Health resort therapy interventions in the COVID-19 pandemic era: what next?

Stefano Masiero^{1,2} · Maria Chiara Maccarone²

Received: 2 April 2021 / Revised: 12 April 2021 / Accepted: 13 April 2021 / Published online: 21 April 2021
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Dear Editor,

The novel coronavirus disease (COVID-19), declared a pandemic by the World Health Organization on March 11, 2020 (World Health Organization 2020a), deeply influences social, economic and health-related issues, changing lifestyle habits and redefining priorities. First reported in December 2019 in the Chinese town of Wuhan, to date (March 31, 2021), there have been 128,540,982 confirmed cases of COVID-19 in the world (World Health Organisation 2020b), with an important impact on health services.

Worldwide the urgent need to deal with the daily concerns related to the pandemic causes the partial or complete interruption of healthcare services. In almost two-thirds (63%) of countries surveyed by the World Health Organization (World Health Organisation 2020c), rehabilitation services have been disrupted, even though rehabilitation plays a decisive role in the recovery following severe illness from COVID-19. Among the rehabilitation services, health resort therapy interventions have been heavily affected. However, the pandemic can represent a boost to rethink the role of health resort therapy, rediscovering its function as “essential service” (Cohen 2020).

Firstly, after COVID-19 pandemic outbreak, world’s population and governments have focused attention on health. Since achieving and maintaining good health have become major concerns in this era, we believe that the medical use of health resort therapy interventions will have a great development.

Health resort therapy interventions includes balneotherapy (immersion in thermal waters, balneological interventions with natural gases, mud applications and other traditional

remedies), hydrotherapy and climatotherapy aimed at health promotion, prevention, therapy and rehabilitation. Other interventions frequently used are water exercises to ameliorate breathing, balance and muscle strength, massages, physical modalities, sauna, nutritional interventions, health education, cognitive behavioural and relaxations therapies (Gutenbrunner et al. 2010).

Through the exploitation of these numerous interventions, health resort therapy can contribute towards achieving global health, defined as a state of bio-psycho-social well-being to which contribute medical, psychological, social, cultural and environmental processes (Koplan et al. 2009).

The beneficial effects of health resort therapy — especially through balneotherapy interventions — on musculoskeletal, pulmonary, cardiocirculatory and skin disorders are well known (Matsumoto 2018). In addition, having a positive effect on mood, sleep quality and depression (Latorre-Román et al. 2015), it can also act therapeutically on psychological concerns, alleviating psychological outcomes both persisting after COVID-19 infection (Masiero et al. 2020a) and related to the stressful experience of confinement (Cohan 2020, Torales et al. 2020). According to recent evidence, these eu-stressful actions seems to be related to the neuroendocrine/stress response with an increase in adrenocorticotrophic hormone, cortisol, prolactin, growth hormone and β -endorphin levels after balneotherapy (Antonelli and Donelli 2018; Fioravanti et al. 2017; Gálvez et al. 2018).

Including the chance to provide health education and health promotion strategies (Blain et al. 2016; Masiero et al. 2020b), health resort therapy can contribute to the prevention of several diseases and to the education to well ageing and healthy lifestyle.

Health resort therapy can be exploited also to increase the availability of rehabilitation services close to communities. Because of population growth and ageing, the number of people with disabilities is rapidly increasing. It is estimated that one in every three people in the world during the entire life will benefit from rehabilitation (Cieza et al. 2021). The

✉ Maria Chiara Maccarone
mariachiara.maccarone93@gmail.com

¹ Rehabilitation Unit, Department of Neuroscience, University of Padova, Via Giustiniani 3, 35128 Padova, Italy

² Physical Medicine and Rehabilitation School, University of Padova, Padova, Italy

development in health resorts of specific protocols aimed at the improvement of functionality will reduce the prevalence and delay the onset of disabling conditions, leading to substantial cost benefits for both the patients and the healthcare systems (Cieza et al. 2021) and to the enhancement of health-related Quality of Life (QoL).

