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RESEARCH ARTICLE

Online teaching self-efficacy of physical therapy educators in the wake of COVID-19 pandemic

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ABSTRACT

Background: Following COVID-19, higher educational institutions are advancing towards distance learning, which is a new experience for many educators. Self-efficacy is a cognitive trait related to perseverance and determination in overcoming the challenges.

Objective: To assess the level of virtual teaching self-efficacy of physical therapy academicians.

Methods: A descriptive cross-sectional study was conducted. All physical therapy educators who were offering online courses during the pandemic received a link to a web survey through Google forms. The Michigan Nurse Educator's Sense of Efficacy for Online Teaching instrument was implied to assess self-efficacy for teaching methods. Using a 32-items MNESEOT scale, study respondents were asked to rate their responses to questions about teaching methods on a Likert scale ranging over 'nothing' (1) to 'a great deal' (9). Mean scores were computed for every participant for different domains of instructional strategies, classroom management, student participation, and computer skills.

Results: Faculty who were asked how effective they felt teaching online stated that they were most effective when using computers and instructional strategies (7.0), followed by classroom management (6.9) and student engagement (6.6) with a mean score of 27.50±4.7. Participants generally reported that they could prepare, conduct, and evaluate online courses to an extent greater than "some" to "quite a bit."

Conclusion: It is concluded that the self-efficacy of study participants in online instruction was quite high.

Keywords: Physical Therapy Educators, self-efficacy, online education, online teaching.

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Introduction:

Teaching in traditional education system and online courses are distinct from each other, they simply vary in their approach and delivery, but neither is superior or inferior. Educators or academicians now have to switch from conventional classrooms to online learning environments due to the recent expansion of online education. For high-quality online education to be delivered, faculty must adopt new teaching methods, pedagogies, and technologies. They must also learn new skillset to prosper, feel accomplished and confident. Success in web-based education influenced by a strong sense of self-efficacy.(1) A cognitive attribute called self-efficacy is coupled with the perseverance, tenacity, commitment, resilience and determination in defying the odds. The perception of one's own effectiveness reflects one's self-efficacy.(2) In realm of virtual teaching, the sense of self-efficacy refers to the confidence one has in their abilities to manage their own behaviors and thoughts to deliver instructions effectively.(3) Teaching satisfaction is related with high teaching self-efficacy.(4,5) The efficacy of online teaching can be evaluated based on extrinsic or intrinsic factors. The former may involve income, institutional assistance, resources, and technology available for online teaching, while the latter may be associated with student motivation in online courses and one's enthusiasm for future teaching and learning opportunities.(6) The ability to cope with difficult circumstances, adapt to changing situations, and remain resilient are closely related with self-efficacy in the context of online teaching.(7)

Higher self-efficacy and satisfaction levels among faculty may increase their likelihood of continuing in academia for a longer period of time.(7) The present

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study was conducted with the purpose to assess the degree of self-efficacy in online education environment among physical therapy academicians across various programs, ranging from undergraduate PT to postgraduate PT.

Bandura proposed the theoretical framework of self-efficacy to elucidate the exertion and perseverance of coping strategies with individuals' beliefs about the effectiveness of their efforts, which play an important role in their motivation and performance, and that these beliefs can be influenced by their past experiences and the feedback they receive. By consistently completing challenging tasks, one can attain mastery and enhance their sense of self-efficacy.(8) The relationship between expectations and performance highlights the significance of being motivated and persistent in accomplishing goals. Perceived self-efficacy states an individual's confidence in their capabilities to succeed.(9)

Educator's self-efficacy level reveals their acceptance in their abilities to have a positive influence on the learning outcomes of students in a subject.(10,11) Studies have established a strong relationship between teacher's self-efficacy, student's accomplishment and outcomes of learning objectives.(12) The degree to which online nurse educators feel capable and confident in their abilities can be affected by their self-determination in web based learning platform as well as their familiarity and comfort level with computers and online learning technologies and the confidence in traversing the technical infrastructure.(13)

