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Telemedicine from research to practice during the pandemic. "Instant paper from the field" on rehabilitation answers to the Covid-19 emergency

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Abstract

Covid-19 pandemic is creating collateral damage to outpatients, whose rehabilitation services have been disrupted in most of the European countries. Telemedicine has been advocated as a possible solution. This paper reports the contents of the third Italian Society of Physical and Rehabilitation Medicine (SIMFER) webinar on "experiences from the field" Covid-19 impact on rehabilitation ("Covinars"). It provides readily available, first-hand information about the application of telemedicine in rehabilitation. The experiences reported were very different for population (number and health conditions), interventions, professionals, service payment, and technologies used. Commonalities included the pushing need due to the emergency, previous experiences, and a dynamic research and innovation environment. Lights included feasibility, results, reduction of isolation, cost decrease, stimulation to innovation, satisfaction of patients, families, and professionals beyond the starting diffidence. Shadows included that telemedicine can integrate but will never substitute face-to-face rehabilitation base on the encounter among human beings; age, and technology barriers (devices absence, bad connection and human diffidence) have also been reported. Possible issues included privacy and informed consent, payments, cultural difficulties in understanding that telemedicine is a real rehabilitation intervention. There was a final agreement that this experience will be incorporated by participants in their future services: technology is ready, but the real challenge is to change PRM physicians' and patients' habits, while better specific regulation is warranted.

Keywords: Covid-19; Telemedicine; Rehabilitation.

Introduction

Covid-19 pandemic is creating collateral damage to outpatients, whose rehabilitation services have been disrupted in most of the European countries (1). Telemedicine has been advocated as a possible solution in case either of Covid-19 patients (2) or of outpatients needs (3). Nevertheless, many barriers still exist to its widespread application, sometimes technological, but mostly cultural on both sides, patients and physicians/therapists (4). In the field of rehabilitation, the strong current need coming from the Covid-19 pandemic is stimulating many who had previous experiences to move forward and convert previous research into clinical practice.

Italy has been hit first in Europe and hard (5), and for this reason, the Italian Society of Physical and Rehabilitation Medicine (SIMFER) is taking leadership in spreading the Italian experiences to colleagues in Europe who have knowledge needs (6). The SIMFER webinars on Covid-19 impact on rehabilitation ("Covinars") provide readily available, first-hand information from the field (7-9). Covinar 3 focused on telemedicine applications for outpatient rehabilitation activities. In Italy since 2012 there are Guidelines about Telemedicine (10), where the terms teleconsultation and telerehabilitation are proposed with a strong commitment to their application, but the practice is still far away from this proposal. During the Covid-19 emergency, the Italian National Superior Institute for Health proposed Guidelines strongly supporting telemedicine for all medical activities, but without mentioning telerehabilitation (11).

This paper reports the contents of the third SIMFER Covinar about the application of telemedicine in rehabilitation, held on April 3rd, 2020 (https://www.youtube.com/watch?v=7_xG5r0HrMQ&feature=youtu.be).

The Covinar

During the 90-minute webinar six PRM physicians from five Italian regions were interviewed by one of the authors (PB). Table 1 shows the situation of the pandemic in the five regions, while Figure 1 shows the timeline of the SIMFER initiatives. Like for the previous ones, the audience of Covinar 3 was high (Figure 2): out of 5,000 PRM physicians in Italy, and 3,300 SIMFER members, 290 attended the Covinar live (6% and 9%, respectively). Up to April 16th, 9900 more persons, including other specialists and health professionals, watched the recorded version.

Practical Telemedicine experiences

The experiences reported by the participants were very different in many respects, reflecting on one side the absence of specific protocols, on the other the variety of needs to be answered. They included two national interventions, one regional, one local and one focused on post-Covid patients. One experience focused on the whole spectrum of outpatient activities (consultations and treatments), others offered only consultations or only treatments, mostly psychological and cognitive; exercises have been proposed, either individually taught by a physiotherapist or standardised and suggested by an app; telecommunications have also been used to build up the team and keep contacts between patients and families. The number of patients involved ranged from a couple of dozens to more than 1,200: the health conditions and ages of patients varied a lot, including multiple sclerosis, traumatic brain injury, post-Covid-19, but also spinal deformities during growth. The service payment ranged between free-of-charge to paid out-of-pocket, with some included in the normal activities.

The commonalities among all these experiences included: the fact that they all started because of the external pressure created by the emergency; some little previous experiences; facilitating established partnerships, and/or internal organization; skills to change perspectives and protocols to face these new needs; availability to change of all people involved, from head of department to physicians and therapists; propensity to research and innovation. The used technologies could have been previously developed for research, but mostly were based on free Apps, and in one case rapidly and specifically prepared in front of

the Covid-19 emergency. Sometimes, providers were in their office, but mostly they were teleworking; in all cases, patients and/or their families were reached home. This totally unfamiliar environment for physicians, but the most comfortable for patients and families, gave to all these experiences a totally different human "flavour", a different contact: mostly a facilitator, but sometimes also a barrier. Team building was easier, reactions by patients less artificial, even if uneasiness could sometimes be perceived on both sides of the screen. The interventions become a little different from classical outpatient services, with more time for history and speaking-based interventions, but fewer possibilities of hands-on, even if these could be provided by caregivers in some instances under careful guidance.