Secondly, the social lockdown experienced in the last months by a large portion of global population (Paital et al. 2020) will lead to new forms of sociality and interaction aimed at restoring social relationships and improving QoL, reduced because of the COVID-19 impact (Zhang and Ma 2020). The spa environment is suited for aggregation and social life and it can be the ideal setting to rediscover sociality after the pandemic, while respecting hygienic standards.

This context may also encourage social integration between healthy subjects and people with disabilities, allowing a further improvement in QoL (Jespersen et al. 2019), and the intergenerational meeting, increasing older subjects' participation (Weintraub and Killian 2007) and reducing cognitive decline (James et al. 2011).

Finally, the generally pleasant naturalistic environment could favour cultural changes needed to overcome the contemporary environmental concerns, as well as improve the outcomes of treatments (Musumeci et al. 2018; Masiero et al. 2019) and positively influence health perception and QoL (Maas et al. 2006; European Environment Agency 2009).

In conclusion, the increased interest in global health and the need for a restored sociability left by the pandemic will change the role of health resort therapy interventions, strengthening their preventive, therapeutic, rehabilitative, educative and social role. Considering all these aspects, research services and National Health Systems should cooperate to develop specific global health-oriented protocols.

References

- Antonelli M, Donelli D (2018) Effects of balneotherapy and spa therapy on levels of cortisol as a stress biomarker: a systematic review. *Int J Biometeorol* 62(6):913–924. <https://doi.org/10.1007/s00484-018-1504-8>
- Blain H, Bernard PL, Canovas G, Raffort N, Desfour H, Soriteau L, Noguès M, Camuzat T, Mercier J, Dupeyron A, Quéré I, Laffont I, Hérisson C, Solimene H, Bousquet J (2016) Combining balneotherapy and health promotion to promote active and healthy ageing: the Balaruc-MACVIA-LR® approach. *Aging Clin Exp Res* 28(6):1061–1065. <https://doi.org/10.1007/s40520-016-0596-4>
- Cieza A, Causey K, Kamenov K, Hanson SW, Chatterji S, Vos T (2021) Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*. 396(10267):2006–2017. [https://doi.org/10.1016/S0140-6736\(20\)32340-0](https://doi.org/10.1016/S0140-6736(20)32340-0)
- Cohen M (2020) Hydrothermal facilities: essential services in the age of pandemics. *International journal of spa and wellness* 3(1):60–65. <https://doi.org/10.1080/24721735.2020.1838144>
- European Environment Agency (2009) Ensuring quality of life in Europe's cities and towns — tackling the environmental challenges driven by European and global change. EEA Report No5/2009.
- Fioravanti A, Karagülle M, Bender T, Karagülle MZ (2017) Balneotherapy in osteoarthritis: facts, fiction and gaps in knowledge. *European Journal of Integrative Medicine* 9:148–150. <https://doi.org/10.1016/j.eujim.2017.01.001>
- Gálvez I, Torres-Piles S, Ortega-Rincón E (2018) Balneotherapy, immune system, and stress response: a hormetic strategy? *Int J Mol Sci* 19. <https://doi.org/10.3390/ijms19061687>
- Gutenbrunner C, Bender T, Cantista P, Karagülle Z (2010) A proposal for a worldwide definition of health resort medicine, balneology, medical hydrology and climatology. *Int J Biometeorol* 54(5):495–507. <https://doi.org/10.1007/s00484-010-0321-5>
- James B, Wilson R, Barnes L, Bennett D (2011) Late-life social activity and cognitive decline in old age. *J Int Neuropsychological Society: JINS* 17:998–1005. <https://doi.org/10.1017/S13556177110005314>
