

Physiotherapists' knowledge, perception, and attitude regarding COVID-19 and infection control: An online cross-sectional survey in Jordan

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Abstract.

BACKGROUND: The COVID-19 pandemic highlighted the importance of knowledge and awareness of healthcare practitioners regarding infection control.

OBJECTIVE: To explore Jordanian physiotherapists' knowledge and perception of COVID-19, awareness about protection measures, and attitude towards infection prevention.

METHODS: A cross-sectional online survey was used. Data were collected from licensed physiotherapists currently living in Jordan. A structured survey was used to collect the data consisting of five parts: 1) General information about the physiotherapists including sociodemographic, academic training, and employment setting, 2) General knowledge about COVID-19, 3) Infection protection in the workplace, 4) Perception of COVID-19, and 5) Attitude towards COVID-19 in daily life and during work.

RESULTS: A total of 147 physiotherapists completed the survey with a mean age of 30.56 (7.70) and years of experience of 7.28 (7.21). The mean of the total knowledge score was 17.18 (2.32)/ 26. There was a significant difference in the total knowledge score between COVID-19 trained physiotherapists and untrained ($t = 2.895$, $p = 0.004$). About 70.8% of the physiotherapists perceived COVID-19 as a very dangerous disease, 69.4% considered physiotherapy a high-risk profession, and 41% perceived COVID-19 does not require any special treatment. Approximately 85% of physiotherapists avoided going to crowded places and wore a mask when leaving home. 75–86.6% of physiotherapists would consider appropriate protective measures during their work.

CONCLUSIONS: Physiotherapists showed suboptimal knowledge, perception, and attitude towards COVID-19. There is a need for training courses to increase physiotherapists' knowledge about COVID-19 and improve their perception and attitude towards COVID-19.

Keywords: Physiotherapists, COVID-19, infection control, knowledge, attitude

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1. Introduction

Coronavirus Disease 2019 (COVID-19) is a newly discovered life-threatening disease that affects the respiratory system [1]. It was first reported in December 2019 as severe viral pneumonia with an unknown source in a cohort of patients in China [1, 2]. As of November 10, 2021, around two hundred and fifty million cases of COVID-19 and approximately five million deaths have been reported worldwide [3]. Jordan has reported an increasing number of infected cases and related deaths since the outbreak of the pandemic [3].

COVID-19 is highly contagious and is transmitted from human to human approximately in two to ten days and, in some reports, up to 14 days before the individual becomes symptomatic [4, 5]. The primary infection transmission method is inhaling the small droplets produced by infected persons during sneezing, coughing, singing, and even talking or touching contaminated surfaces and then transferring these airborne particles to the body by touching the mouth, nose, or eyes [6]. Most individuals with COVID-19 are asymptomatic or have mild symptoms, but some may develop severe viral pneumonia with respiratory failure [7]. All ages can be infected with the disease. However, older individuals and those with comorbidities such as cardiovascular disease, chronic respiratory disease, cancer, and diabetes are at higher risk of having severe COVID-19 infection [7].

Healthcare workers (HCWs) play an essential role at the frontline in managing patients with COVID-19, which raises the fact that they are at a higher risk of being infected with COVID-19 [8]. Therefore, their safety is a critical issue, and they have an essential role in providing care to patients and preventing and controlling the outbreak [9]. Physiotherapists (PTs) are no exception to this as they have a role in managing patients with suspected or confirmed COVID-19, especially those who work in hospitals [10, 11]. Physiotherapy plays a significant role in physically rehabilitating patients with COVID-19, especially those admitted to the ICU [11]. Physiotherapy, as a profession, deals with a variety of conditions that require close contact with the patient [11]. Due to the prolonged incubation of the COVID-19 virus, asymptomatic patients who visit physiotherapy clinics for other conditions' treatment are a significant threat to the physiotherapist. Therefore, physiotherapists should ascertain a high awareness and readiness to deal with all COVID-19 patients with or without symptoms and control and prevent its spread.

