



Online Learning in Physiotherapy Education and Health Allied Profession during the Pandemic: A Scoping Review

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ABSTRACT

During pandemic, the education sector remains one of the worst-hit by Coronavirus outbreak and universities across the world have transitioned to online delivery system that requires both teachers and learners to adapt with technological support. Hence, Scoping Review was utilized to explore the different practices around the globe in educating Physiotherapist students and other health allied professions through online learning. The researchers used the ScR by Joanna Briggs Institute (JBI) to map and summarize the different experiences of the students, teachers and courses delivery of online learning during the COVID-19 pandemic in a global context. With the utilization of ScR, it can be used as a policy map as bases for adopting hybrid flexible learning approach. A total of 2459 titles and full abstract level was screened, and 56 full articles were selected (19 cross sectional study, 15 qualitative studies, 8 survey questionnaire studies, 5 mixed method studies, 4 systematic reviews, 1 case control, 1 cohort study, 1 quasi-experimental, 1 Scoping Review, and 1 Randomized Control Trial). 39 articles were from Asia, 8 from Europe, 5 from Africa, 3 from Australia and 1 from USA. The articles were categorized based on the new learning circumstances, experiences, perceived advantages, drawbacks in delivery of curriculum in the new normal academic landscape. COVID-19 pandemic created a significant impact in the delivery of curriculum. The different factors that are identified and mapped can be a benchmark in creating a hybrid flexible learning to the paradigm shift in education.

Keywords: COVID-19, Health allied profession, Online learning, Physiotherapy, Scoping Review



INTRODUCTION

Online learning (OL) is also known as distance education or e-learning, it pertains to any type of education or training that is conveyed through digital technologies such as mobile devices, webinars, video conferencing and internet. There are various forms of online learning, which include non-credit courses and completely online degree. OL can be observed in different disciplines like in business and management, education, health care, science, and technology. According to Li and Huang (2018), OL is defined as "mode of education that utilizes the internet or other computers network to deliver course content, facilitate communication and support activities" (p.184). They further noted that OL can take various forms as full online or blended courses. And according to Choi and Johnson (2019), OL as "instructions delivered through digital media that is designed to promote learning". There are six types of OL (Krasinski, 2021) artificial intelligence, gamification, adaptive learning, virtual and augmented reality, social media, and open education. Taylor and Newton (2020) mentioned that OL in medical education as "the delivery of education and training via digital technologies either asynchronously or synchronously, and independent of geographic location". During pandemic, Chakraborty and Joshi (2020) noted that the COVID-19 pandemic has led to a rapid shift towards OL, with many educational institutions forced to transition to online delivery to maintain continuity of learning. They emphasized that this has highlighted the importance of OL and the need for educator to adapt to new pedagogical approaches and technologies. Pallas et al. (2021) stated that OL during COVID-19 pandemic promoting equity and access to education especially to marginalized and underdeveloped population. Kappor and Pandey (2021) stated that OL promote resilience and adaptability in education, as well as the potential for OL to support lifelong learning and skills development. Van Hove et al. (2020) emphasized the importance of OL for continuing education and professional development in health allied professions during the COVID-19 pandemic, noting that OL can provide opportunities for self-directed and personalized learning experiences management systems to support the success of OL. Chong et al. (2020) discussed the use of OL in physiotherapy education during COVID-19 pandemic, noting that while OL can support continuity of education and provide flexibility for students, it also requires careful planning and design to ensure its effectiveness. They emphasized the importance of maintain-

ing practical and clinical components of physiotherapy education and using technology to support simulation based learning. Skjaeret et al. (2021) discussed the use of tele-rehabilitation in physiotherapy and other health allied professions during the COVID-10 pandemic, noting that OL can support the development of skills and competencies in tele-rehabilitation. They emphasized the need for interprofessional collaboration and communication to support the success of tele-rehabilitation and OL in health allied professions. Sánchez-González et al. (2021) discussed the use of OL in physiotherapy education during the COVID-19 pandemic in Spain, noting that OL can support the development of critical thinking skills and self-directed learning. They emphasized the importance of collaboration among educators, students, and technology providers to support the success of OL. Technology in education is certainly an area of change that has been problematic. The unexpected arrival of COVID-19 and the almost overnight need to move delivery of programs online at every level of schooling has exacerbated an already uneven implementation of digital technology. Fullan et al. (2020) provide a three-stage model to describe how schools are adapting to OL, beginning with Disruption, moving to Transition, and finally to Reimagining. Many teachers are still in the Disruption stage, dealing with the technical aspects of delivery, unable to ask larger questions related to the cognitive, social, and emotional needs of children in an online environment.

