

The need to scale up rehabilitation

Key messages

- Throughout the life course, persons with health conditions that cause limitations in functioning can benefit from rehabilitation.
- Excluding acute and remitting conditions, and conditions associated with mild disability, 74% of years lived with disability (YLDs) in the world are the result of health conditions for which rehabilitation may be beneficial.
- 15% of all YLDs are caused by health conditions associated with severe levels of disability. Rehabilitation is a fundamental health intervention for people living with these conditions.
- Both the prevalence of severely disabling conditions and the absolute number of associated YLDs have increased dramatically over the last decade. The prevalence of health conditions associated with severe levels of disability today has increased by nearly 183 million compared to 2005.
- The need for rehabilitation continues to grow worldwide, especially in low- and middle-income countries. The demand for rehabilitation services already exceeds availability, leaving a large unmet need.
- The current workforce of physicians, nurses and skilled rehabilitation professionals is totally inadequate to serve the needs of the population in most countries, especially in the African, Eastern Mediterranean, and South-East Asia regions. The number of occupational therapists, physiotherapists, physical medicine and rehabilitation doctors, speech and language therapists, prosthetists and orthotists is one-tenth of that required.
- High-income countries have workforces several times larger than low- and middle-income countries yet the utilization of rehabilitation services remains low.
- A comprehensive strategy is required to strengthen rehabilitation and address global unmet needs.

Global need for rehabilitation

The 2015 Global Burden of Disease Study (GBD)(1) – the source of the most consistent global, regional and national epidemiological evidence for all diseases and injuries in the current period – shows that 74% of the total number of YLDs in the world is linked to health conditions for which rehabilitation is beneficial. These conditions include non-acute conditions associated with significant disability such as noncommunicable diseases, musculoskeletal conditions (such as low back pain), maternal and perinatal conditions, nutritional deficiencies and injuries, as well as certain communicable diseases. Furthermore, 15% of the total number of YLDs in the world is caused by health conditions such as epilepsy, multiple sclerosis, and cancer that are associated with severe levels of disability.

The prevalence of these conditions and the absolute numbers of associated YLDs have increased dramatically over the last decade. The prevalence of health conditions associated with severe disability today has increased by nearly 183 million compared to 2005, a 23% increase. The number of YLDs for these conditions has risen since 2005 by more than 17 million (Table 1).

Groups of disabling health conditions: methodology

1. The GBD 2004 established severity weights between 0.0 and 1.0 for approximately 500 disabling health states (health conditions, injuries and associated sequelae). All health states were grouped into seven classes, where classes I and II represent mild disability with weights below 0.12, classes III, IV and V, significant disability with weights between 0.12 and 0.5, and classes VI and VII, severe disability with weights above 0.5.⁽²⁾
2. To calculate YLDs and prevalence data for the health conditions in need of rehabilitation presented in this paper, the highest weight of the health conditions from classes I and II of the 2004 GBD but using their 2015 weights was used as threshold, i.e. 0.149; all health conditions below this value were excluded.
3. To calculate YLDs and prevalence data for health conditions for which rehabilitation can be considered fundamental, the lowest weight of the health conditions from classes VI and VII of the 2004 GBD but using their 2015 weights was used as threshold, i.e. 0.54; all health conditions above this value were included. These were the ones based on which the change in prevalence estimates and YLDs between 2005 and 2015 were calculated.

Since the aim of rehabilitation is to optimize functioning, and future populations will experience more and more limitations in functioning and live longer with these limitations, the global need for rehabilitation is predicted to increase.⁽³⁾ Longer life expectancies and increasing survival rates for those with severe disability, coupled with the rising prevalence of chronic diseases means that globally there will be an increase in the health burden associated with limitations in functioning. Population ageing, with the accompanying rise in multimorbidity, will lead to a higher absolute number of older adults with difficulties in functioning, while the absence of a significant compression of morbidity will lead to more years of life being spent with disability.⁽⁴⁾

Throughout the life course, persons with health conditions that cause limitations in functioning can benefit from rehabilitation. Studies show that rehabilitation improves functioning in many domains of life for people with cancer, cardiovascular, and chronic respiratory conditions.^(5–7) Rehabilitation also produces positive results for people with cerebrovascular, neurological, and mental health conditions,^(8–10) and many other noncommunicable conditions and injuries.^(10,11) For communicable diseases such as HIV/AIDS and malaria, rehabilitation can be beneficial in addressing limitations in functioning.^(13,14) Rehabilitation has also been shown to be highly effective in improving clinical outcomes and enhancing functioning and quality of life of persons with disabilities.⁽¹⁵⁾