The major part of the global management of COVID-19 is the prevention of disease transmission [12]. Knowledge, attitude, and perception of the disease affect a person's behavior towards the disease and influences their adherence to prevention and infection control measures [13]. Therefore, we aimed to explore Jordanian physiotherapists' knowledge and perception of COVID-19, their awareness of protection measures, and their attitude towards preventing infection.

2. Methods

The study design was a cross-sectional online survey. Data were collected using an online survey designed on Google Forms. A face-to-face interview was not possible during data collection because of the locked-down and strict social isolation procedures in Jordan at that time. Data were collected from a sample of licensed physiotherapists currently living in Jordan. Snowball sampling was used to collect as many responses as possible. Database of the Jordanian Physiotherapy Society (JPTS) that contains names and email addresses of 500 Physiotherapists was used to reach Physiotherapists. A link to the survey was sent to participants by email.

Additionally, the therapists' names were searched by Facebook accounts of the JPTS Facebook page, and a message with a survey link was sent to therapists. Also, the link was sent to the contacts on the investigator's Facebook accounts, who were identified as physical therapists working in Jordan. In total, 147 physiotherapists completed the online questionnaire. The number of physiotherapists in Jordan by an unofficial estimation is 2000. Based on the study sample size calculations, the margin of error is 7.8% at the 95% confidence level, which is considered acceptable [14].

The surveys were anonymous to maintain the confidentiality of data and privacy. Ethical approval was obtained from the Institutional Review Board at Jordan University of Science and Technology (# 15/135/2020). The study was conducted in the third week of April 2020. During that time, 400 confirmed COVID-19 cases were reported, and the number of active cases was 155. After weeks of partial curfew, the government allowed some sectors to go gradually back to work, including the Allied health workers, to be prepared to work in total capacity.

Once the participants clicked the survey, an informed consent that contained the description of the

study appeared. Once the participants confirmed their acceptance to participate, the following link guided them to complete the survey. The survey consisted of five parts. The design of the survey was adopted from previous publications and clinical experience [15, 16]. The first part included general information about the physiotherapists, including age, gender, place of residence, the highest degree of qualification, current workplace, work setting, current work status during the pandemic, years of clinical experience, infection control training courses, COVID-19 training, and policies and regulations for infection control at their workplace.

The second part was general knowledge about COVID-19, including symptoms, mode of transmission, high-risk group, and general knowledge about protection and treatment. The total knowledge was calculated based on their answers to these items.

The third part of the survey was infection protection in their workplace. Participants answered questions regarding what they should do to protect themselves from the infection during their work, from taking the appointment to treating the patient.

The fourth part questioned the participants' perception of COVID-19, including how they think it is a serious disease and its prognosis. Also, there were questions about how dangerous the disease on the physiotherapists is and their perception of the importance of infection education.

The last part of the survey questioned participants' attitudes towards COVID-19 in their daily lives and during work. Their attitude includes using the correct measures to protect themselves and their patients from the disease.

The study questionnaire was validated by an experts panel from the scientific committee of the Jordanian Physiotherapy Society. A pilot study was conducted to validate it on ten physiotherapists (excluding them from the main analysis). Pilot study participants found the questionnaire items to be straightforward and easy to understand.

Data were described using percentages, mean, and standard deviation. The total knowledge score was normally distributed. Therefore, the parametric independent sample *t*-test or ANOVA were used to test whether there were significant differences between the means of the physiotherapists' general Knowledge about COVID-19. The statistical level was set at $p < 0.05$. IBM SPSS Statistics 25.0 (IBM Corp., Armonk, NY, USA) was used for all statistical analyses.

