to contribute to the life expectancy gap between people with and without disabilities, and so need to be addressed.⁴⁶ There is a strong argument that making health care more inclusive of people with disabilities will improve health for all (eg, older people or other types of diversity), and be cost saving.²²⁴ Analyses from the recent WHO Global report suggest that there is a US\$10 return for every \$1 spent on disability-inclusive prevention and care for non-communicable diseases.²

We provided good practice examples that align to components of an overall framework to improve disability inclusion of health systems. This framework could help to identify areas for improvement by key actors, using good practice examples when relevant to guide interventions, although it is illustrative and not comprehensive. The largest number of good practice examples focused on improving rehabilitation, assistive technology, and specialist services, but there were gaps in other areas, such as leadership, financing, and affordability. Some good practices do exist, but were not captured by our search (eg, with respect to financing, or not included in either the Good Practice Compendium or evidence and gap map).71-75 For other areas, innovation of new approaches is needed. For instance, we identified good practices around health-care worker training on disability, but new approaches might be needed on recruitment and diverse hiring to include people with disabilities in the health-care workforce. Our review highlighted inequities in access to particular services (eg. cancer or maternal), but good practices focusing on these types of health-care need were scarce, and might require development. It could be necessary to implement a socalled twin-track approach to improving the performance of the health system with respect to disability inclusion, which means that efforts are needed to enable people with disabilities to access mainstream services, but also to specifically target them with services that address their greater and specific needs (eg. assistive technology). It is also crucial to work in partnership with people with disabilities when implementing changes that affect their life. This collaboration, or co-creation, makes it more probable that changes implemented are acceptable and appropriate for people with disabilities, and addresses their challenges and needs.

There are limitations to our review. The umbrella review focused on only one search database, although we also tracked references from included papers and other key resources.^{2,36} It was restricted to English language peer-reviewed publications, from 2007 onwards, and did not include the grey literature. The umbrella review also did not identify the key reasons for the inequities in

access, which would help to guide the interventions needed. Our search for good practice examples will have missed important examples, and so our list is illustrative, rather than comprehensive. For instance, we cited the disability allowance programme in Viet Nam as a good practice example to improve affordability of health care, yet many countries in the world provide a disability allowance. We also did not consider the quality, costeffectiveness, or coverage of the implementation of good practices, although these are often crucial when considering scale-up. Furthermore, most of these good practice examples have not been evaluated, and so their effectiveness in reality at achieving their desired effects is not known. Indeed, the definition of what constitutes good practice was relatively subjective, and is therefore illustrative, rather than definitive. Many good practice examples will be context-specific, and this should be considered before replication or scale-up.

Key policy and programmatic actions are needed to improve inclusion in health systems. However, the tools and evidence base needed require strengthening and scaling. Structured assessments of health systems should be made to identify key gaps and prioritise action. A systems-level assessment toolkit with indicators has been developed using the Missing Billion Initiative framework, which could guide these assessments,⁷⁶ but as yet has been implemented in few settings. A more comprehensive list is needed of good practice examples, ideally including information on cost-effectiveness, and their effect on life expectancy and other health outcomes. These examples could inform the development of a toolkit for action, to improve disability inclusion in health systems.

In conclusion, our review of the evidence shows that health systems are failing to accommodate people with disabilities, and yet good practices exist to address these challenges. Health systems need to adapt to include people with disabilities, so that they can truly achieve health for all.

Contributors

HK and TS conducted the umbrella review on disability and health equity. DRG and SR compiled the good practices for the Missing Billion Initiative, and DRG and LA extracted information on the good practices. HK and PH developed the Missing Billion Initiative health system framework, with intellectual input from SR. HK designed the outline of the papers. All authors contributed to writing, and reviewed and agreed on the final version.

Declaration of interests

We declare no competing interests.

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