




PANDEMİ SEYRİNİN FİZYOTERAPİSTLERİN COVID-19 HASTALARINA KARŞI TUTUMLARINA ETKİSİ: 2020 VE 2021 MEZUNLARININ KARŞILAŞTIRILMASI

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ÖZ

COVID-19 pandemi seyri, virüs hakkında artan bilgi ve deneyim ve yaygın aşılama sayesinde başlangıcından bu yana çok değişti. Tüm bu değişikliklerin fizyoterapistlerin COVID-19 hastalarına yönelik tutumlarını etkileyip etkilemediği bilinmemektedir. Bu çalışma, 2021 yılında mezun olan fizyoterapistlerin yaklaşımını değerlendirmeyi ve sonuçlarını önceki çalışmamız için elde edilen 2020 yılı mezun fizyoterapistlerin sonuçları ile karşılaştırmayı amaçlamaktadır. Çalışmaya x Üniversitesi'nden 2021 yılında mezun olan fizyoterapistler davet edildi. Katılımcılara Google Formlar aracılığıyla COVID-19'a yaklaşımlarını değerlendiren 7 maddelik bir anket gönderildi. 2021 yılında mezun olan fizyoterapistlerin her bir maddeye verdiği yanıtların (%) dağılımı, önceki çalışmamızda kaydedilen 2020 mezunlarından alınan yanıtların dağılımı ile karşılaştırıldı. Analize 2020 mezunlarından 56 ve 2021'den 65 fizyoterapist dahil edildi. Gruplar yaş ve cinsiyet açısından benzerdi ($p>0,05$). Herhangi bir maddeye verilen yanıtların dağılım oranları iki farklı mezuniyet yılları arasında anlamlı farklılık göstermedi ($p>0,05$). Bu çalışma, pandemi sürecinde iki yıl üst üste mezun olan fizyoterapistlerin COVID-19'a yaklaşımlarında anlamlı bir fark olmadığını göstermiştir. Hastalıkla ilgili bilgi, deneyim ve korunma yöntemlerindeki çarpıcı artış, fizyoterapistlerin tutumlarında bir anlam ifade etmemiştir. Virüsün belirsiz yeni varyantların, çoklu sistemik tutulumun ve uzun süreli komplikasyonların bu sonucu etkilemiş olabileceği düşünülmektedir.

Anahtar Kelimeler: covid-19, pandemi, fizyoterapist, koronavirus

THE EFFECT OF PANDEMIC COURSE ON PHYSIOTHERAPISTS' ATTITUDES TOWARDS PATIENTS WITH COVID-19: COMPARISON OF 2020 AND 2021 GRADUATES

ABSTRACT

COVID-19 pandemic course has changed a lot since its beginning thanks to the increased knowledge and experience about the virus and widespread vaccination. It is unknown whether all these changes affect physiotherapists' attitudes toward patients with COVID-19. This study aims to evaluate the approach of physiotherapists who graduated in 2021 and compare their results with the results of physiotherapists who graduated in 2020 that have been obtained for our previous study. Physiotherapists who graduated from x University in 2021 were invited to the study. Participants were sent a 7-item questionnaire assessing their approach to COVID-19 via Google Forms. The distribution of responses (%) of physiotherapists who graduated in 2021 to each item was compared with those from 2020 graduates recorded in our previous study. In the research conducted in 2020, 56 graduate physiotherapists answered the questionnaire. Sixty-five of the physiotherapists who graduated in 2021 answered the questionnaire. The groups were similar in terms of age and gender ($p>0,05$). There was no significant difference between the two graduation years in terms of the distribution of responses given to each item ($p>0,05$). This study showed no significant difference in the approaches of physiotherapists who graduated two years in a row during the pandemic process against COVID-19. The dramatic increase in knowledge, experience, and prevention methods about the disease did not make any sense in the attitudes of physiotherapists. Uncertain new variants of the virus, multiple systemic involvement, and long-term complications are thought to have affected this outcome.

