

Why Rehabilitation must not be neglected during and after the COVID-19-pandemic: A position statement of the Global Rehabilitation Alliance

1. Background

The COVID-19 pandemic has resulted in significant mortality, morbidity and unprecedented stress on the health care system. COVID-19 is disproportionately infecting older individuals, those in lower socioeconomic status and those with multi-comorbidities (1-3) and ethnic minorities (4, 5). Moreover, the pandemic has severely impacted on the delivery of most rehabilitation services, and the impact of this reduction in services is likely to be more pronounced in low- and middle-income countries (6). Therefore, the needs for rehabilitation for COVID-19 related disability or pre-existing disability will undoubtedly grow post-COVID.

We are currently awaiting the development of vaccines and antiviral medications. During this period, the health care and public health system has focused on:

- prevention of infections through public health measures such as isolation, social distancing, and washing hands;
- increasing the capacity to manage patients in acute care clinics/hospitals, intensive care units and respiratory departments.

The current situation requires investments in specific sectors of the health and social system.

With regard to rehabilitation, a number of questions need to be answered:

- What are the rehabilitation needs of patients with moderate and severe COVID-19?
- How do we ensure that persons with chronic health conditions and people with disability continue receiving rehabilitation services so that they can achieve and maintain optimal functioning?
- How do we address the rehabilitation needs of people living in poverty and other vulnerable subgroups of the population?
- Do the measures taken to prevent infections like lock down and physical distancing cause additional disability and need for rehabilitation, e.g. with respect to mental disorders?
- Are rehabilitation workers sufficiently protected from COVID-19 infections?
- How will low- and middle-income countries cope with the rehabilitation needs of their population?

Little scientific evidence is available to answer these questions. Nevertheless, civil societies with expertise in rehabilitation urge decision makers to take the advice of civil societies, persons with disabilities, their families and their organizations into consideration when taking their decisions.

2. Rehabilitation and the scope of the Global Rehabilitation Alliance

The World Report on Disability defines rehabilitation as “a set of measures that assist individuals who experience, or are likely to experience, disability to achieve and maintain optimal functioning in interaction with their environments” (7). More recently the World Health Organization (WHO) has refined the definition of rehabilitation as “a set of interventions

needed when a person is experiencing or is likely to experience limitations in everyday functioning due to ageing or a health condition, including chronic diseases or disorders, injuries or traumas”(8). Rehabilitation interventions include multiple components, and it has been shown that rehabilitation is effective into reducing disability and improving functioning. Thus rehabilitation should be available at all levels of health care (*primary, secondary and tertiary levels*) and in all phases (*acute, post-acute, long-term*)(9).

As stated in the World Report on Disability and reiterated again in 2017, the World Health Organization (WHO) aims to strengthen rehabilitation in health systems and include it as an essential component of Universal Health Coverage and to reach the UN Sustainable Development Goals 2030(10).

The Global Rehabilitation Alliance was founded to “be a uniting body for rehabilitation stakeholders, jointly advocating for rehabilitation as a key health strategy of the 21st century, and the implementation of rehabilitation services in health systems worldwide. It “envisions a world where every person has access to timely, quality and user-centered rehabilitation services. Its mission is “to advocate for the availability of quality, coordinated and affordable rehabilitation through system strengthening according to population needs (11)

Therefore, this statement reflects the concerns of the Global Rehabilitation Alliance. We aim to raise awareness and foster collaboration of Civil Societies to taking action to solve the problems (11).

3. Perspective of patients with COVID-19 and the need for rehabilitation

Patients with moderate and severe COVID-19 primarily suffer from lung dysfunction and this can be fatal. However, growing evidence suggest that SARS-CoV-2 infections may also affect the nervous system (*such as loss of taste*) and cardiovascular function (*such as increased risk of thrombosis*)(12, 13). It also has been shown that many patients develop mental health problems that need to be addressed through rehabilitation programs. The evidence indicates that rehabilitation for people with COVID-19 is needed in all phases of the disease.

In acute phase supporting respiration functions and preventing complications (*such as contractures, thrombosis, pressure sores, deconditioning and frailty,*) are of major relevance. Interventions include positioning, respiration treatment, passive and active movements, early mobilization. To support the weaning phase through respiration techniques and mobilization is essential(14).

In the early post-acute phase, training of lung function, early mobilization and rehabilitation of other affected body functions and (*basic*) activities of daily living are of major importance. Treating side-effects of intensive care and artificial respiration and addressing the so-called Post-Intensive-Care Syndrome (PICS) is relevant too (*e.g. critical illness polyneuropathia, dysphagia, voice impairment and others*). Last but not least to support coping with the disease and treat mental problems is important(14).