3. Results

3.1. Participant characteristics

The mean age of 147 participants was 30.56 (7.70) and ranged between 22 to 62 years. The maximum working experience as a physiotherapist was 40 years, with an average of 7.28 (7.21) years. Approximately half of the sample was females (48.6%). Most of the sample had undergraduate qualifications (78.5%), worked in the private sector (70.1%), and were living in the middle of Jordan (60.4%) (Table 1)

During the COVID-19 pandemic and the country's lockdown, 69.4% of the physical therapists stopped working completely. Meanwhile, 13.9% continued working full-time or part-time, and 16.7% continued working from home. Thus, 48.6% of the physiotherapists never received infection control training during study or postgraduation training. In comparison, 68.8% of the physiotherapists indicated that they had established policies or regulations for infection control in their workplace. Furthermore, during the COVID-19 pandemic, 27.9% of the physiotherapists received training on managing cases with or suspected COVID-19 infection.

3.2. Participants' general knowledge

The mean of the participants' total knowledge score was 17.18 (2.32) out of 26 scores, ranging from 11 to 23. There was a significant difference in the total knowledge score between physiotherapists who received COVID-19 training and those who did not ($t = 2.895$, $p = 0.004$). There was no significant difference in the mean score according to other studied demographics (Table 1).

3.3. Knowledge about symptoms

Most therapists (over 75%) correctly identified symptoms of COVID-19, including dry cough, shortness of breath, fever, headaches, tiredness, sore throat, muscle pain, and could be present with no symptoms (Fig. 1). Approximately half of the participants correctly identified symptoms of diarrhea and nasal congestion. Less than 30% of physiotherapists incorrectly identified symptoms of runny nose, vomiting, and red eyes. Only 4.08% of physiotherapists identified skin rash correctly as a symptom.

3.4. Knowledge of transmission

About 57.1% of the physiotherapists selected the correct answer by identifying respiratory droplets

Table 1
Demographic characteristics and total knowledge score comparison between demographic variables

	<i>n</i> (%)	Total knowledge score	F/t statistics	<i>p</i> -value
Age (yrs.)				
20–26	56 (38.9)	17.05 (2.50)	0.210	0.811
27–33	39 (27.1)	17.15 (2.10)		
≥33	49 (34.0)	17.35 (2.32)		
Clinical experience (yrs.)				
0–4	68 (47.2)	17.01 (2.42)	0.365	0.695
5–9	31 (21.5)	17.42 (1.91)		
≥10	45 (31.3)	17.27 (2.45)		
Gender				
Male	74 (51.4)	17.20 (2.38)	0.117	0.662
Female	70 (48.6)	17.16 (2.28)		
Qualification				
Undergraduate studies	113 (78.5)	17.10 (2.20)	0.820	0.142
Postgraduate studies	31 (21.5)	17.48 (2.76)		
Workplace				
Private sector	101 (70.1)	17.22 (2.24)	0.188	0.904
Ministry of Health	15 (10.4)	16.93 (3.01)		
Royal Medical Services	5 (3.5)	16.60 (1.67)		
University hospitals	23 (16.0)	17.30 (2.42)		
Work setting				
Inpatient	8 (5.6)	17.00 (2.14)	0.318	0.813
Outpatient	61 (42.4)	16.98 (2.20)		
Inpatient and outpatient	63 (43.8)	17.38 (2.40)		
Academic	12 (8.3)	17.25 (2.83)		
Location				
North of Jordan	49 (34.0)	17.22 (2.37)	0.225	0.799
Middle of Jordan	87 (60.4)	17.08 (2.37)		
South of Jordan	8 (5.6)	18.00 (2.56)		
Infection control training				
No education/self-education	70 (48.6)	18.86 (2.58)	0.371	0.691
During study	40 (27.8)	19.28 (2.23)		
Post-graduation training	34 (23.6)	19.03 (2.43)		
COVID-19 training				
Yes	39 (27.9)	18.08 (2.21)	2.895	0.004
No	105 (72.9)	16.85 (2.29)		
Workplace infection policy				
Yes	99 (68.8)	16.76 (2.48)	1.49	0.139
No	45 (31.3)	17.37 (2.23)		
Current work status				
Stopped working completely	100 (69.4)	17.26 (2.39)	0.223	0.800
Work from home	24 (16.7)	16.92 (2.39)		
Work full time/part time	20 (13.9)	17.10 (2.00)		

p-values < 0.05 is in bold.

as the primary mode of transmission, and 83.67% selected the correct answer by identifying older adults are at higher risk for severe illness, and 95.92% selected the correct answer by identifying the individuals with serious medical conditions are at higher risk for severe illness due to COVID-19. However, 48.98% and 21.77% selected incorrect answers by identifying pregnant women and infants, respectively, as high-risk groups. In addition, a limited number of physiotherapists incorrectly selected the incorrect answers by identifying children and adolescents (8.16%) and young adults (4.76%) as high-risk groups.