Table 1. Global prevalence and YLDs for health conditions associated with severe levels of disability (2005–2015)

Health condition	Prevalence in 2005 (thousands)	Prevalence in 2015 (thousands)	Percentage change in prevalence, 2005–2015	YLDs in 2005 (thousands)	YLDs in 2015 (thousands)	Percentage change in YLDs, 2005–2015
HIV/AIDS	30 794.0	37 277.4	21.1	4 086.1	3 989.9	-2.4
Cancer	62 673.8	90 497.5	44.4	6 271.7	8 569.3	36.6
Ischaemic stroke	20 467.3	24 929.0	21.8	2 999.9	3 659.9	22.0
Parkinson's disease	4 706.2	6 193.3	31.6	561.3	737.8	31.4
Epilepsy	21 033.1	23 414.5	11.3	6 715.9	6 286.8	-6.4
Multiple sclerosis	1 689.7	2 012.0	19.1	562.1	667.5	18.8
Schizophrenia	19 563.1	23 383.0	19.5	12 572.1	15 020.5	19.5
Alcohol use disorders	57 132.2	63 469.5	11.1	5 690.4	6 321.3	11.1
Opioid use disorders	13 579.6	16,746.4	23.3	5653.5	6 969.6	23.3
Major depressive disorder	183 433.9	216 046.9	17.8	37 544.7	44 224.4	17.8
Chronic kidney disease	254 121.6	322 510.6	26.9	6 602.7	8 172.7	23.8
Rheumatoid arthritis	19 779.4	24 491.2	23.8	4 674.3	5 777.8	23.6
Gout	33 387.2	42 214.2	26.4	1 063.1	1 342.8	26.3
Psoriasis	67 753.3	79 699.7	17.6	5 478.8	6 438.3	17.5
Total	790 114.4	972 885.2	23.1	100 476.6	118 178.6	17.6

Notes: The table compares the rates of prevalence and YLDs between 2005 and 2015 for health states associated with severe levels of disability according to 2015 GBD disability weights. Only those health states that may benefit from rehabilitation are presented. Acute states that need acute treatment (e.g. African trypanosomiasis) are not shown, nor are sequelae for which prevalence and YLDs are not available (e.g. traumatic brain injury or spinal cord injury). Prevalence refers to the number of people with a health condition; YLDs refers to the number of years lived with disability per health condition.

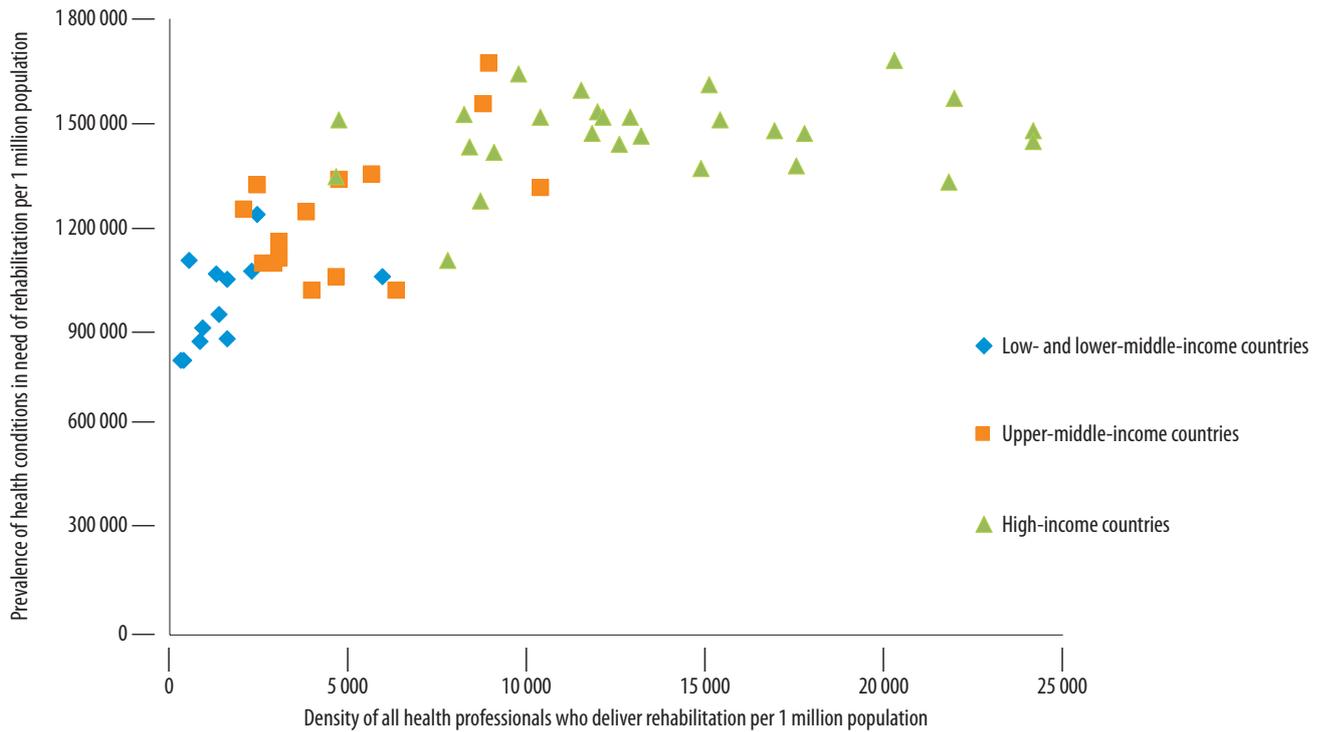
Source: GBD 2015(1)

