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ORIGINAL RESEARCH

Students, professors and preceptors' perspectives of physical therapy undergraduate and graduate courses in emergency remote teaching during social distancing: a cross-sectional study - electronic survey

Perspectiva de alunos, professores e preceptores dos cursos de graduação e pós-graduação em fisioterapia sobre ensino remoto emergencial em período de distanciamento social: um estudo transversal- survey eletrônico

Perspectiva de estudiantes, profesores y preceptores de los cursos de grado y posgrado en fisioterapia sobre la enseñanza remota de emergencia en un periodo de alejamiento social: un estudio transversal – encuesta electrónica

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ABSTRACT | During the period of emergency remote teaching (ERT), it became crucial to understand the perceptions of those involved in the national pedagogical scenario. This study aimed to describe the perspectives of students, professors, and physical therapy preceptors on ERT during social distancing due to COVID-19. The survey was distributed through social media and registered 995 visitors, resulting in 709 valid responses. The sample included 59 professors and preceptors as well as 650 undergraduate and graduate students. Most participants were female (80.2%), students were aged from 20 to 34 years and professors and preceptor from 20 to 49 years; the latter were predominantly linked to private higher education institutions (92%), mostly in the Brazilian Southeast (82.9%). Confidence in digital platforms use varied between groups: 81.4% of professors and preceptors reported high levels of confidence, while only 58.3% of students reported the same. The results highlighted the financial impact (86.6%), the difficulties in accessing classes (76.6%) and the preference for the continued use of digital platforms (79.5%). Engagement and interaction during classes were affected (83.2%), as well as academic and professional performance (79.4%), especially among professors and preceptors (79.5%). The correlation between confidence in digital platforms use and academic/professional performance was significant for teachers and preceptors (r=0.323) and not significant for students and the overall sample. Confidence in technology use proved to be vital to the success of ERT. Despite the negative effects observed in the variables analyzed, the preference for remote learning was high.

Keywords | Education, Distance; Surveys and Questionnaires; Pandemic; Physical therapy.

RESUMO | Durante o período de ensino remoto emergencial (ERE), tornou-se crucial compreender as percepções dos envolvidos no cenário pedagógico nacional. Este estudo visou descrever as perspectivas de alunos, professores e preceptores de fisioterapia sobre o ERE durante o distanciamento social devido à covid-19. A pesquisa foi divulgada por meio de mídias digitais e registrou 995 acessos aos formulários, resultando em 709 respostas válidas. A amostra incluiu 59 professores e preceptores e 650 alunos de graduação e pós-graduação. A maioria dos participantes era do sexo feminino (80,2%), com idades entre 20 e 34 anos para os alunos e entre 20 e

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49 anos para os professores e preceptores, predominantemente vinculados a Instituições de Educação Superior (IES) privadas (92%) e da região Sudeste do país (82,9%). A confiança no uso de plataformas digitais variou entre os grupos, com 81,4% dos professores e preceptores relatando alta confiança, enquanto para os alunos 58,3%. Os resultados destacaram o impacto financeiro (86,6%), as dificuldades de acesso às aulas (76,6%) e a preferência pelo uso contínuo de plataformas digitais (79,5%). A participação e interação durante as aulas foram afetadas (83,2%), assim como o desempenho acadêmico e profissional (79,4%), especialmente entre os professores e preceptores (79,5%). A correlação entre a confiança no uso de plataformas digitais e o desempenho acadêmico/profissional foi significativa para professores e preceptores (r=0,323) e insignificante para alunos e grupo total. A confiança na utilização de tecnologias se mostrou fundamental para o sucesso do ERE. Apesar dos impactos negativos observados nas variáveis analisadas, a preferência pelo ensino remoto foi alta.
Descritores | Educação a Distância; Pesquisas e Questionários; Pandemia; Fisioterapia..