A Scoping Review (ScR) entails a methodical examination of literature with the objective of mapping available evidence concerning a specific research question or topic. The goal is to uncover primary concepts, theories, sources of evidence, and gaps in the literature, differentiating it from traditional systematic reviews by its broader, more exploratory nature (Arksey & O'Malley, 2005).

During the COVID-19 pandemic, there has been a significant shift towards Online Learning (OL). ScRs play a crucial role in shedding light on the current state of OL research during this pandemic. By conducting a ScR, researchers can effectively identify fundamental themes and research gaps linked to OL during this time, consequently aiding in the formulation of new research inquiries and educational approaches (Ali & Abohashrh, 2021).

Ali and Abohashrh's (2021) ScR illustrated that OL adoption in response to the pandemic has been



extensive, emphasizing the need for further research to assess the effectiveness of OL as compared to traditional classroom-based instruction. Subsequent research endeavors should delve into the evaluation of various OL technologies and instructional methods during the pandemic to ascertain their efficacy. Likewise, Hodges et al. (2020) acknowledged OL's potential to offer flexibility and accessibility, albeit recognizing the challenges it presents to learners and instructors. They stressed the importance of future research aimed at devising effective strategies to support stakeholders in OL environments and assessing the long-term ramifications of the pandemic on OL.

ScRs are also instrumental in uncovering the implications of OL for health-related professions during the COVID-19 pandemic, prompting changes in curriculum delivery, clinical training, and assessment within health professions education. De Oliveira et al. (2021) highlighted the necessity for additional research on the effectiveness of OL in health professions education during the pandemic, urging a focus on investigating diverse OL technologies and instructional practices for optimal outcomes. Furthermore, ScRs can illuminate the implications of OL on physiotherapy education during this pandemic. Petrus et al. (2021) stressed the need for more research to evaluate the effectiveness of OL in this domain, urging a focus on diverse OL technologies and instructional practices to optimize physiotherapy education during the pandemic. ScRs are invaluable tools, particularly in the dynamically evolving context of the COVID-19 pandemic, offering comprehensive insights into the impact and effectiveness of OL across various educational domains and professions. Conducting such reviews is pivotal for recognizing research gaps and shaping future research initiatives and educational practices (Arksey & O'Malley, 2005).

With these, Physiotherapy and allied health professions are typically hands-on fields, and students need to have opportunities to practice and develop their clinical skills through practical experiences, and observation feedback. However, the restrictions imposed during the pandemic including social distancing measures and reduced access to clinical settings, have made it challenging to provide students with essential learning experiences. The main objective of conducting a ScR for OL of Physiotherapy and health allied professions is to identify and map out the available evidence on the use of OL on its advantages, disadvantages, and implications.

OBJECTIVES

1. To recognize the advantages, disadvantages, and barriers of online learning (OL) for physiotherapy and allied health professions during the COVID-19 pandemic.
2. To identify the implications of online learning (OL) education on physiotherapy and allied health professions during the COVID-19 pandemic.
3. To identify articles utilized in the scoping review that demonstrate evidence-based practices.
4. To identify and map the impact of online learning in physiotherapy and allied health professions.

METHODOLOGY

A ScR methodology guide was used. Comprehensive research was based on OL conducted in Medline, EBSCOhost, Google Scholars, Physiopedia, and PEDro. "Online learning", "COVID-19 pandemic", "physiotherapy" and "health allied professions" are keywords used for secondary search. The JBI extracting tools were used as a screening tool for selected full text article by two reviewers used to identify and mapped the advantages, disadvantages, and implication of OL. The researchers used the JBI appraisal tool to assess the methodological quality of a study and to determine the extent to which a study has addressed the possibility of bias in its design, conduct and analysis. The researcher utilized the Arksey and O'Malley framework six stages of conduct.