3.5. Knowledge of protection and treatment

Only 79.9% of the physiotherapists reported that there is currently no effective cure for COVID-19. However, 90.3% reported that early symptomatic treatment could help most patients recover from the infection (Table 2).

Most physiotherapists reported that isolation and social distancing measures are essential for protecting and decreasing disease transmission. The majority also know that others can be infected by a COVID-19, even with no symptoms. Approximately half of the physiotherapists think that

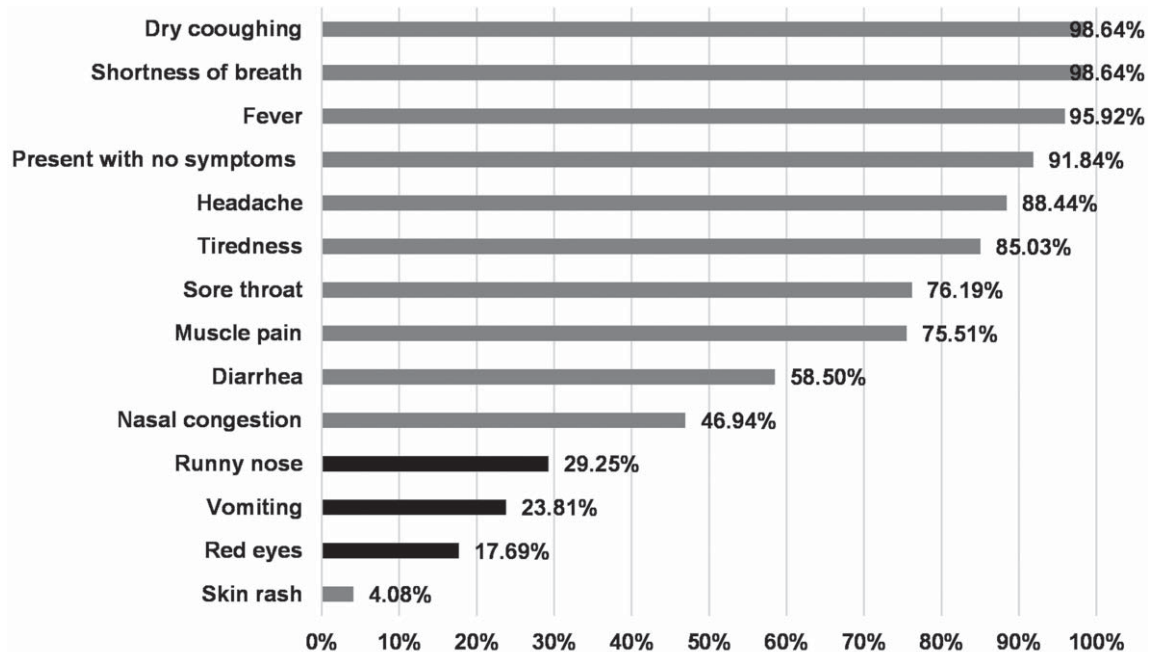


Fig. 1. Knowledge about COVID-19 symptoms.