Can the need for rehabilitation be met?

A proxy indicator for level of provision of rehabilitation is the number of health professionals who deliver rehabilitation services (including rehabilitation specialists and, in parts of the world where these are scarce, any health professional who delivers rehabilitation services – physicians, nurses or midwives). Evidence suggests that the demand for rehabilitation is much higher than the services can provide,(16) especially in low- and lower-middle-income countries.

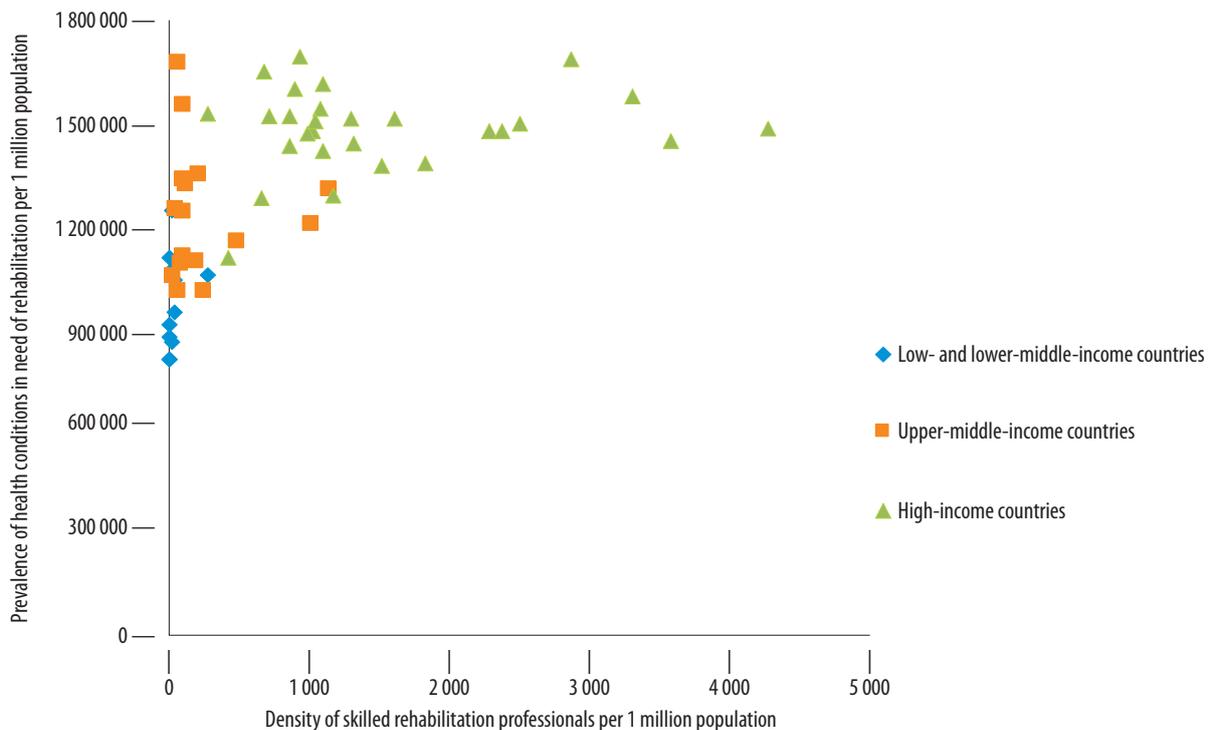
The relationship between the prevalence of health conditions for which patients might benefit from rehabilitation (i.e. those that result in 74% of the YLDs, as noted above) and the number of available health professionals (all who deliver rehabilitation services and only the skilled rehabilitation professionals) in countries where data are available is shown in Figures 1a and 1b. People in low- and lower-middle-income countries have poor access to rehabilitation services; in many of these countries the skilled practitioner density is often below 10 per 1 million population and the number of other health professionals who can deliver rehabilitation services is also extremely low. In the African Region, for example, the total number of physicians, nurses and midwives is 890 per million population. In the South-East Asia Region the ratio is 1 900 per million, and in the Eastern Mediterranean Region it is 2 210 per million population. The density of all health professionals who deliver rehabilitation is far below the threshold required for providing adequate services. According to the World Health Report 2006,(17) countries with fewer than 2 300 health professionals per million population generally fail to achieve adequate coverage for even the primary health care interventions prioritized by the Millennium Development Goals.

