

TELEREHABILITATION: CURRENT STATUS FROM THE PERSPECTIVE OF TWO ERASMUS+ PROJECTS

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Abstract

Online rehabilitation has gained popularity during the COVID-19 pandemic and due to many advantages for both the therapist and the patient, it seems to be accepted as a valid and widely implemented method, but most countries were found unprepared for the digital management of online medical services. The present paper presents new approaches for online rehabilitation in the framework of two Erasmus+ projects, particularly through building digital education readiness, development of digital competencies, and strong cooperation between the world of education, digital technology providers, and the world of work. This was achieved by the development of a theoretical course, case studies, a database of standard protocols for rehabilitation and prevention in different pathologies, and a virtual medical environment that functioned as an online rehabilitation clinic. The methodology for delivering project outputs was tailored to the target group's needs. The proposed adaptations were first tested by the project team and by a group of trainees and patients. We registered 511 users on the e-learning platform and 87% of the beneficiaries reported improved skills for telerehabilitation. The prophylaxis videos posted on the YouTube channel targeting patients, professionals, and the public at large reached 1355 views by the end of the project. Of the interviewed patients, 92,3% considered that the online rehabilitation protocols would be useful in daily life for the long term, 95% considered that the use of online protocols would decrease the number of visits to the doctor and 98% would like to benefit from protocols in the future. From the perspective of these projects, we can conclude that online rehabilitation services represent a contemporary problem-solving idea for physiotherapists' education and professional development.

Keywords: *Online rehabilitation, virtual clinic, physiotherapy education.*

1. Introduction

Rehabilitation is an essential part of universal health coverage. The World Health Organization estimated that 2.4 billion people are currently living worldwide with a health condition that may benefit from rehabilitation. The need for rehabilitation is largely unmet and in some low- and middle-income countries, more than 50% of people do not receive the rehabilitation services they require (WHO,2024).

Within e-health, telerehabilitation is a field with great applications in different pathologies and encompasses the delivery of various services via different information and communication technologies (Muñoz-Tomás et al, 2023). From the available evidence, there is moderate-to-good quality consistent evidence to indicate that telerehabilitation may be as effective as usual care (Appleby et al., 2019). The main advantages include equal access for patients from remote areas, lowering costs for transportation, better adherence to the treatment, and better satisfaction of patients (Cotrell et al, 2017).

The World Confederation for Physical Therapy (WCPT) and the International Network of Physiotherapy Regulatory Authorities (INPTRA) produced a report in 2020 on digital physiotherapy practice and offered several recommendations. Beginning with entry-level education, physical therapists must develop competencies required for digital practice and post-entry-level opportunities must be provided to ensure that practicing physical therapists also have opportunities to develop digital practice competencies and practice.

A study conducted by Seçer and Tosun in 2022 regarding the evaluation of telerehabilitation knowledge, awareness, and opinions of physical therapy professionals and rehabilitation students indicated that the majority of the respondents stated that even if the topic is of great interest, they were not prepared for telerehabilitation due to the lack of lesson curriculum. Currently, according to existing research, the main needs in telerehabilitation are the inclusion of it in health curriculums in higher education and the development of cost-effectiveness and implementation trials, especially in low- and

middle-income countries where access, investments, and digital health literacy are limited (Baroni et al, 2023).

The present paper presents new approaches for online rehabilitation in the framework of 2 Erasmus+ projects aiming to spread knowledge and practical skills about online patient rehabilitation, for physiotherapy professionals, physiotherapy students, and patients.

The first project entitled "Development of digital skills for online rehabilitation therapies" intended to enhance the theoretical knowledge, skills, and competencies regarding telerehabilitation for physiotherapy professionals and to train this group to use resources to develop digital skills as needed by the labor market.

The second project entitled „Modernization of physiotherapy education for Bachelor Degree in WB countries through Innovative Ideas and Digital Technology”, aims to support the telerehabilitation curriculum development, cooperation, and knowledge transfer according to Higher Education modernization Agenda and through Innovative Ideas and Digital Technology.