RESUMEN | Durante el periodo de enseñanza remota de emergencia (ERE), se volvió crucial comprender las percepciones de las personas involucradas en el escenario pedagógico nacional. Este estudio tuvo el objetivo de describir las perspectivas de estudiantes, profesores y preceptores de fisioterapia sobre la ERE durante el alejamiento social debido a la COVID-19. Se difundió la investigación a través de medios de comunicación digitales y registró 995 accesos a los formularios, resultando en 709 respuestas válidas. La muestra estuvo compuesta por 59 profesores y preceptores y 650 estudiantes de curso de grado y posgrado. La mayoría de los participantes era del sexo femenino (el 80.2%), con edad entre 20 y 34 años para estudiantes y entre 20 y 49 años para profesores y preceptores, predominantemente vinculados a Instituciones de Educación Superior (IES) privadas (el 92%) y de la región Sudeste del país (el 82.9%). La confianza en el uso de plataformas digitales osciló entre los grupos, con el 81.4% de los profesores y preceptores relatando una alta confianza, mientras que para los estudiantes, el 58.3%. Los resultados resaltaron el impacto financiero (el 86.6%), las dificultades de acceso a las clases (el 76.6%) y la preferencia por el uso continuo de plataformas digitales (el 79.5%). La participación y la interacción durante las clases se vieron afectadas (el 83.2%), así como el rendimiento académico y profesional (el 79.4%), principalmente entre los profesores y preceptores (el 79.5%). La correlación entre confianza en el uso de plataformas digitales y rendimiento académico/profesional fue significativa para profesores y preceptores (r=0.323) e insignificante para estudiantes y el grupo total. La confianza en el uso de tecnologías resultó ser fundamental para el éxito de la ERE. A pesar de los impactos negativos observados en las variables analizadas, la preferencia por la enseñanza remota fue alta.
Palabras-clave | Educación a Distancia; Encuestas y Cuestionarios; Pandemias; Fisioterapia.

INTRODUCTION

In 2020, the use of digital tools in teaching grew exponentially due to the adaptations necessary after the restrictions on face-to-face classes around the world caused by the SARS-CoV-2 virus[1]. Estimates suggest that 70% of the world's students were affected by this catastrophic event in 2020[2]. In Brazil, emergency remote teaching (ERT) was employed[3], and the necessary adjustments were made throughout the school year[4]. For Health courses, adaptations were necessary for practical classes and patient care[3,5]. An example is physical therapy, which has a practical training workload and quite frequent hands-on contact[6]. The change from in-person interactions to the virtual environment can bring up several issues, namely: mental health impairment[7], adaptation difficulties among students regarding digital tools[8,9], technological limitations, low student engagement during classes[10] and low participation in group activities[11], and communication difficulties with students and their work institution, deficit and even absence of institutional support[8].

Emergency remote teaching, class maintenance and student assessments via digital tools lasted until December 2021. However, as it is a unique moment for the national pedagogical scenario, it is important to understand and describe the perceptions of physical therapy undergraduate and graduate students, professors, and preceptors regarding ERT during social distancing due to COVID-19 in Brazil to propose suggestions for improvements and adaptations in the future. Thus, this study aimed to describe the perceptions of physical therapy undergraduate and graduate students, professors, and preceptors regarding ERT during social distancing due to COVID-19 in Brazil.

For this study, five hypotheses based on the literature[12-14] and the academic and professional experience of the

authors were formulated: 1) for both groups, the ERT would result in greater financial impact, a negative impact on teaching due to technological difficulties, on the engagement and interaction of participants, lower academic and professional performance during ERT compared to face-to-face teaching, and a negative perception in relation to the maintenance of the use of digital platforms and remote teaching even after ERT termination; 2) teaching experience or the semester of study would negatively interfere with the perception of impact on the engagement and interaction of participants in the academic environment during the ERT; 3) participants' confidence level in using digital platforms and resources would positively affect academic and professional performance during the ERT and result in the continued use of digital platforms and remote teaching even after ERT termination; 4) lack of training on the use of digital tools provided by a Higher Education Institution (HEI) at the onset of ERT would negatively affect participants' perception of the impact of technological difficulties on teaching during emergency remote teaching; and 5) working in only one educational institution would negatively influence the perception of financial impact during emergency remote teaching.

METHODOLOGY

Study design

This is a cross-sectional study conducted via an electronic survey. This study used the Consensus-Based Checklist for Reporting of Survey Studies (CROSS) to direct and assist the research description.

Population

Undergraduate and graduate students (academic and specialization degrees) and professors and preceptors of physical therapy undergraduate and graduate courses (academic and specialization degrees) participated in this study.