Data Collection Procedure:

To identify the relevant studies for this ScR a systematic search was conducted using the following databases: PubMed, Ebscohost, Medline, Google Scholar, Physiopedia and PEDro. The search includes keywords related to OL, physiotherapy, health professions, and COVID-19 pandemic. And limited to article between 2020-2022. The search strategy will be developed using PICO framework (population, Intervention, Comparison, Outcome) to ensure it is focused and specific. (Tricco et al., 2018). After the initial search, duplicates were removed, and two reviewers will independently screen the title and abstracts to determine eligibility. Studies that met the inclusion criteria will then be reviewed in full text, and data will be extracted using a standardized forms that include study

design, participants characteristics, OL interventions, and outcomes. Any disagreements will be resolved through discussion and consultation with the third reviewer (Colquhoun et al, 2014)

Data Analysis:

The data analysis for this ScR will involve the-

matic analysis of the extracted data. This will include identifying themes, and patterns in the online learning interventions and outcomes reported in these studies. The analysis was guided by the Scoping review framework by Levac et al., (2010), which emphasize a transparent and rigorous approach to ScR.

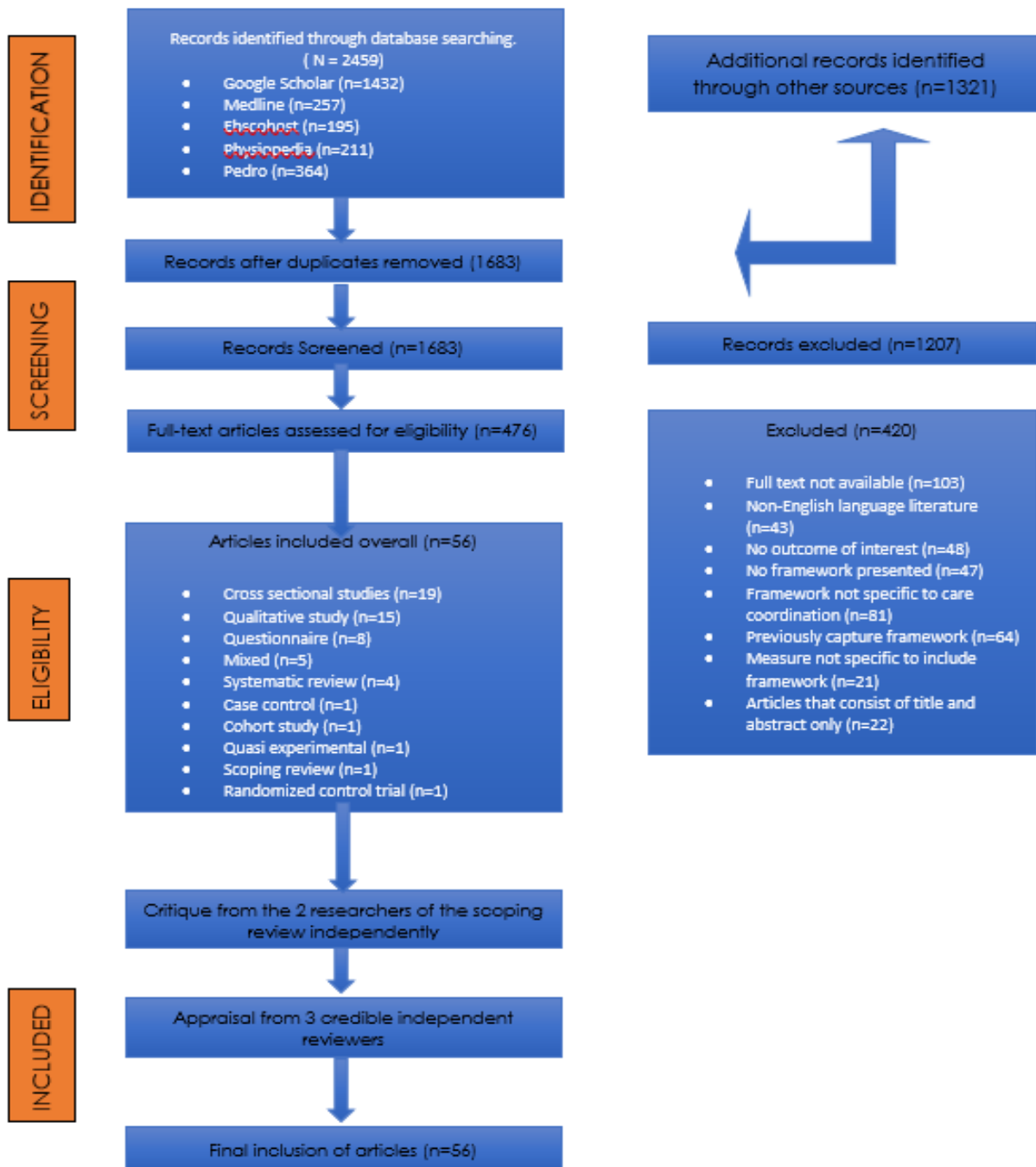


Figure 1: PRISMA – ScR flow diagram for scoping review process.