Keywords: covid-19, pandemic, physiotherapist, coronavirus

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INTRODUCTION

The new type of coronavirus disease (COVID-19) has rapidly turned into a pandemic since the beginning of 2020 and has adversely affected many areas, especially health and education. Due to the new variants of the virus emerging with mutations, the course of the pandemic has changed a lot within the previous two years. As long as the pandemic continues, it is clear that more and more people will be affected by the COVID-19 disease and therefore the burden it brings to the health system will continue (1).

Healthcare workers are the group most affected and most exposed to the virus in the COVID-19 pandemic (2,3). In studies conducted in previous pandemics such as SARS and MERS, it has been observed that the stress, fear, and anxiety experienced by healthcare workers at work were high. In COVID-19 pandemic, it has been shown that elevated levels of anxiety or stress are seen throughout the public, and infectious diseases increase the level of hopelessness (4-7). It has been stated that this effect is more pronounced in healthcare workers. It is clear that the elevated risk of exposure of healthcare workers to the virus has an effect on this result. Similarly, this risk is high in healthcare workers who have completed their education and have just started their profession during the pandemic (4,8). For this reason, in our previous study, we evaluated the attitudes of physiotherapists who graduated in 2020 towards COVID-19 (+) patients, considering that the risk of contact with patients and the virus in this population is high when they are employed. We showed that they feel worried and unconfident in approaching those patients and linked this result to the fact that they graduated under extraordinary conditions in

the first months of the pandemic (June 2020) (9).

Today, considering that the pandemic has been going on for more than two years, we wonder whether such an anxious attitude in the new graduates continues. Although the pandemic continues with new variants of the virus, it is also clear that the knowledge and experience of healthcare professionals and researchers about the virus have increased significantly during this period. An influx of studies has been conducted, and the knowledge about the virus and the disease has increased dramatically. It is also clear that the physiotherapy and rehabilitation syllabus now includes lectures about the disease in the universities. In addition, vaccination has also been applied in our country since the beginning of 2021 at the same time with the rest of the world (10).

As the pandemic continues, the increase in knowledge and experience about the virus has increased the knowledge of healthcare professionals about it. In addition, it is known that the spread of the virus decreased with the spread of vaccination (11-14). It is thought that all these developments within the previous two years have changed the approach of new graduated physiotherapists to patients with COVID-19. Therefore, this study aims to evaluate the approach of physiotherapists who graduated in 2021 to patients with COVID-19 and compare their results with the results of the physiotherapists who graduated in 2020 that were obtained for our previous study.

MATERIALS AND METHODS

Physiotherapists who graduated from x University Faculty of Health Sciences Physiotherapy and Rehabilitation Department in the spring semester of 2021 academic year were included in the study.

Participants who are currently employed were excluded from the analysis.

The study design was approved by Gazi University Ethics Committee (Date: 2021, No: 1007). All procedures were carried out in accordance with ethical rules and the principles of the Declaration of Helsinki. Since this study was conducted online, an informed consent statement regarding voluntary participation was included at the top of the form. The participant could only proceed to the questionnaire after confirming to participate. In addition, among the participants, those who are currently working in a health institution were not included in the study, since it is thought that having knowledge about the virus and patients with COVID-19 may affect the results. The participant was asked whether he/she is employed at the time of the study, before proceeding to the questions.

Physiotherapists who graduated in the spring term of 2021 were reached via e-mail and message groups. Participants were sent a link and asked to access and complete the questionnaire via this link. This link provides access to the online version of the questionnaire on the Google Forms application. The questionnaire assesses their level of anxiety in approaching patients with COVID-19. The questionnaire consists of a total of seven statements about the feelings/thoughts of the participants who have to work with patients with COVID-19. The statements have no right or wrong solutions. Participants are asked to mark how they felt after reading the statements and the answer that best expresses them as "never", "a little", "a lot", and "totally". This questionnaire was developed by researchers and one that was used in their previous study (9). (Appendix 1)

In that previous study, the researchers evaluated the anxiety levels of physiotherapists who graduated from various universities in Turkey in 2020 in approaching patients with COVID-19. Similar to the current study, they conducted the survey online via The Google Forms application. Google Forms shows the survey results to the user ready for analysis. Therefore, the results of the questionnaire could be accessed as the frequency (%) of the answers given to every seven items. The data of the previous study, in other words, the data of physiotherapists who graduated in 2020 were reviewed and only the results of x University graduates were recorded among these data. Therefore, the results of the participants from 2020 were compared with the results of participants from 2021 from the same department. Since the same questionnaire was used in both studies, it was possible to compare the results of physiotherapists who graduated from x University in two consecutive years.