Location

Study distribution was done using a strategy for video engagement and dissemination on social media. These strategies were carried out simultaneously, with monthly iterations, from May to August 2021. Data collection ended in December 2021. As this is a public survey, it was impossible to limit respondents' access to the questionnaire through single-use links. Duplicate participant control was done by checking for duplicate emails, which were filled out at the same time as the acceptance of the informed consent form.

Selection criteria

The inclusion criteria for the study were: physical therapy undergraduate and graduate students (academic and specialization degrees) of any gender who were at least 18 years old, or physical therapy undergraduate and graduate professors or preceptors (academic and specialization degrees) at public or private HEIs in any region of the country. The exclusion criteria were: students or professors and preceptors from other fields of knowledge unrelated to physical therapy, and people unable to read Brazilian Portuguese.

Sample definition

For this study, a sample of at least 84 individuals was estimated, after sample size calculation using the G*Power calculator, version 3.1.9.4. An 80% statistical power was considered to detect a 0.30 correlation coefficient and a 5% alpha value.

Data collection

An electronic survey was used, consisting of a form for professors and preceptors, and another for undergraduate physical therapy students and physical therapists as well as graduate students (academic and specialization degrees), which were distributed throughout Brazil. For data management and dissemination, the Research Electronic Data Capture (REDCap) was used[15]. The data collection period took place from May to December 2021. The survey forms consist of 44 questions each: five about sociodemographic data, five about students' academic characteristics or professors and preceptors' professional characteristics, and 34 about students, professors and preceptors' perceptions regarding the impact of emergency remote teaching. The students' and professors and preceptors' forms are available in Appendix 1 and Appendix 2, respectively . Scoring system was based on a Likert scale containing five response options, namely: 1) strongly disagree;

2) partially disagree; 3) neutral; 4) partially agree and 5) totally agree.

For this study, the participants' perceptions regarding the impact of emergency remote teaching were organized into five dependent variables (final outcomes), which are described below (questions can be verified in Appendix 3): financial impact during emergency remote teaching; impact on teaching due to technological difficulties during emergency remote teaching; continued use of digital platforms and remote teaching even after the end of emergency remote teaching; impact on the participation and interaction of participants in the academic environment during emergency remote teaching; and academic and professional performance during emergency remote teaching similar to in-person performance.

Statistical analysis

Means and percentage values were analyzed to describe the population and the participants' perceptions. The survey measures on the Likert scale were categorized as follows: "no" (values from one to three), that is, participants disagree with the statement, and "yes" (values four and five), that is, participants agree with the statement. After categorization, the five dependent variables (Appendix 3), were created.

To analyze the first hypothesis, descriptive analyses were conducted and reported as numbers and percentages. For the other hypotheses, Pearson's correlation analyses were conducted. The strength and direction of the correlation were interpreted as negligible positive or negative (r=0.00 to 0.30), low positive or negative correlation (r≥0.30 to 0.50), moderate positive or negative correlation (r≥0.50 to 0.70), high positive or negative correlation (>0.70 to 0.90) and very high positive or negative correlation (>0.90 to 1.0)[16]. For all analyses, a 0.05% statistical significance level was considered. For all data analyses, the Statistical Package for the Social Sciences (SPSS), software version 17.0 for Windows, was used.

Ethical aspects

Participants were informed about the objectives, procedures, risks and benefits of the research and signed an electronic informed consent form. Each participant received a copy of the consent form by email. Thus, the participation of each participant in the study was of their own free will. The security and confidentiality of the data was done through REDCap platform[15], which does not allow sharing or viewing of data to those who are not registered and authorized members of the survey. Only the researcher responsible for this study and the technical assistant from REDCap working with FCMSCSP had access to the data, as per the recommendations of the General Data Protection Regulation–GDPR[17].

RESULTS

A total of 995 visitors t were identified on the REDCap platform. A total of 709 forms were completely filled, representing 71% of valid responses. The final sample of this study had 709 participants: 59 professors and preceptors (undergraduate and graduate) and 650 students (undergraduate and graduate).