Figure 1a. Prevalence of rehabilitation-relevant health conditions compared to the density of all health professionals who can deliver rehabilitation services in 12 low- and lower-middle-income countries, 16 upper-middle-income countries, and 31 high-income countries per 1 million population



Note: Health professionals who can deliver rehabilitation services include physicians, nurses, midwives, physiotherapists, occupational therapists, prosthetists, and orthotists.
Source: WHO's Global Atlas of the Health Workforce,(18) International Society for Prosthetics and Orthotics (ISPO), World Confederation for Physical Therapy (WCPT), World Federation of Occupational Therapists (WFOT), and Organization for Economic Co-operation and Development (OECD).

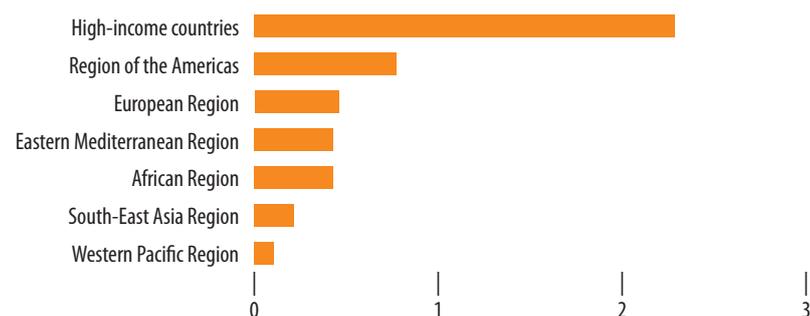
Figure 1b. Prevalence of rehabilitation-relevant health conditions compared to the density of skilled rehabilitation professionals in 12 low and lower-middle income countries, 16 upper-middle income countries, and 31 high-income countries per 1 million population



Note: Skilled rehabilitation professionals include physiotherapists, occupational therapists, prosthetists, and orthotists.
Source: WHO's Global Atlas of the Health Workforce,(18) ISPO, WCPT, WFOT, OECD.

The unmet need for rehabilitation can be seen in every area of specialized rehabilitation services. For example, based on the WHO standards for prosthetics and orthotics,⁽¹⁹⁾ for every 1 million population, a country would need to have at least five prosthetics and orthotics professionals in order to meet the needs of all individuals. Data from the International Society for Prosthetics and Orthotics (ISPO) show that the number of registered prosthetists, orthotists, technicians and technologists does not reach the minimum number of required personnel even in high-income countries. In the African, South-East Asia and Western Pacific regions the number of practicing professionals is one tenth of the number required (see Figure 2).