Table 2

Participants' responses to items related to protection and treatment

Measures of knowledge of protection and treatment	<i>n</i> (%)
There is currently no effective cure for COVID-19	115 (79.9)
Early symptomatic and supportive treatment can help most patients recover from the infection	130 (90.3)
Eating or contacting wild animals would result in COVID-19 infection	68 (47.2)
Persons with COVID-19 cannot infect the virus to others when a fever is not present	7 (4.9)
It is necessary for children and young adults to take measures to prevent COVID-19 infection	135 (93.8)
To prevent COVID-19 infection, individuals should avoid crowded places such as shopping malls and avoid taking public transportation	140 (97.2)
Isolation and treatment of people who are infected with COVID-19 are effective ways to reduce the spread of the virus	142 (98.6)
People who contact someone infected with COVID-19 should be immediately isolated in a proper place	144 (100)

COVID-19 can be transmitted through animals (Table 2).

3.6. *Physiotherapists' awareness of COVID-19 infection protection in the workplace*

Most physiotherapists agreed that enquiring about COVID-19 symptoms, identifying infected or suspected COVID-19, wearing protective equipment for all workplace staff, hand hygiene, disinfecting surfaces and isolating infected or suspected COVID-19 could help in infection protection in the workplace (Table 3).

3.7. *Physiotherapists' perception of COVID-19 pandemic*

About 70.8% of the physiotherapists perceived COVID-19 as a very dangerous disease, and 69.4%

considered physiotherapy a high-risk profession compared to other healthcare professions. However, 41% of physiotherapists perceived COVID-19 as a disease that often resolves with time and does not require special treatment. Approximately all physiotherapists thought it was essential to educate the public in general and physiotherapists about COVID-19 (Table 4).

3.8. *Physiotherapists' attitudes towards the COVID-19 pandemic*

Approximately 85% of physiotherapists avoided going to crowded places and wore a mask when leaving home. Around 75% of physiotherapists avoided working with suspected patients. Almost all physiotherapists reported asking patients about COVID-19 symptoms before the appointment or

Table 3
Physiotherapists' awareness of COVID-19 infection protection in their workplace

	Agree	Neutral	Disagree
Ask about COVID-19 symptoms before an appointment and before each therapy session	140 (97.2)	4 (2.8)	0 (0)
Ask the patient if was in contact with anyone who was infected or was in contact with an infected person with COVID-19	141 (97.9)	3 (2.1)	0 (0)
Ask the patient if was in contact with anyone who traveled to a COVID-19 hotspot country	140 (97.2)	4 (2.8)	0 (0)
Keep up to date on the latest COVID-19 hotspots (cities or local areas where COVID-19 is spreading widely)	140 (97.2)	4 (2.8)	0 (0)
Routinely clean and disinfect surfaces and equipment in contact with known or suspected patients	143 (99.3)	1 (0.7)	0 (0)
Use of personal protective equipment such as disposable gowns, masks, and gloves	143 (99.3)	1 (0.7)	0 (0)
Put facemask on known or suspected patients	139 (96.5)	3 (2.1)	2 (1.4)
Avoid moving and transporting patients out of their area unless necessary	135 (93.8)	9 (6.3)	0 (0)
All health staff members wear protective clothing	134 (93.1)	7 (4.9)	3 (2.1)
Place known or suspected patients in adequately ventilated single rooms	130 (90.3)	11 (7.6)	3 (2.1)
Clean hands by using alcohol-based hand rub or soap and water	143 (99.3)	1 (0.7)	0 (0)

Table 4
Physiotherapists' perception of COVID-19 pandemic

Measures of perception	Response	n (%)
How do you perceive COVID-19?	Very dangerous	102 (70.8)
	Moderately dangerous	40 (27.8)
	Not dangerous	2 (1.4)
COVID-19 often resolves with time and does not require any special treatment	Agree	59 (41.0)
	Disagree	85 (59.0)
It is essential to educate people about COVID-19 to prevent the spread of the disease	Agree	143 (99.3)
	Disagree	1 (0.7)
It is essential to educate physiotherapists about COVID-19	Agree	143 (99.3)
	Disagree	1 (0.7)
In terms of COVID-19, physiotherapy is considered a high-risk profession in comparison to other health care professions	Agree	100 (69.4)
	Disagree	44 (30.6)