In post-acute and long-term rehabilitation care further training of respiration functions, the restoration of other affected body functions and the treatment of mental problems are in the foreground. Many patients will also need support for restoring mobility, independent living (*mainly elderly people*) and support for return to work (*people in working age*)(14). Other studies also showed that it is likely that 10% of people may present with post-viral fatigue syndromes (15, 16).

To deliver such complex interventions, rehabilitation services must be empowered and, in many cases, upgraded. This includes a well-trained rehabilitation workforce in hospitals and community clinics treating with people with COVID-19, well equipped post-acute rehabilitation units that are equipped to treat patients who are potentially still are infectious and long-term rehabilitation services that are able to deliver patient-centered multimodal rehabilitation with multi-professional team aiming at return-to-normal life.

4. Perspective of persons in need for rehabilitation, i.e. vulnerable populations

Rehabilitation services have been locked down in many countries during the "Corona-Crisis" (6). In some cases it was done, among other reasons, to gain capacities for the treatment of patients with COVID-19 and/or patients that could not access to hospitals due to limited capacities. Additionally, the shortage of personal protection equipment and the uncertainty regarding the prevention of infections while treating patients were major concerns reasons for suspension of the delivery of out-patient services. Last but not least, the general rules imposed during the lock down and the concern of patients' fears limited the delivery of rehabilitation services (6).

It has been observed that persons in need of rehabilitation during COVID-19 outbreak received less care. In many countries, rehabilitation services for people with chronic health conditions were reduced or completely stopped. Although the impact has not yet been documented through research, it can be assumed that this situation has further reduced functioning in persons with disabilities and chronic health conditions. It likely also affected the rehabilitation of persons with acute events such as stroke, traumatic brain injury or myocardial infarction. This is significant because these individuals may not have access to essential post-acute rehabilitation during this important window of opportunity; this may have led to further deterioration of function which could have been prevented through rehabilitation interventions (17). In many cases, this will result in otherwise preventable functioning deficits including quality of life, independent living and return to work.

Elderly individuals, those with comorbidities (*congestive heart failure, cancer*), and persons with disabilities (*e.g. SCI, blindness, limb amputation*) have a worse prognosis following COVID-19 infection and this is of significant concern for people living in nursing homes (18, 19). We are also extremely concerned about people in poverty who live in precarious environmental conditions. It is therefore critical to strengthen the environment, health and functioning of vulnerable individuals to prevent infection, lessen the impact and severity of symptoms and promote recovery through effective rehabilitation strategies.

5. Health systems perspective

The long term health, social and economic impact of the COVID-19 pandemic is unknown. Nevertheless, we anticipate that it will lead to:

- shortage of intensive care beds and equipment for mechanical ventilation;
- prolonged periods of mechanical ventilation and extended length of stay in hospital;
- shortage of health care workforce (*e.g. because of work overload, burn-out, need to quarantine and COVID-19 infections*);
- long-term disability and need for social support (*also coming from not being able to work*).

We are very concerned that the pandemic will slow down, or even stop initiatives to strengthen rehabilitation in health systems and the delivery of rehabilitation services to those in need. Such consequences would have devastating consequences on all persons who need rehabilitation, especially persons with disabilities, chronic health conditions, and patients with acute disease and severe trauma. A devastating consequence of the impact of the pandemic on the delivery of rehabilitation services would be a decreased participation of persons with disabilities in society. We also fear that the commitment to improve rehabilitation systems in low and middle income countries will lose momentum and be retrograded to lower level priorities.

We argue that rehabilitation can minimize the consequences of the COVID-19 pandemic by:

- shortening length of stay in all phases of the health care;
- optimizing health outcomes and reducing healthcare and social costs;
- increasing employment rate for COVID-19 survivors; and
- strengthening health of health care workforce (*and families of patients*).

With regard to the COVID-19 pandemic, strengthening rehabilitation is on the one hand important to minimize consequences of the disease and on the other hand to avoid negative side effects of non-rehabilitation in persons with rehabilitation needs during the pandemic.