Figure 2. Density of prosthetists and orthotists per 1 million population by Region (data from 140 countries)



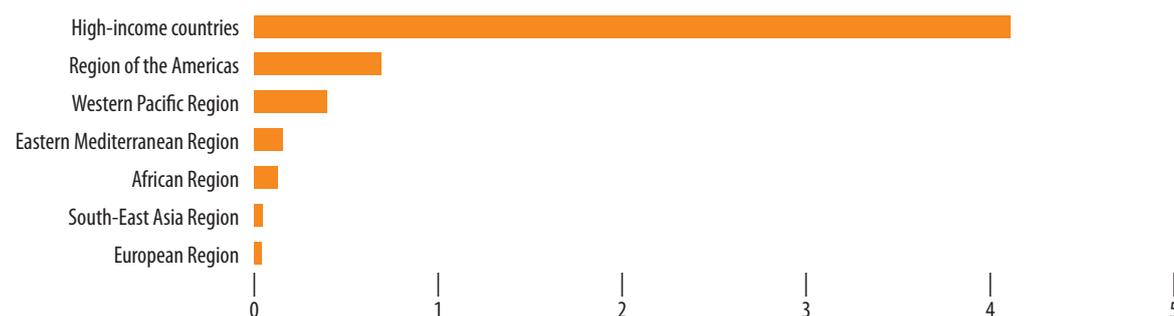
Note: High-income countries are those with a gross national income (GNI) per capita of US\$ 12 475 or more in 2015, as estimated by the World Bank. The remaining data in this figure are from low- and middle-income countries only.

To cover the needs of all individuals for prosthetics and orthotics, at least 5 professionals per 1 million population are needed

Source: ISPO

According to the World Federation of Occupational Therapists (WFOT), the minimum number of occupational therapists per 1 million population should be 750. Data from 71 countries around the world show that the number of registered occupational therapists is far below this required minimum even in high-income countries (Figure 3).

Figure 3. Density of occupational therapists per 1 million population by Region (data from 79 countries)



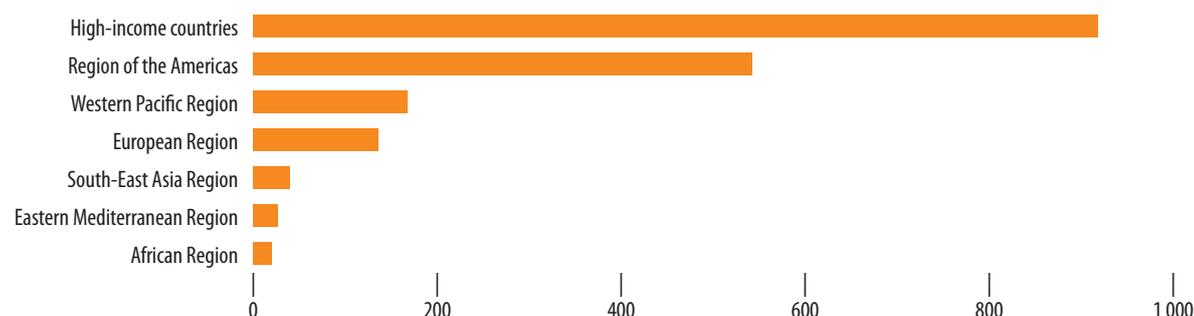
Note: High-income countries are those with a gross national income per capita of US\$ 12 475 or more in 2015, as estimated by the World Bank. The remaining data in this figure are from low- and middle-income countries only.

To cover the needs of all individuals for occupational therapists, at least 750 professionals per 1 million population are needed

Source: WFOT

Although there is no universally agreed or recommended minimal number of physiotherapists, physical and rehabilitation medicine doctors, or speech and language therapists, the critical shortage of these professionals is evident, especially in low- and middle-income countries. Figures 4, 5 and 6 show the density of physiotherapists, physiatrists and speech and language therapists across world regions. Despite the large number of people with health conditions requiring physical therapy intervention, the number of qualified personnel in the African, South-East Asia and Eastern Mediterranean regions is well below 30 per 1 million population (Figure 4). Again, low-income countries tend to have the lowest densities; there are fewer than 10 physiotherapists per million inhabitants in many countries of Sub-Saharan Africa and the South-East Asia Region, where millions of people with health conditions face challenges in attaining and maintaining maximum independence, health and well-being. There are no data available from the African Region for density of physiatrists, and in the Eastern Mediterranean and South-East Asia regions the number of professionals is below 1 per 1 million population. In the case of speech and language therapists, the available data show enormous disparities among high-, middle- and low-income countries (Figure 6). While some low-income countries in the African region have no speech and language therapists for the entire population, high-income countries such as USA or Australia have more than 300 per 1 million.