Lights

The first thing clearly stated by everybody was: "it can be done!". There are difficulties, including the resistance to change and to technologies typical of the medical world, but the need created the solutions. Motivation of patients always resulted greatly increased by these sessions, keeping high the compliance. Isolation was reduced, and this is particularly important for people experiencing disability during the Covid-19 emergency, but it could be true also in "normal" times for some health conditions: telemedicine could help reducing barriers to access consultations and treatments for frail and less autonomous persons, or persons with reduced mobility in general.

The impact on cost reduction is highly relevant. Distances are literally reduced, avoiding patients to travel with all inherent difficulties; this cost decrease could also be true in the future for providers, if able to reduce and optimise treatment spaces, and need of human resources; physicians and therapists easily teleworked from home, with again a cost reduction. Personnel, albeit experienced, was challenged and stimulated to provide innovative, but still evidence-based answers. The existing partnerships were strengthened for the purpose, integrating different professionals to solve all possible problems: organizational, technological and technical. All participants, patients and professionals, were generally very happy of the experience, sometimes unexpectedly, due to the big diffidence to this unusual approach by many on both sides of the screen. Team building was also facilitated.

Shadows

There was complete agreement that telemedicine, particularly in rehabilitation, will never substitute the encounter between the suffering human being and the persons who care and provide a bio-psycho-social holistic help. Age was sometimes a barrier, as well as lack of devices at home and too slow a connection bandwidth. The simple diffidence to technology is another problem, but this can be overcome by good instructions and most of all by the external pressure of a specific need. Telemedicine cannot substitute the role of any part of the team, and specifically cannot be well provided without the help of caregivers.

The issue of privacy and informed consent was also discussed, even if probably solvable with better organization. Privacy depends on the safety of the Apps and telecommunications used, and this has legal implications. Other issues relate with payments, whether they come directly from patients or from the health national service: if payment is out of pocket, in the current cultural approach, telemedicine is not perceived as medicine and patients have difficulties in understanding the intervention; if the payment is due from the national health service, the same resistance appears in the administration. The Italian Guidelines, but also Medicare in the US (12), state that telemedicine has to be paid like the same intervention provided face-to-face. General organization is not easy, and support is required. Other problems could be the lack of functional assessment or unavailability of an accurate monitoring system (even where developed, it was not possible to have in the emergency a clear understanding of their reliability). Finally, the lack of involvement of a motivated caregiver might represent a barrier to the effective use of telerehabilitation programs, especially in people with moderate disability.

Conclusion: a look to the future

Covid19 pandemic pushed everybody around the world in a new era: everything will be different, starting from medical practice. SIMFER experts are now thinking about how to improve medical practice using telemedicine in rehabilitation. The change was sudden and forced due to Covid-19 emergency, but the answers must be even faster. However, in the immediate future telemedicine can be integrated in usual rehabilitation care. Technology is ready. The real challenge is to change PRM physicians' and patients' habits. Telemedicine could and must be an integrative solution to common practice, especially for screening, follow-up, distance support, and in specific situations like the Covid-19 emergency.

From a general point of view, telemedicine could be even more effective in the future considering the possibility of implementation using digital biomarkers coming from smartphones, wearable sensors, smart homes. In the future, telerehabilitation programs will undoubtedly help most chronically disabled people to exercise at home, in an effective though sustainable way. Both physician and patient will need to integrate these programs in routine care as a mean for increasing empowerment, improve health literacy and reduce the increasing burden of non-communicable diseases. Specific regulation is warranted to manage privacy issues and face the cyber-security challenge in an effective way.

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TAB 1 – REPORTED CASES OF SARS Cov-2 at April 3rd in Italy, and in the Regions of the participants (in parentheses the total cases in the areas where the participants operate)

AREA	TOTAL CASES	HOSPITALIZED	ADMITTED IN ICU
ITALY	119.827	28.741	4068
LOMBARDIA	47.520 (Milano 10.391)	11.802	1381
EMILIA ROMAGNA	15.932 (Bologna 2339; Ferrara 368)	3915	364
MARCHE	4230 (Ancona 1263)	982	158
UMBRIA	1179 (Perugia 884)	165	48
LAZIO	3600 (Roma 2503)	1194	188

Captions

Table 1. Reported cases of SARS-Cov-2 on April 3rd, 2020 in Italy, and in the Regions of participants (in parentheses the total cases in the areas where the participants operate).

Figure 1. Evolution of the Covid-19 epidemic according to the official Italian Health Ministry data, and timelines of the most important restrictions imposed to the population, Italian Society of Physical and Rehabilitation Medicine (SIMFER) initiatives and publications in the European Journal of Physical and Rehabilitation Medicine (EJPRM). Covinar = SIMFER "Covid-19" webinars. Italian government reactions to epidemic: (1) February 24th, 2020: red zones (total quarantine) close to Milan; (2) March2nd: closure of schools; (3) March 8th: travel restrictions; (4) March 11th: total shutdown

Figure 2. Audience to the 3 SIMFER "Covid-19" webinars (Covinar).