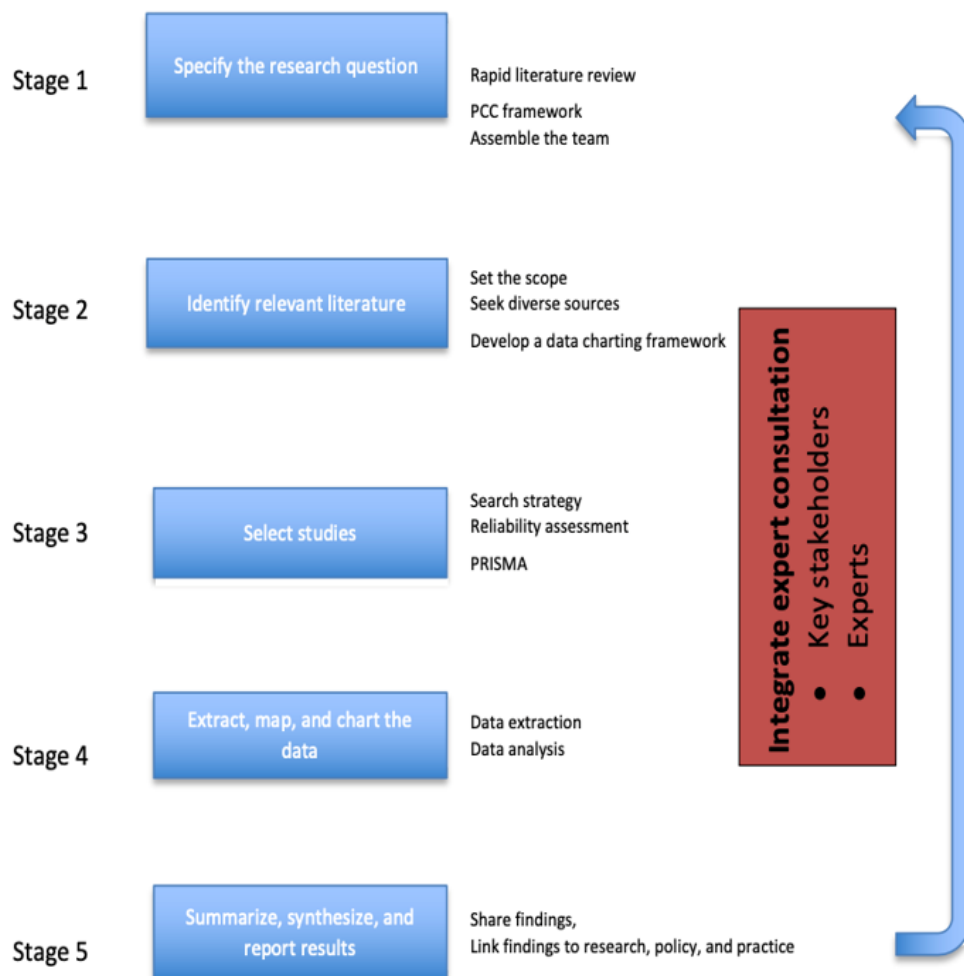


Figure 2: Arksey and O'Malley Framework Six Stages of Conduct.

Data Source:

The data sources for this ScR included Systematic review, Randomized Control Trials, Cross Sectional study, Qualitative study, Cross sectional Survey, Experimental Mixed Method, Case Control study, Cohort study Quasi experimental and Scoping review .

Inclusion and Exclusion

For the inclusion criteria, we will consider studies that meet specific requirements to ensure their reliability and relevance to the research topic. Firstly, we will gather studies from reputable sources such as Medline, Ebscohost, Google Scholars, Physiopedia, and PEDro. Secondly, articles must be in the English language and include a title, abstract, and full article. Additionally, we will focus on articles published between the years 2020 and 2022, and they must

contain keywords related to "Online learning," "COVID-19," "Physiotherapy," and "Allied Health Professions." On the other hand, we have established exclusion criteria to narrow down the selection process. We will exclude articles that are not in the English language, as our focus is on understanding and extracting information from English-written material. Furthermore, we will exclude articles that only have a title and abstract, as we require the full content for a comprehensive analysis. Additionally, articles from gray literature and unpublished literature will be excluded to maintain the reliability and credibility of the sources we utilize in our study.