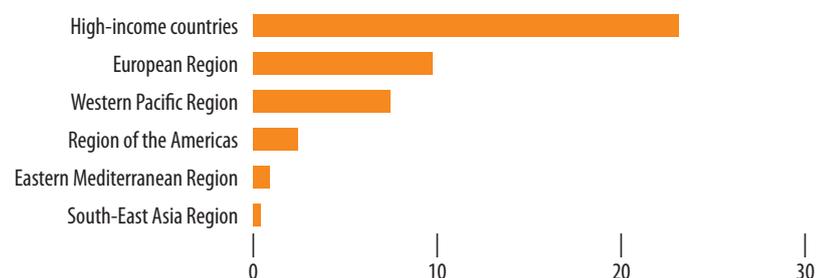
Figure 4. Density of physiotherapists per 1 million population by Region (data from 107 countries)



Note: High-income countries are those with a gross national income per capita of US\$12 475 or more in 2015, as estimated by the World Bank. The remaining data in this figure are from low- and middle-income countries only.

Source: WCPT, and OECD

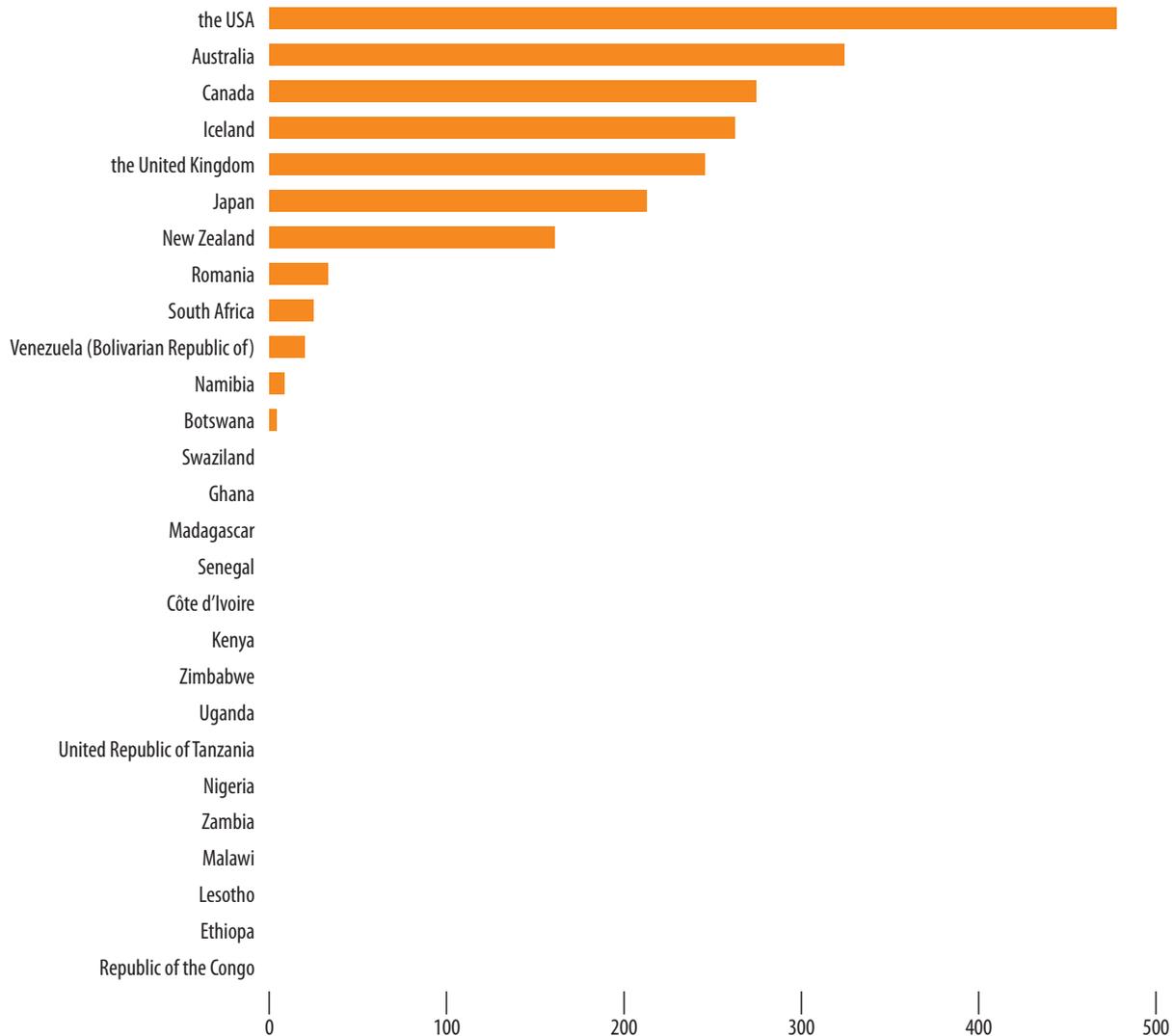
Figure 5. Density of physical and rehabilitation medicine doctors per 1 million population by region (data from 48 countries)