Educationists having greater levels of self-efficacy can increase their students' chances of success. Multiple studies have examined the instructional outcomes associated with high teacher self-efficacy, including teacher well-being, job satisfaction, commitment, and efficacy, as well as student engagement, motivation, and educational achievement have been shown to positively correlate with teachers' sense of competence and higher level of self-efficacy.(14)

Years of teaching experience are one of several variables that affect an educator's self-efficacy in web-based learning environment. Robinia and Anderson discovered that nurse educationalists had greater rating of self-efficacy subsequent to teaching minimum 1 web-based course as evident by the Michigan Nurse Educators' Sense of Efficacy for Online Teaching (MNESEOT) results. Additionally, they reported that as educators gained more expertise, their confidence in their ability to teach online increased.(15,16)

Methods:

This descriptive cross-sectional survey was approved by the ethical review committee (Ref # Riphah/RCRS/REC/01145) of Riphah College of Rehabilitation and Allied Health Sciences, (RCR&AHS) Riphah International University, Islamabad. From September 2020 to March 2021, a web-based survey was distributed to investigate how effective physical therapy faculty members felt about their self-efficacy. Sample size was calculated using epitool, keeping the confidence interval 95% and assumed population standard deviation was 7.5.(17) To take part in this study, academicians from several physical therapy colleges were invited. Participants in the present study had at least one online graduate or postgraduate course they had taught. The 32-item MNESEOT tool was used to measure level of self-efficacy for online teaching.(15,16) The efficacy of student engagement, instructional strategies, classroom management, and computer use are among the constructs on this measure. The MNESEOT has demonstrated high reliability, with a Cronbach's alpha of 0.93 for the overall tool and scores of .80 or higher for the subscales.(6,16)

Each individual item of MNESEOT tool, the present study employed a Likert-type rating scale with response choices covering a range of 1 (none) to 9 (a great deal). Data was analyzed utilizing SPSS 21. Exploratory data analysis were applied to investigate the socio-demographic attribute comprising means and standard deviations (SD) for continuous variables and frequencies and percentages for categorical variables. An independent t test was applied to ascertain the differences in means of the outcome variables.

Results:

Total 55 physical therapy educators participated in this study. The majority of study participants were female, 40 in number (73%). The study assessed the relationship between online teaching self-efficacy levels, as measured by the mean MNESEOT scores, and factors such as age, gender, academic designation, teaching level, and teaching experience amongst study participants. The mean age of the study participants was 31±3.6 years, spanning from 26 to 41 years. The academicians possessed 6±3.1 years of overall teaching experience going from 1 to 15 years. The study participants were alike in terms of their age, gender, years of teaching experience, qualifications, academic rank, and the level of teaching (varying from undergraduate to postgraduate), as illustrated in Table 1.

Table 1: Demographic characteristics of study respondents

Variables		n(%)	Variables		n(%)
Age (years)	26-30	27(49)	**Teaching Level**	Undergraduate	24(43.6)
	31-35	18(32.7)		Postgraduate	4(7.3)
	36-41	10(18.1)		Both	27(49.1)
Gender	Male	15(27)	**Teaching Experience**	1-7 years	42(76.3)
	Female	40(73)		8-15 years	13(23.6)
Academic Rank	Lecturer	20(36)	**Qualification**	MPhil	1(1.8)
	Senior Lecturer	14(25.5)		MS	47(85.5)
	Assistant Professor	19(34.5)		PhD	4(7.3)
	Associate Professor	1(1.8)		DPT, PP-DPT	3(5.5)
	Professor	1(1.8)			

The participants were guided to grade their responses to the 32 items of the MNESEOT tool using a Likert scale, where they implied the degree of their agreement with statements linked with digital teaching on an grade of 1 (indicating "nothing") to 9 (indicating "a great deal"). Mean scores of MNESEOT scale were computed for each participant in the areas of instructional strategies, classroom management, student engagement, and computer skills. The total MNESEOT score was then calculated using these means subscale values ranging from 4 to 36. Faculty who were asked how effective they felt at teaching online said they were most effective when using computers and instructional strategies (7.0), followed by classroom management (6.9) and student engagement (6.6) (Table 2). Study participants reported that they could prepare, conduct, and evaluate online courses to an extent greater than "some" to "quite a bit with a mean score of 27.50± 4.7 as shown in table 2. Through all of the subscales, the score remained constant.