6. Need for action

The Global Rehabilitation Alliance believes that rehabilitation as an integral part of the response to the COVID-19 pandemic. Therefore, we recommend that rehabilitation services:

- be available in the acute, post-acute and long-term care for patients with COVID-19;
- be accessible vulnerable population, such as older people, people with disabilities and people living in poverty;
- delivered by rehabilitation services providers who are adequately equipped with personal protective equipment;
- be maintained in health systems in this climate of shifting resources;
- be investigated in scientific studies that will focus on:
 - the needs of COVID-19 patients;
 - the consequences of COVID-19 in for persons with disabilities and other vulnerable groups; and
 - to develop specific rehabilitation programs for persons after COVID-19.
 - to determine to what extent people recovered from COVID-19 are able to access rehabilitation services in middle and low income countries

References

1. Fuellen G, Liesenfeld O, Kowald A, Barrantes I, Bastian M, Simm A, et al. The preventive strategy for pandemics in the elderly is to collect in advance samples & data to counteract chronic inflammation (inflammaging). *Ageing Res Rev.* 2020; 101091.
2. Katulanda P, Dissanayake HA, Ranathunga I, Ratnasamy V, Wijewickrama PSA, Yogendranathan N, et al. Prevention and management of COVID-19 among patients with diabetes: an appraisal of the literature. *Diabetologia.* 2020.
3. Martini N, Piccinni C, Pedrini A, Maggioni A. [CoViD-19 and chronic diseases: current knowledge, future steps and the MaCroScopio project.]. *Recenti Prog Med.* 2020; 111: 198-201.
4. Abuelgasim E, Saw LJ, Shirke M, Zeinah M, Harky A. COVID-19: Unique public health issues facing Black, Asian and minority ethnic communities. *Curr Probl Cardiol.* 2020; 45: 100621.
5. Rentsch CT, Kidwai-Khan F, Tate JP, Park LS, King JT, Skanderson M, et al. Covid-19 by Race and Ethnicity: A National Cohort Study of 6 Million United States Veterans. *medRxiv.* 2020.
6. Prvu Bettger J, Thoumi A, Marquevich V, De Groot W, Rizzo Battistella L, Imamura M, et al. COVID-19: maintaining essential rehabilitation services across the care continuum. *BMJ Glob Health.* 2020; 5.
7. WHO, The World Bank. *World Report on Disability.* Geneva: WHO, 2011.
8. WHO. Rehabilitation. 2020 [cited 2020 3 June]; Available from: <https://www.who.int/news-room/fact-sheets/detail/rehabilitation>.
9. Gutenbrunner C, Bickenbach J, Melvin J, Lains J, Nugraha B. Strengthening health-related rehabilitation services at national levels. *Journal of rehabilitation medicine.* 2018.
10. WHO. *Recommendations: Rehabilitation in Health Systems 2017;* Geneva: WHO; 2017.
11. GRA. 2018 [cited 2020 3 June]; Available from: <https://global-rehabilitation-alliance.org/>.
12. Wu Y, Xu X, Chen Z, Duan J, Hashimoto K, Yang L, et al. Nervous system involvement after infection with COVID-19 and other coronaviruses. *Brain, behavior, and immunity.* 2020.
13. Madjid M, Safavi-Naeini P, Solomon SD, Vardeny O. Potential Effects of Coronaviruses on the Cardiovascular System: A Review. *JAMA Cardiol.* 2020.
14. PAHO. *Rehabilitation considerations during the COVID-19 outbreak 2020;* 2020.
15. Lopez M, Bell K, Annaswamy T, Juengst S, Ifejika N. COVID-19 Guide for the Rehabilitation Clinician: A Review of Non-Pulmonary Manifestations and Complications. *American journal of physical medicine & rehabilitation.* 2020.
16. WCPT. WCPT response to COVID-19: Briefing paper 2: Rehabilitation and the vital role of physiotherapy. 2020. Available from: <https://www.wcpt.org/sites/wcpt.org/files/files/wcptnews/COVID19-Briefing-paper-2-Rehab-PT-May2020.pdf>.
17. Bhatia R, Sylaja PN, Srivastava MVP, Khurana D, Pandian JD, Suri V, et al. Consensus Statement - Suggested Recommendations for Acute Stroke Management during the COVID-19 Pandemic: Expert Group on Behalf of the Indian Stroke Association. *Ann Indian Acad Neurol.* 2020; 23: S15-S23.
18. Shammi M, Bodrud-Doza M, Towfiqul Islam ARM, Rahman MM. COVID-19 pandemic, socioeconomic crisis and human stress in resource-limited settings: A case from Bangladesh. *Heliyon.* 2020; 6: e04063.
19. Djalante R LJ, Setiamarga D, Sudjatma A, Indrawan M, Haryanto B, Mahfud C, Sinapoy MS, Djalante S, Rafliana I, Gunawan LA, Surtiari GAK, Warsilah H. Review and analysis of current responses to COVID-19 in Indonesia: Period of January to March 2020. *Progress in Disaster Science.* 2020.