Descriptive variables of the sample

Most participants were female (80.2%), aged from 20 to 34 years among students and (86.7%) from 20 to 49 years old among professors and preceptors (83.1%), who are linked, mainly, to private institutions (92%). Most participants were from Southeast Brazil in both groups (82.9%). Regarding the use of digital platforms before the pandemic, most of the responses were for complementary material/support material (theoretical material in slide presentations) (57.4%). Most participants in both groups answered that they had not received any digital tools training (56%). Internship strategies with in-person care were predominant in the responses, either by alternating student groups (42.6%), or with a reduction in the number of patients (38.2%). The perception of confidence in digital platforms use was prevalent in the professors and preceptors' group (81.4%) but showed even results in the group of students (yes=58.3% vs no=41.7%). Table 1 shows the sample characterization.

Most of the student sample was composed of undergraduates (87.4%) between the seventh and 10th semesters (57.7%), attending theory classes and internships (27.2%) or attending theory and practical classes as well as internships (25.3%) (Table 2). The group of professors and preceptors worked with undergraduate studies (59.3%), and taught theory and practical classes and internships (37.3%) and working in only one HEI (67.8%).

The most common degree in the professors and preceptors' group was the master's degree (35.6%), followed by the doctorate (32.6%). As shown in Table 3, the group of professors and preceptors had an average of 11 or more years of teaching (40.7%) in various fields of knowledge.

Table 1. General characteristics of the sample (n = 709).

Parameter	Professors and preceptors (undergraduate and graduate) (n=59)	Students (undergraduate and graduate) (n=650)	Total (n=709)
Sex			
Female	37 (62.7)	529 (81.8)	566 (80.2)
Male	22 (37.3)	117 (18.1)	139 (19.7)
Did not answer	0	1 (0.2)	1 (0.1)
Region			
Southeast	43 (72.9)	545 (83.8)	588 (82.9)
South	3 (5.1)	19 (2.9)	22 (3.1)
Midwest	9 (15.3)	50 (7.7)	59 (8.3)
North	1 (1.7)	5 (0.8)	6 (0.8)
Northeast	3 (5.1)	28 (4.3)	31 (4.4)
Did not answer	0	3 (0.5)	3 (0.5)
Age			
20 to 34 years old	25 (42.4)	561 (86.7)	586 (83)
35 to 49 years old	24 (40.7)	69 (10.7)	93 (13.2)
50 or more	10 (16.9)	17 (2.6)	27 (3.8)
Type of institution			
Public	4 (6.8)	42 (6.5)	46 (6.5)
Private	53 (89.8)	596 (92.3)	649 (92.1)
Both	2 (3.4)	8 (1.2)	10 (1.4)
Digital platforms before the pandemic			
No, I had never used it	26 (44)	241 (37.2)	267 (37.7)
Yes, for supplementary material	23 (39)	384 (59.4)	407 (57.4)
Yes, for theory classes	8 (13.6)	62 (9.6)	70 (9.9)
Yes, for practical classes	4 (6.8)	11 (1.7)	15 (2.1)
Yes, for meetings	14 (23.7)	5 (0.8)	19 (2.7)
Training given by a HEI			
Public	3 (5.1)	11 (1.7)	14 (2)
Private	34 (57.6)	108 (16.7)	142 (20.2)
Both	1 (1.7)	6 (0.9)	7 (1)
I didn't receive any training	10 (16.9)	384 (59.1)	394 (56)
I sought training by myself	11 (18.6)	136 (21.1)	147 (20.9)
Tools used for evaluation			
Google Forms	40 (67.8)	485 (74.6)	525 (74)
Survey Monkey	3 (5.1)	13 (2)	16 (2.3)
Socrative	5 (8.5)	87 (13.4)	92 (13)
Other tools	27 (45.8)	206 (31.7)	233 (32.9)
Strategies and tools for student performance			
Quizzes	35 (59.3)	423 (65.1)	458 (64.6)
Games	13 (22)	72 (11.1)	85 (12)
Group Activities	44 (74.6)	373 (57.4)	417 (58.8)
Other strategies and tools	15 (25.4)	66 (10.2)	81 (11.4)
Internship strategies			
No internship	6 (10.2)	117 (18)	123 (17.3)
Online internship without patient care	8 (13.6)	59 (9.1)	67 (9.4)
In-person care with a reduction in the number of patients	24 (40.7)	247 (38)	271 (38.2)
In-person care with alternating student groups	26 (44.1)	276 (42.5)	302 (42.6)
Telerehabilitation	17 (28.8)	95 (14.6)	112 (15.8)
Regular care	6 (10.2)	54 (8.3)	60 (8.5)
Not applicable	12 (20.3)	103 (15.8)	115 (16.2)
Confidence in digital platforms use			
No	11 (18.6)	270 (41.7)	281 (39.8)
Yes	48 (81.4)	377 (58.3)	425 (60.2)

n: number of participants; HEI: Higher Education Institution

All data were categorical and presented in number and percentage (%).