Table 5
Physiotherapists' attitudes towards COVID-19 infection protection

Attitude	Agree	Neutral	Disagree
In recent days, I have gone to a crowded place	22 (15.3)	22 (15.3)	100 (69.4)
In recent days, I have worn a mask when leaving home?	122 (84.7)	12 (8.3)	10 (6.9)
I prefer to avoid working with a patient with a suspected case of COVID-19	107 (74.3)	18 (12.5)	19 (13.2)
It is necessary to ask patients to sit far from each other, wear masks while in the waiting room	141 (97.9)	1 (0.7)	2 (1.4)
It is necessary to ask patients to wash their hands before getting in the therapy room to decrease disease transmission	141 (97.9)	1 (0.7)	2 (1.4)
If a patient sneezes or coughs in the clinic, I would refer him to the hospital without treating him	75 (52.1)	41 (28.5)	28 (19.4)
I wear protective equipment during my work all the time	125 (86.8)	15 (10.4)	4 (2.8)
I asked patients about possible COVID-19 symptoms before appointment or management	141 (97.9)	2 (1.4)	1 (0.7)

before management, asking patients to sit far from each other in the waiting room, wear masks, and wash hands before getting to the therapy room. In addition, 86.8% of physiotherapists adhere to protective equipment during work, and around half of the physiotherapists would consider coughing or sneezing as a red flag (Table 5).

4. Discussion

This study used an online questionnaire to assess physiotherapists' COVID-19 knowledge, perception,

and attitude towards preventing infection during the COVID-19 pandemic. The knowledge level of enrolled physiotherapists was acceptable, but needed improvement and update as more facts emerged.

Regarding general knowledge, this study showed that physiotherapists who received COVID-19 training ($n=39$) had significantly higher general knowledge scores than those who did not receive training ($n=105$). These results highlight the importance of exposing physiotherapists to different COVID-19 training courses. There was no significant difference in general knowledge due to age, clinical

experience, qualifications, and work sector, region, and setting. Shrivastava et al. reported no significant difference in COVID-19 knowledge and attitude scores among physiotherapists according to age, gender, education level, and clinical experience [17].

In addition, the study results showed that over 75% of physiotherapists knew the common symptoms of COVID-19, 57% were aware of transmission mode, and more than 83% recognized the high-risk individuals. However, our study results revealed that around 30% of the physiotherapists reported incorrectly that runny nose, vomiting, and red eyes are symptoms related to COVID-19. Therefore, training courses to increase awareness and improve general physiotherapist knowledge related to the spread of COVID-19 and its symptoms are needed. A recent study that included physiotherapists worldwide showed a variation in physiotherapists' COVID-19 knowledge [18]. The study used a different knowledge survey and reported a percentage of correct answers, which varied between 13 and 100%. The study recommended the need for continuous medical education in infection control for physiotherapists.

Although all physiotherapists in our study believe that education about COVID-19 is necessary, only 28% of them received COVID-19 training, and around half reported no education or self-education about infection control in general. A recent study showed that most physiotherapy students had 60% or more correct answers in self-administered COVID-19 knowledge questionnaires. However, these results reflect good knowledge, but there is a need to improve this knowledge to the optimal level [19]. Therefore, physiotherapy students should have a better education in their curriculum, and they need a refreshment following graduation and in their workplace. Most importantly, they need special training about COVID-19, especially while gradually returning to resume their work for those who stopped working. Furthermore, approximately 80% of physiotherapists believe there is no current cure for COVID-19, but other therapists believe there is. This uncertainty about the cure may come from an untrusted source that spread widely and may show that some therapists need to use trusted sources for their knowledge.

Approximately 70% of enrolled physiotherapists in our study stopped working completely. Interestingly, a similar proportion (73.2%) was reported by a study aimed to determine the number of physiotherapists who interrupted their work because of the COVID-19 pandemic [10]. This suspension in providing physiotherapy services returns to physical

distances, isolation, and even curfew and lockdown taken during the COVID-19 pandemic, making it difficult to provide face-to-face services. Therefore, it became necessary to find alternatives to face these challenges and maintain the continuity of rehabilitation services to all patients. As a result, implementing telerehabilitation or digital-physical therapy services offers a practical solution.