2. Methods

The methodology for delivering e-KINE project outputs was tailored to the target group's needs and to the foreseen deliverables. From the medical perspective, we intended to train physiotherapists and students for the management of online-patient rehabilitation, including online assessment (posture, range of motion), and patient-centred approaches. To cover these aspects, we developed several databases with standard online protocols specially designed to be adapted to the patient's needs. For each protocol, there is a text description and a correspondent video. This enabled the user to watch the procedure that is presented in the text and ensure a better connection between knowledge and skills development. Due to ethical and deontological reasons, the videos were restricted with a password. An Ethics Advisory Board was the guardian of the correct governance practices which reviewed at regular intervals

From the technical perspective, we intend to help the target groups to acquire theoretical and practical knowledge in order to develop digital skills to work in the online environment. This included providing information on actual e-health approaches with main benefits and limitations so they can choose the best one and offering basic knowledge needed for the development of an online rehabilitation unit (how to develop and manage patient database, how to develop and manage communication with patients and other medical professionals; data protection and ethical considerations, legislation in each country, payment, promoting the business) by the development of an e-course entitled "Contemporary Applications of IT for online rehabilitation services",

The delivered educational materials were included in an interactive e-learning platform based on open-source software Moodle and suitably customized and optimized to include interactive tools to present medical images, video files etc. giving opportunity to develop video conferencing, track results of the training, learner performance, users activity and grades, assigning homework, upload and manage documents in different formats: Audio, Video, HTML, Text, rich text, .zip, .pdf; Track statistics

The training path prototype (environment and content) was tested internally by all project team members and by a group of trainees and patients (iterative and formative evaluation) with feedback to identify potential changes that were incorporated into subsequent forms.

As a pilot study for all the training materials and online approaches, a virtual space was developed, aiming to offer complete and quality services and personalize patient care. The online clinic can be accessed across different operating systems and specialized assistance can be available from laptop or smartphone. Additional built-in features (appointment scheduling, measurement tools, and communication with patients) are also available. Each patient can benefit individually of an assessment session followed by a rehabilitation-guided session with real-time monitoring by a physiotherapist.

Selected indicators of knowledge, attitudes, and practices were measured by questionnaires and surveys addressing the target groups (physiotherapists and students). The perception of beneficiaries' patients & stakeholders about the quality and benefits of services based on SMART scheme was also evaluated.

3. Results

As mentioned before, the partnership developed online courses regarding theoretical aspects of telerehabilitation, a database of standard protocols for rehabilitation and prophylaxis in different pathological conditions, and a virtual medical environment as a pilot application of the e-course.

Quantitative indicators included 8 PPT modules (160 slides), over 300 text pages and 20 case studies (cc. 400 slides); 120 protocols and correspondent videos for online rehabilitation and prophylaxis; 100 hours spent on study; 20 hours for assessment, 3 e-KINE online rehabilitation clinics in RO, BG, TK and 3 curricula on telerehabilitation certified by partners in RO, TK and BG.

As result indicators, we reached 511 registered users of the Project e-platform. The evidence of positive changes attributable to the projects included:

- 88% of participants expected the e-KINE project to enhance their level of knowledge and practical skills necessary for online rehabilitation;
- 95% found the presentations within e-KINE easy to follow, having a level and complexity appropriate to their background and experience,
- 97.8% were interested in learning more about the project.
- 87% improved digital skills for telerehabilitation (according to questionnaires).

Of the interviewed patients (10/country), 92,3% consider the e-KINE protocols will be useful in daily life for the long term, 95% consider that the use of e-KINE protocols will decrease the number of visits to the doctor/kinesitherapist, 98% would like to benefit of e-KINE protocols in the future and 93,4% would recommend the e-KINE project to other persons.

Of the interviewed stakeholders (20/country), 93% of respondents rated as good and very good the e-KINE approaches regarding the achievement of the stated aims of the project, positive changes to previous methodologies, and usefulness of the project results. In the assessment of the sustainability of the activities, 96,7% of respondents rated as good and very good the e-KINE approaches and intend to use the project results within their own organizations, affordability of the project results, ongoing support and development, and willingness to contribute to the future development of the project results.

4. Conclusions

Online rehabilitation services represent a contemporary problem-solving idea for physiotherapists' education and professional development. The educational offer in physiotherapy lacks courses related to digital competencies for online rehabilitation services. The development of sustainable learning tools for lifelong learning will encourage telerehabilitation replication and promote transferability.

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