Table 2. Academic characteristics of the students (n=650)

Parameter	Students n (%)
Schooling	
Undergraduate	568 (87.4)
Graduate academic degree	75 (11.5)
Graduate specialization degree	7 (1.1)
Semester	
1st to 3rd	132 (20.5)
4th to 6th	140 (21.8)
7th to 10th	371 (57.7)
Currently studying	
Only theory classes	90 (13.9)
Only practical classes	3 (0.5)
Internship only	64 (9.9)
Theory and practical classes	150 (23.2)
Theory classes and internships	176 (27.2)
Theory and practical classes and internships	164 (25.3)

n: number of participants

All data were categorical and presented in number and percentage (%).

Table 3. Professional characteristics of professors and preceptors (n=59)

Parameter	Professors and preceptors n (%)
Type of course	
Undergraduate studies	35 (59.3)
Graduate studies	3 (5.1)
Both	21 (35.6)
Certification	
Specialization	17 (28.8)
Master's degree	21 (35.6)
Doctorate degree	19 (32.2)
Other	1 (1.7)
Did not answer	1 (1.7)
Number of HEIs in which they work	
One	40 (67.8)
Two	18 (30.5)
Three or more	1 (1.7)
Teaches	
Only theory classes	2 (3.4)
Only practical classes	2 (3.4)
Internship only	9 (15.3)
Theory and practical classes	18 (30.5)
Theory classes and internships	6 (10.2)
Theory and practical classes and internships	22 (37.3)
Teaching experience	
1 to 3 years	15 (25.4)
4 to 10 years	20 (33.9)
11 or more	24 (40.7)

continues...

Table 3. Continuation

Parameter	Professors and preceptors n (%)
Field of expertise as an educator	
Physical therapy and acupuncture	2 (3.4)
Aquatic therapy	2 (3.4)
Cardiovascular	9 (15.3)
Dermato-functional	4 (6.8)
Sports	11 (18.6)
Gerontology	11 (18.6)
Work	4 (6.8)
Neurofunctional	12 (20.3)
Oncology	2 (3.4)
Respiratory	10 (16.9)
Trauma-orthopedic	26 (44.1)
Public Health	12 (20.3)
Women's health	8 (13.6)
Intensive Care	6 (10.2)
Other	7 (11.9)

MAIN RESULTS

Regarding the categories analyzed, our first hypothesis was confirmed. We identified that most participants in both groups had the same perception in relation to the financial impact during emergency remote teaching (86.6%), as well as the impact on access to classes due to technological difficulties (76.6%) and a preference for maintaining the use of digital platforms and distance education even after the end of the emergency (79.5%). Additionally, we observed that engagement and interaction during classes was affected (83.2%), being higher among students (83.5%), as was the academic and professional performance during the period of ERT (79.4%), which was higher among professors and preceptors (79.5%) (Table 4). The other hypotheses of this study were analyzed by correlation analyses; only the third was confirmed and described below. Table 5 shows the results of the correlation analyses.

We found a statistically significant value ($p<0.05$) in the hypothesis analysis regarding confidence in dealing with digital platforms positively influencing academic and professional performance. The values revealed a low positive correlation for the group of professors and preceptors ($r=0.323$), and a non-significant positive correlation for the group of students ($r=0.246$) as for the whole group ($r=0.258$). The analysis of the level of confidence in dealing with digital platforms being positively related to the groups' preference for maintaining distance education even after the pandemic also showed a statistically significant value for the groups of students and for the whole group, with positive and insignificant correlation coefficients ($r=0.297$ and 0.280, respectively). For the professors and preceptors' group (–0.164), the values did not confirm the third hypothesis.