The current study showed that physiotherapists' awareness of COVID-19 infection protection in their workplace is generally high. More than 90% of the physiotherapists follow or at least understand the essential elements of protecting their clients and themselves at the workplace. For example, physiotherapists (>90%) agreed to collect information about their patient's current symptoms, travel, and contact history. Furthermore, physiotherapists in the current study are aware of the importance of using personal protective equipment to fight against the spread of COVID-19 and keep themselves and their patients safe. However, our study showed that physiotherapists use protective measures better than dentists in Jordan [16], and other allied health professionals reported in similar studies [17, 20]. A study in Ethiopia showed a level of knowledge similar to our study among healthcare providers; however, the study reported negative attitude and poor practice towards COVID-19 [21]. Therefore, continuing education should target knowledge that improves knowledge, attitude, and good practice towards the pandemic.

Also, this study showed that most physiotherapists have a positive attitude towards COVID-19 infection protection. However, around 75% of our study physiotherapists preferred not to work with patients with COVID-19. This may be related to 70% of physiotherapists perceiving COVID-19 as a very dangerous disease requiring special treatment. Their profession is considered a high-risk profession compared to other health care professions. Besides, being at risk of infection and the possibility of transmitting the infection to their families would increase the stress and anxiety.

Our study results are aligned with previous study results on health professionals in Pakistan, including physiotherapists [22]. The study reported that 75.5% of health professionals have good knowledge about COVID-19, 86.5% had a positive attitude, and 73.4% had good practice towards infection prevention [22]. This is the first study that assesses the knowledge, perception, and attitude towards COVID-19 among physiotherapists in Jordan to the best of our knowledge.

While the COVID-19 pandemic is still a global health issue, there is a need to increase and update the knowledge and awareness of the public in general and among healthcare workers, particularly physiotherapists. In addition, there is a need to continue to monitor physiotherapists' knowledge, awareness, and perception and provide updated continuing education and training. Other disease outbreaks may arise in the future, and physiotherapists need to be prepared to continue their services effectively and safely.

The limitation of our study includes a small sample size in relation to total physiotherapists in Jordan. The generalizability of the findings could also be limited due to the sampling method. Also, the study is a self-reporting measure, and the information presented depends on participants' responses where recall bias and inaccuracy in responses could be possible. Furthermore, the study was conducted online during the lockdown, and a face-to-face survey would be a better option to collect more reliable data. Finally, the study was collected during a specific time set of the pandemic and only measured attributes during that period. The strength points include the diversity of participants' demographic characteristics, e.g., workplace, work settings, and being from different locations in the country, which promote generalizability. Future studies should use a standardized scale to measure physiotherapists' knowledge, perception, and attitude towards COVID-19.

5. Conclusion

Jordanian physiotherapists showed adequate knowledge about COVID-19 with a higher knowledge level reported for those who received COVID-19 training. However, Jordanian physiotherapists have a suboptimal level of awareness and positive attitude towards infection protection that must be enforced through workplace policies and regulations. Therefore, this study suggests a strong need to implement training courses to increase physiotherapists' knowledge about COVID-19 and digital physiotherapy practice for both physiotherapy students and workers.

Ethical approval

Ethical approval was obtained from the Institutional Review Board at Jordan University of Science and Technology (# 15/135/2020).

Informed consent

Informed consent was obtained from all participants.

Conflict of interest

The authors declare no conflict of interest.