Table 2: Online teaching efficacy MNESEOT rating

Variables		Mean	Standard Deviation	Ranges
Domains of online teaching self-efficacy	Student Engagement	6.6	1.2	5-6
	Classroom Management	6.9	1.2	5-7
	Instructional Strategies	7.0	1.1	5-6
	Computer Skills	7.0	1.2	5-8
Total MNESEOT score		27.5	4.7	5-8

Mean MNESEOT scores used as a measure of online teaching self-efficacy were compared to age, gender, academic designation and years of teaching experience. On independent sample t-test, male and female MNESEOT mean scores were almost the same i.e. 25.08±4.54 for male participants and 26.71±4.9 for female participants and did not differ significantly ($p = 0.626$). The results of Pearson's correlation interpretation showed that there was no statistically significant relationship between the total scores of MNESEOT tool with age or duration of teaching experience of the study participants. The MNESEOT score variations amongst program did not differ significantly.

Discussion:

The main focus of the current study was to assess the level of self-efficacy of physical therapy educators in teaching online. Due to the pandemic, education has quickly shifted online; therefore, evaluating the effectiveness of faculty members in teaching online courses is crucial. The outcomes of the MNSEOT items indicated that the study participants scored above the 70th percentile, indicating a higher level of self-efficacy in teaching online.

Both the present study and Robinia's study found that physical therapy academicians felt confident in their abilities to teach courses online, particularly with

regards to computer skills, instructional strategies, and classroom management, though, both studies also indicated that the educators had lower levels of self-efficacy when it came to engaging students in the online environment.(16)

Similar to previous research, the current study discovered that the least confident online instructors are in their abilities to keep students interested or engaged in their courses.(6,18) The results of this study are comparable to those of Robinia and Anderson with Wise showed no relation among years of teaching experience with self-efficacy of nursing educators in teaching online courses.(15,19)

As demonstrated previous research conducted by Howe et al., the faculty members who participated in the present study expressed a relatively greater level of self-efficacy with their courses teaching online.(20) Duration of teaching experience did not have any relation with the level of self-efficacy that the respondents in current study had with their online teaching, as was also observed in former studies conducted by Howe et al. or Wise.(19,20) This is established because an educator has expertise in a conventional classroom environment which does not assure that they will be successful teaching in online education. In order to perform well and feel content in the transition from physical classroom instruction to web based courses, teachers may require adequate training timeframe, preparing module study materials, and adjusting towards new teaching environment.(20)

Proficiency in the skills required in web based courses is a requirement for self-efficacy in online teaching.(21) When confronted with circumstances they are unsure of, like teaching online, instructors' self-efficacy for online teaching might affect how determined and focused they are and how well they manage stress from unforeseen challenges.

The lower response rate in this study could have been a limitation. Data was collected from numerous educational institutions using various teaching strategies and learning management systems, which was a study's strength. It is essential to provide a training session on how to increase student's participation in an online learning environment. Additionally, more research on the methods that improve the effectiveness of online instruction is required. Additional research aimed at enhancing self-efficacy in online learning is worthwhile given that it helps students succeed. It is worthwhile to devote time and resources to further research aimed at enhancing student achievement in online learning.

Conclusion:

The study concluded that the study participants had greater levels of self-efficacy in teaching online courses. However, the study's significant finding was that physical therapy academicians were not entirely confident about how to engage with students (student's engagement) effectively in the online environment.

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Authors contribution:
Malik AN: Conception of work, Interpretation of data, and Final approval of the version to be published.
Jahan S: Design of the work, analysis of data, drafting the work, Final approval and Agreement to be accountable.