Table 4. Categories analyzed in relation to the participants' perception of impact during emergency remote teaching

Parameter	Professors and preceptors (undergraduate and graduate) (n=59)	Students (undergraduate and graduate) (n=650)	Total (n=709)
Financial impact during emergency remote teaching			
No	7 (11.9)	87 (13.6)	94 (13.4)
Yes	52 (88.1)	555 (86.4)	607 (86.6)
Impact on teaching due to technological difficulties during emergency remote teaching			
No	16 (27.1)	149 (23.1)	165 (23.4)
Yes	43 (72.9)	496 (76.9)	539 (76.6)

continues...

Table 4. Continuation

Parameter	Professors and preceptors (undergraduate and graduate) (n=59)	Students (undergraduate and graduate) (n=650)	Total (n=709)
Continued using digital platforms and distance education even after the period of emergency remote teaching			
No	6 (10.3)	138 (21.4)	144 (20.5)
Yes	52 (89.7)	507 (78.6)	559 (79.5)
Impact on participant engagement and interaction in academia during emergency remote teaching			
No	12 (20.7)	106 (16.5)	118 (16.8)
Yes	46 (79.3)	537 (83.5)	583 (83.2)
Academic and professional performance similar to in-person performance during emergency remote teaching			
No	5 (8.5)	131 (20.5)	136 (19.5)
Yes	54 (91.5)	509 (79.5)	563 (79.4)

n: number of participants.

Categorical data presented in numbers and percentage (%).

Table 5. Correlation analyses between descriptive variables and dependent variables

	Pearson's correlation coefficient (r)		
	Professors and preceptors (undergraduate and graduate) (n=59)	Students (undergraduate and graduate) (n=650)	Total (n=709)
Semester or teaching experience x participation/interaction	0.184	−0.058	NA
Confidence x academic/professional performance	0.323*	0.246*	0.258*
Confidence vs. continued using digital platforms after ERT	−0.164	0.297*	0.280*
Lack of training for digital platforms use x impact on teaching	−0.135	−0.049	−0.063
Teaching in an HEI x greater financial impact	−0.151	NA	NA

n: number of participants.

ERT: Emergency remote teaching. NA: not applicable

*Significant correlation from p<0.05 (two-tailed). r 0.00 to 0.30 (−0.00 to −0.30): insignificant positive or negative correlation; r>0.30 to 0.50 (−0.30 to −0.50): low positive or negative correlation; r>0.50 to 0.70 (−0.50 to −0.70): moderate positive or negative correlation; r>0.70 to 0.90 (−0.70 to −0.90): high positive or negative correlation; and r >0.90 to 1.0 (−0.90 to −1.0): very high positive or negative correlation.

DISCUSSION

Main results and comparisons with other studies

In the descriptive analysis, we found a perception of financial impact, an impact on teaching due to technological difficulties, and a preference for maintaining digital platforms and remote teaching after the ERT period. In addition, we identified a negative impact on engagement and interaction in the academic environment during ERT; academic and professional performance during ERT presented similar results to face-to-face classes for both research groups. Very similar results were described by Chesterton et al.[14], who used a questionnaire with physical therapy students and found that most felt they were at a disadvantage in the remote model when compared to the face-to-face one and did not feel equally motivated to study, negatively influencing their academic performance.

In the correlation analyses, we found a statistically significant value (p<0.05) for the confidence variable to positively interfere with the academic and professional perspective, demonstrating a low positive correlation to the professors and preceptors' group (r=0.323) and a non-significant positive correlation to the students' group (r=0.246) and for the whole group (r=0.258). The confidence variable also showed a statistically significant value when correlated to the preference to maintain the use of digital platforms after the ERT period, with a positive and non-significant correlation to the student group (r=0.297) and to the whole group (r=0.280). The group of professors and preceptors presented values that did not confirm the third hypothesis (r=−0.164). The small number of professors and preceptors who took part in the study may have impaired the confirmation of the third hypothesis, considering that fewer participants interfere with the statistical power. Although we did find no studies assessing the level of confidence in dealing with digital tools and platforms, we found that the level of satisfaction and performance of students did not differ in a study published by Rossetini et al.[18]. These authors

compared two groups of students in the transition of classes to the virtual environment during the pandemic, in which one group received training on the virtual environment and the other did not.