Data Extraction Tool

Collection of Studies via Databases and registers

See Figures 1 & 2.



RESULTS

From insights gathered across 56 articles, online learning during the COVID-19 pandemic showcased several pivotal advantages for the field of physiotherapy and allied health professions. First, 27% of the articles highlighted the substantial advantage of flexibility in learning. Online platforms allowed learners to tailor their study schedules, adapting to the unique demands and constraints presented by the pandemic. Second, 15% of the articles emphasized improved accessibility. Through

online platforms, educational materials and resources were more readily available, ensuring continuous learning despite restrictions on physical access to educational facilities. Lastly, 7% of the articles noted the capacity of online learning to reach a wider audience. Online education transcended geographical boundaries, making learning opportunities more inclusive and diversified, ultimately enriching the educational experience for professionals in the physiotherapy and allied health domains.

Flexibility in learning	27%
Improved accessibility	15%
Ability to reach a wider audience	7%

Table 1: Advantages of OL on Physiotherapy and Allied Health Profession during the COVID-19 Pandemic. N-56

Based on insights extracted from 56 articles, online learning in the field of physiotherapy and allied health professions during the COVID-19 pandemic presented several notable disadvantages. A significant concern, noted by 65% of the articles, was the challenge posed by poor internet connectivity. This hindered smooth participation and access to online resources, disrupting the learning process. Additionally, 17% of the articles highlighted reduced engagement and motivation among learners in the online environment, indicating that the

absence of in-person interaction and accountability impacted the learning experience. Moreover, 10% of the articles pointed out the struggle of some individuals who were not proficient in using computers, making it difficult for them to adapt to online learning. Lastly, 7% of the articles identified a lack of adequate online resources, underscoring the importance of a comprehensive digital infrastructure for effective online education in these crucial healthcare professions.

Poor internet connection	65%
Less engagement or motivation	17%
Not proficient in computers	10%
No online resources	7%

Table 2: Disadvantages of OL Physiotherapy and Allied Health Professions during the COVID-19 Pandemic. N-56



Online learning in physiotherapy and allied health professions during the COVID-19 pandemic brought forth significant positive and negative implications. On the positive side, online platforms enabled flexible scheduling and efficient time management for learners, enhancing engagement and accomplishment. This flexibility empowered students to take charge of their learning, leading to higher achievements and increased satisfaction rates. Additionally, the shift to online education positively impacted attitudes towards learning, promoting a

sense of autonomy. However, on the flip side, there were negative implications. Many experienced emotional exhaustion and low personal accomplishment due to the demanding nature of online learning. Satisfaction levels dropped, especially in developed countries, leading to fatigue and high stress levels, contributing to burnout. Traditional methods were found to be more effective, and online learning introduced challenges that had a negative impact on the overall educational experience.

1. Flexible, time management.	1. Emotional exhaustion
2. Enhance engagement	2. Low personal accomplishment
3. Learning autonomy	3. Low satisfaction
4. Higher student achievement	4. Fatigue among developed countries
5. High satisfaction rate	5. Stressful
6. Positive impact	6. Burn out
7. Attitude readiness	7. Not effective in traditional
	8. Negative impact
	9. More challenges

Table 3: Implications of OL Physiotherapy and Allied Health Professions during the COVID-19 Pandemic. N=39

This Figure 3 showed 5 different search engines where all the articles collected. There (16) articles or 28.57% from google scholar followed by Physiopeia (12) or 21.429%, Ebscohost (11) or 19.643%, Pedro (9) or 16.07%, and Medline (8) or 14.2857%. In conducting ScR, a minimum of 3 search engines is sufficiently enough in collecting articles in mapping the impact of online in Physiotherapy and other health allied professions. Reliable search engines serve as a filters for the wealth of information available on the internet.

It can be gleamed in figure 4 that 70% of articles were from Asia, followed by Europe 14%, Africa 9% Ocean 5% and least are from USA which is 2 %.

Results showed that Asian countries offers more courses of physical therapy and other health allied professions that significantly affects the educational learning system during pandemic more than any other continents.