- Jespersen LN, Michelsen SI, Tjørnhøj-Thomsen T, Svensson MK, Holstein BE, Due P (2019) Living with a disability: a qualitative study of associations between social relations, social participation and quality of life. *Disabil Rehabil* 41(11):1275–1286. <https://doi.org/10.1080/09638288.2018.1424949>
- Koplan JP, Bond TC, Merson MH, Reddy KS, Rodriguez MH, Sewankambo NK, Wasserheit JN (2009) Towards a common definition of global health. *Lancet*. 373(9679):1993–1995. [https://doi.org/10.1016/S0140-6736\(09\)60332-9](https://doi.org/10.1016/S0140-6736(09)60332-9)
- Latorre-Román PÁ, Rentero-Blanco M, Laredo-Aguilera JA, García-Pinillos F (2015) Effect of a 12-day balneotherapy programme on pain, mood, sleep, and depression in healthy elderly people. *Psychogeriatrics: the official journal of the Japanese Psychogeriatric Society* 15(1):14–19. <https://doi.org/10.1111/psyg.12068>
- Maas J, Verheij RA, Groenewegen PP, de Vries S, Spreeuwenberg P (2006) Green space, urbanity, and health: how strong is the relation? *J Epidemiol Community Health* 60:587–592
- Masiero S, Pranovi G, Di Pumpo M, Bernardini S, Dattilo A, Del Felice A, Sale P (2019) Does aquatic thermal therapy improve quality of life after total hip replacement? A retrospective preliminary pilot study. *Int J Biometeorol* 64:1023–1026. <https://doi.org/10.1007/s00484-019-01846-3>
- Masiero S, Maccarone MC, Agostini F (2020a) Health resort medicine can be a suitable setting to recover disabilities in patients tested negative for COVID-19 discharged from hospital? A challenge for the future *Int J Biometeorol* doi 64:1807–1809. <https://doi.org/10.1007/s00484-020-01947-4>
- Masiero S, Litwocenko S, Agostini F (2020b) Rehabilitation in an Italian thermal setting: a new therapeutic strategy for patients with musculoskeletal disability—the results of an Italian survey. *Int J Biometeorol* 64(6):951–954. <https://doi.org/10.1007/s00484-019-01765-3>
- Matsumoto S (2018) Evaluation of the role of balneotherapy in rehabilitation medicine. *J Nippon Med Sch* 85(4):196–203. https://doi.org/10.1272/jnms.JNMS.2018_85-30
- Musumeci A, Pranovi G, Masiero S (2018) Patient education and rehabilitation after hip arthroplasty in an Italian spa center: a pilot study on its feasibility. *Int J Biometeorol* 62(8):1489–1496. <https://doi.org/10.1007/s00484-018-1548-9>
- Paital B, Das K, Parida SK (2020) Inter nation social lockdown versus medical care against COVID19, a mild environmental insight with special reference to India. *Sci Total Environ* 120(728):138914 5
- Torales J, O'Higgins M, Castaldelli-Maia JM, Ventriglio A (2020) The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int J Soc Psychiatry* 66(4):317–320. <https://doi.org/10.1177/0020764020915212publication.10.1016/j.scitotenv.2020.138914>

- Weintraub APC, Killian TS (2007) Intergenerational programming: older persons' perceptions of its impact. *J Appl Gerontol* 26(4):370–384. <https://doi.org/10.1177/0733464807302671>
- World Health Organisation (2020a) WHO announces COVID-19 outbreak a pandemic. Available from: <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus/covid19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic>
- World Health Organisation (2020b) World Health Organisation, coronavirus disease 2019 (COVID 19) situation dashboard (cited March 31, 2021). Available from: <https://covid19.who.int/>
- World Health Organisation (2020c) COVID-19 significantly impacts health services for noncommunicable diseases. Available from: <https://www.who.int/news/item/01-06-2020-covid-19-significantly-impacts-health-services-for-noncommunicable-diseases>
- Zhang Y, Ma ZF (2020) Impact of the COVID-19 pandemic on mental health and quality of life among local residents in Liaoning Province, China: a cross-sectional study. *Int J Environ Res Public Health* 17(7):2381. <https://doi.org/10.3390/ijerph17072381>

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