Note: High-income countries are those with a gross national income per capita of US\$ 12 475 or more in 2015, as estimated by the World Bank. The remaining data in this figure are from low- and middle-income countries only. No data are available from the African Region.

Source: International Society of Physical and Rehabilitation Medicine (ISPRM)

Figure 6. Density of speech and language therapists per 1 million population in 27 countries



Source: International Association of Logopedics and Phoniatrics, and Fagan JJ & Jacobs M 2009 (20)

High-income countries have workforce densities several times higher than low- and middle-income countries. Yet even in high-income countries, the utilization of rehabilitation services can be relatively low. A study of Central European countries shows a general lack of utilization of rehabilitation in primary, secondary, tertiary, and community health care settings.(21) A recent European survey reveals that fewer than 20% of patients with heart failure use cardiac rehabilitation.(22) Evidence from USA, Canada, Australia, New Zealand, and South Korea also shows underutilization of cardiac and post-stroke rehabilitation.(23–26) Women and people over 65 are less likely to complete rehabilitation programmes.(27) The reasons for underutilization of rehabilitation in high-income countries include lack of accessibility and transportation barriers, especially for those living in rural areas, the costs of services, long waiting times, and lack of awareness.(21,22) At programme level, underutilization can be explained in terms of inappropriate use of facilities, lack of infrastructure resources (equipment, space, beds), and lack of funding.(21,25) At health-system level, the main barriers include lack of funding, and absent or inadequate national legislation, guidelines or information systems.(22,25)

Although WHO's Global Atlas of the Health Workforce (18) provides comprehensive information on the general health workforce, data on the rehabilitation workforce are poor, i.e. are often missing, or, when available, are incomplete and fragmented. Some of these data are based on authoritative sources such as a regulatory agency or government department, but often the number of rehabilitation-related health professionals is just an estimate based on the respondent's knowledge and experience. This scarcity of evidence makes it difficult to develop guidelines or recommend policies, and generally hampers coordinated planning for rehabilitation needs. The data presented in this paper reveal that there is a worldwide shortage of qualified professionals, and as a result, rehabilitation needs remain unmet. If rehabilitation needs are not met, people's level of functioning will not be optimized, they may be unable to fully participate in day-to-day activities, or their health may deteriorate further.(28–30) The magnitude of the unmet needs for rehabilitation clearly signals an urgent need for action.

Future steps for scaling up rehabilitation

The Sixty-sixth World Health Assembly in resolution WHA66.9 endorsed a coordinated global action plan by all stakeholders to “strengthen and extend rehabilitation, habilitation, assistive technology, assistance and support services, and community-based rehabilitation”.(31) The essential working areas for action are set out in the *Joint commitment to action for rehabilitation* document, to be adopted by all participants at the 2017 WHO meeting on Rehabilitation 2030: A Call for Action. The research conducted for this background paper indicates that:

- The need for rehabilitation is projected to increase in the following decades due to the ongoing demographic, epidemiological and nutrition transitions, as well as improved acute care and better survival.
- Better data showing the actual number of health professionals generally, and rehabilitation professionals specifically, are needed. These data are especially important for evidence-informed policy for rehabilitation.
- There is a need for research to estimate and predict the future number of health professionals per 1 million population required to satisfy the demands for rehabilitation.
- Efficient models of rehabilitation care are needed in high-income countries, and more research to identify the causes for underutilization of rehabilitation services is necessary.
- There is a need for global action by professional organizations, development agencies and civil society to work towards developing and maintaining a sustainable workforce for rehabilitation.

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