Noted on Figure 5 showed different types of studies that were lifted, and most articles were classified as Cross-sectional study (19) followed by Qualitative study (15), Cross Sectional Survey (8), Experimental Mixed Method (5), Systematic review (4), Case control (1), Cohort study (1), Quasi experimental (1), ScR (1), and Randomized control trial (1). Collected articles are utilized to clarify key concepts in the literature, help the researcher to identify and analyze



Search Engine	Number of articles	Percentage
Google Scholar	16	28.57%
Physiopedia	12	21.43%
EBSCOhost	11	19.64%
PEDRo	9	16.07%
Medline	8	14.29%

Figure 3 : Search Engines where Articles are collected.

knowledge gaps on OL of Physiotherapy and allied health professions. It showed that cross-sectional and qualitative study and were the most available study to capture the real time response of the respondents during the pandemic stage.

DISCUSSION

In the analysis of 56 articles for this study, key themes emerged regarding online learning (OL), focusing on the experiences of students, teachers, and course delivery. About 27% of the literature highlighted the flexibility OL offers, allowing students and educators to control the pace of learning and, consequently, improving knowledge retention. Additionally, 15% of the articles emphasized positive experiences linked to OL, such as customized learning experiences and access to a diverse range of resources, fostering independence, motivation, and engagement in the learning journey (Reinharta et al, 2021). Collaborative learning was underscored in 7% of the articles, promoting skills refinement, interprofessional collaboration, and enhancing the quality of healthcare delivery through various collaborative activities within the OL framework (Naidoo, 2022).

However, OL does come with certain disadvantages, as identified in the literature. Poor internet connection was a significant challenge, affecting 65% of the discussions and causing disruptions and connectivity issues that hindered seamless participation (Agormedaha et al., 2020). Furthermore, 17% of the articles noted less engagement and motivation in comparison to face-to-face learning, underlining the challenge of establishing a sense of engagement and motivation in the absence of physical presence (Singaram, 2022). Additionally, 10% of students faced challenges due to limited computer proficiency, making it difficult for them to navigate OL platforms and actively engage in online activities (Daffalla-Awadalla Gismalla et al., 2021). Lastly, 7% of the literature emphasized inadequate access to essential online resources, like e-books and videos, for some students, affecting their success in the OL environment (Hanafy et al., 2021).

Addressing these identified drawbacks is crucial and necessitates collaborative efforts among various stakeholders, including schools, administrators, students, parents, teachers, and the learning environment. Their collective endeavors are essential in shaping curriculum designs that optimize the OL experience for programs in Physiotherapy and other health-related professions (C (Pathmanathan, 2021).

Continent	Percentage
Asia	70%
Europe	14%
Africa	9%
Oceania	5%
USA	2%

Figure 4: Different Continents affected by the educational learning system during pandemic for PT and other health allied professions.



Types of Study	Number of Articles
Cross sectional Study	19
Qualitative Study	15
Cross sectional Survey	8
Experimental Mixed method	5
Systematic review	4
Case Control study	1
Cohort Study	1
Quasi Experimental	1
Scoping review	1
Randomized Control Trial	1

Figure 3 : Search Engines where Articles are collected.

CONCLUSION

In summary, this Scoping Review (ScR) highlights online learning (OL) as a viable and crucial alternative to traditional in-person learning for physiotherapy and allied health professions, especially in the context of the COVID-19 pandemic. While OL interventions have demonstrated success, challenges like poor internet connectivity, reduced engagement, lack of motivation, limited computer proficiency, and inadequate access to online resources must be effectively addressed. The findings underscore the importance of investments in infrastructure and resources to support OL, including reliable technology and continuous professional development for educators in OL platform utilization. Moreover, future research should focus on innovative OL interventions tailored to the specific needs and challenges of physiotherapy and allied health professions, aiming to enhance the quality and standardization of OL materials.

RECOMMENDATIONS

To mitigate the challenges associated with OL, it is imperative for educators and institutions to invest in comprehensive infrastructure and resources. This includes ensuring reliable and high-speed internet access for all learners and providing ongoing training

for educators to effectively utilize OL platforms and engage students. Additionally, fostering collaborative efforts among institutions and researchers to develop, evaluate, and refine innovative OL interventions tailored to the unique requirements of physiotherapy and allied health professions is crucial. Exploring methods to enhance the quality and standardization of OL materials will be essential in realizing the full potential of OL in supporting the education and professional development of physiotherapy and allied health professionals, not only during the pandemic but in the future as well. Continuous innovation and improvement in this area are vital to optimize OL and meet the evolving needs of healthcare education and training.

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