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References

- [1] Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med.* 2020;382(8):727.
- [2] Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet.* 2020;395(10223):497.
- [3] Coronavirus Outbreak. COVID-19 Coronavirus Pandemic 2021 [Available from: <https://www.worldometers.info/coronavirus/>].
- [4] Backer JA, Klinkenberg D, Wallinga J. Incubation period of 2019 novel coronavirus (2019-nCoV) infections among travellers from Wuhan, China. *Euro Surveill.* 2020;25(5):2000062.
- [5] Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med.* 2020;382(18):1708.
- [6] World Health Organization. Coronavirus disease 2019 (COVID-19): Situation report, 46 [homepage on the Internet]. Geneva: World Health Organization; 2020 [updated 2020-03-06]. Available from: <https://apps.who.int/iris/handle/10665/331443>.
- [7] World Health Organization. Coronavirus disease 2019 (COVID-19): Situation report, 51 [homepage on the Internet]. Geneva: World Health Organization; 2020 [updated 2020-03-11]. Available from: <https://apps.who.int/iris/handle/10665/331475>.
- [8] Nguyen LH, Drew DA, Graham MS, Joshi AD, Guo C-G, Ma W, et al. Risk of COVID-19 among front-line health-care workers and the general community: A prospective cohort study. *The Lancet Public Health.* 2020;5(9):e475.
- [9] Chang, Xu H, Rebaza A, Sharma L, Dela Cruz CS. Protecting health-care workers from subclinical coronavirus infection. *Lancet Respir Med.* 2020;8(3):e13.

- [10] Minghelli B, Soares A, Guerreiro A, Ribeiro A, Cabrita C, Vitoria C, et al. Physiotherapy services in the face of a pandemic. *Rev Assoc Med Bras* (1992). 2020;66(4):491.
- [11] Righetti RF, Onoue MA, Politi FVA, Teixeira DT, Souza PN, Kondo CS, et al. Physiotherapy care of patients with coronavirus disease 2019 (COVID-19) - A Brazilian experience. *Clinics (Sao Paulo)*. 2020;75:e2017.
- [12] Guo Y-R, Cao Q-D, Hong Z-S, Tan Y-Y, Chen S-D, Jin H-J, et al. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak—an update on the status. 2020;7(1):1.
- [13] Ajilore K, Atakiti I, Onyenkeya K. College students' knowledge, attitudes and adherence to public service announcements on Ebola in Nigeria: Suggestions for improving future Ebola prevention education programmes. *Health Education Journal*. 2017;76(6):648.
- [14] Dillman DA, Smyth JD, Christian LM. *Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method*. 4th ed: Wiley; 2014.
- [15] Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: A quick online cross-sectional survey. *Int J Biol Sci*. 2020;16(10):1745.
- [16] Khader Y, AlNsour M, Al-Batayneh OB, Saadeh R, Bashier H, Alfaqih M, et al. Dentists' awareness, perception, and attitude regarding COVID-19 and infection control: Cross-sectional study among Jordanian dentists. *JMIR Public Health and Surveillance*. 2020;6(2):e18798.
- [17] Shrivastava D, Alduraywish AA, Srivastava KC, Alsharari AF, Al-Johani K, Sghaireen MG, et al. Assessment of knowledge and attitude of allied healthcare professionals about COVID-19 across Saudi Arabia. *Work*. 2021; 68(2):305.
- [18] Al Attar WSA, Husain MA. Physiotherapists' knowledge and the implementation of COVID-19 infection prevention and control measures. *Work*. 2021;69(2):351.
- [19] Jangra MK, Saxena A, Anurag P. Knowledge and awareness among physiotherapy students to combat COVID-19: A questionnaire based study. *Clin Epidemiol Glob Health*. 2021;11:100748.
- [20] Banaee S, Claiborne DM, Akpinar-Elci M. Occupational health practices among dental care professionals before and during the COVID-19 pandemic. *Work*. 2021;68(4):993.
- [21] Bitew G, Sharew M, Belsti Y. Factors associated with knowledge, attitude, and practice of COVID-19 among health care professional's working in South Wollo Zone Hospitals, Northeast Ethiopia. *SAGE Open Medicine*. 2021; 9:20503121211025147.
- [22] Salman M, Mustafa Z, Asif N, Zaidi HA, Shehzadi N, Khan TM, et al. Knowledge, attitude and preventive practices related to COVID-19 among health professionals of Punjab province of Pakistan. *J Infect Dev Ctries*. 2020;14(7):707.