We did not find statistically significant values for teaching experience or whether attending the initial semesters would have a negative influence on engagement and interaction in the academic environment. Büker et al.[13] found a similar result, by investigating the acceptance and attitudes of physical therapy students of all years (n=620) to the adaptations imposed by the pandemic. The authors found a good rate of acceptance of the use of digital platforms in all semesters investigated, especially the initial semesters, which have a theory-filled curriculum and, the authors believe, had an easier adaptation. However, the authors indicate that the sense of professional community and anxiety levels can be negatively affected by the maintenance of distance education on a permanent basis[13]. Ng et al.[19] described the stages of the transition process from an education program for physical therapists to the virtual environment during the pandemic and found reports of good participation and interaction of students, similar to our result.

The negative impact of the lack of training on how to deal with digital platforms during the ERT on teaching was not confirmed in our study, demonstrating that there is no positive correlation for this hypothesis, that is, the existence or not of training by an HEI did not demonstrate to have an influence on the perspective of negative impact on teaching. Rajab et al.[20] found results that demonstrate that, for medical students and professors, although having technology training is important, the absence of training had no negative impact on the participants' perspective and confidence to perform the tasks.

Rossetini et al.[21] published a comment that stresses important aspects to be considered by HEIs for the proposition of physical therapy courses after the pandemic. For example, the cultural shift in the training of physical therapy professors, including remote teaching courses, and having digital tools and platforms as allies in the training of physical therapy professionals. Furthermore, the authors argue that, due to lack of preparation of HEIs, students and professors experienced an emulation of remote teaching and distance education during the pandemic. The authors also present suggestions found in the literature for the evaluation of students via digital tools, reinforcing important aspects of the technical training of students. Finally, they reinforce that HEIs must consider the social inequalities faced by students and the barriers to access the virtual environment, in order to promote equal access to educational experiences[21].

Relevance of this study to physical therapy

Despite the perception of negative financial, technological, and interactional impacts during classes, our sample showed a preference for maintaining the use of digital platforms and tools after the end of the emergency remote teaching. This finding demonstrates an opportunity for new teaching and learning paths in the training of physical therapists. However, it may also indicate that the participants of this study reframed their experiences, seeking to identify positive potential in an atypical and unusual situation and, despite the negative points, saw a promising future in digital platforms.

This study shed light on aspects that can benefit the training of physical therapists not only during emergency remote teaching, but also after it. Digital tools enable student's protagonism and, if the tools are properly employed, this protagonism can be reflected on the students' professional aspects, reinforcing the sense of belonging and community that are so important in the training of health professionals. As this study also demonstrated, the perception of confidence in dealing with digital platforms positively influence the results of students, professors, and preceptors of Physical Therapy courses. Therefore, the implementation of adequate and periodic training by HEIs can enhance the benefits described in this study.

Strengths and limitations of the study

The survey presents a robust sample, although there was lower engagement than expected by professors and preceptors. The analyses carried out provided detailed insight on the perceptions of participants in relation to remote teaching and digital platforms, contributing significantly to the understanding of the challenges and opportunities presented by ERT in the training of physical therapists.

However, it is noteworthy that the diminishing number of participants in the professors and preceptors group affected the statistical power of the analyses. In addition, participants' responses may have been

influenced by local restrictions and the COVID-19 vaccination process. Furthermore, the self-reported nature of the data and the lack of control over external variables may have introduced biases in the results. The data collection period was long, and the fact that different restrictions were put on face-to-face activities according to city or state may have affected the participants' perception. Access to the COVID-19 vaccine or lack thereof as well as being at a higher risk for COVID-19 or living with people that were may also have interfered with participants' answers, especially regarding questions related to face-to-face activities.

CONCLUSION

We conclude that this study addressed crucial issues related to ERT during the COVID-19 pandemic. We had significant insights into the financial impact, technological challenges, and reduction in engagement and interaction in the academic environment during ERT. Interestingly, academic and professional performance during ERT was comparable to that of face-to-face education for both groups surveyed. In addition, we observed a positive, although not significant, correlation between the level of confidence in digital platforms use and academic/professional performance, for both students and educators. A positive correlation was also evident between confidence in the use of digital platforms and the preference for continued use of these platforms and distance education, especially among students and the whole group.

We recommend, for future studies, broadening the scope to collect data on psychosomatic symptoms, with a larger sample focused on professors and preceptors. Additionally, conducting cohort studies and randomized controlled trials, controlling for bias and adhering to scientific writing guidelines would provide further insights and increase the robustness of the results. Such approaches would contribute significantly to the advancement of knowledge in this area.

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