Statistical Analysis: SPSS® 21.0 (IBM®, Chicago, IL, USA) version was used in the statistical analysis of the data. Data were expressed as percentages (%) and numbers (n) for descriptive variables. The normal distribution of the data was evaluated. Parametric variables with normal distribution were expressed as mean \pm standard deviation (SD), and non-parametric variables without normal distribution were expressed as median and interquartile range (IQR). Since the mean age of the groups did not show a normal distribution, the Mann-Whitney U test was used for comparison.

The gender distribution of the two groups was given as a percentage (%) and the Chi-square test, which is one of the cross-table statistical methods, was used in the comparison between the groups.

Responses to the questionnaire statements were calculated as percentages (%) for each item separately. The frequency of the answers given by the physiotherapists who graduated in 2020 and 2021 to each item was recorded as % and the Chi-Square method was used. The analysis was made by comparing the proportions of each answer given to each question over the years. In this analysis, the p-value was determined as follows: In cases where the minimum expected value (minimum expected count) is >2 and less than %20 of the expected value is <5 , the p-value of the Pearson Chi-Square test is taken into account. In cases where the minimum expected value (minimum expected count) was <2 or more than %20 of the expected value was <5 , the p-value of the Fisher Exact test was taken into account. $P < 0,05$ was considered for the two-way significance level for all the analysis results above.

RESULTS

One hundred and eighteen physiotherapists who graduated in 2021 were invited to the study, and sixty-seven of them participated in the study. Two physiotherapists were excluded from the analysis because they were employed at the time of the study. The results of a total of sixty-five physiotherapists from 2021 were analyzed. Females were %83.1 of the participants while %16.9 were males. In the previous study, it was recorded that fifty-six participants were from graduated from x University in 2020. Females were %80.4 of this group and %19.6 were males. Two groups were compared in terms of gender distribution and found to be similar ($p=0,699$). (Table 1) When they were compared in terms of mean age, they were found to be similar ($p=0,154$).

Table 1. Gender distribution and mean age of 2020 and 2021 graduates

	2020 graduates (n: 56)	2021 graduates (n: 65)	p
Age Mean \pm SD	22.68 \pm 1.48	23.1 \pm 2.36	.699
Gender (n) (%)			
Female	45 (%80.4)	54 (%83.1)	.154
Male	11 (%19.6)	11 (%16.9)	

SD: Standart deviation, n: number of participants

The response rates (%) of the physiotherapists in two different years were compared separately for every seven items. This analysis revealed no significant difference between the responses of two graduation years. (For each statement in the questionnaire, $p=0,667$, $p=0,311$, $p=0,926$, $p=0,684$, $p=0,370$, $p=0,630$, $p=0,214$ consecutively) (Table 2). Since there was no significant difference between the response rates, pairwise comparisons were not conducted.

DISCUSSION

The course of the COVID-19 pandemic has changed much by time as the knowledge about its treatment increased and vaccination was developed. In this study, we evaluated the effects of those changes on the attitudes of 2021 graduate physiotherapists towards COVID-19 disease. Additionally, we compared their results with those who graduated in 2020. Our results showed that there is no significant difference between the two groups. 2021 graduates treat COVID-19 patients with the same level of concern as 2020 graduates.

The effectiveness of physiotherapy interventions against COVID-19 and its complications indicate that new graduate physiotherapists will encounter these patients when they are employed.

Table 2. Survey results of 2020 and 2021 graduates

Statements	Graduate Years	Never (%)	A lot (%)	A little (%)	Totally (%)	P
1. "I'm afraid of treating the patients with COVID-19"	2020	%7	%44.6	%37.5	%10.7	.667
	2021	%4.6	%41.5	%35.4	%18.5	
2. "I don't know how to approach the patients with COVID-19"	2020	%12.5	%30.4	%42.9	%14.3	.311
	2021	%6.2	%44.6	%40	%9.2	
3. "Since I don't have enough information about COVID-19, I avoid treating a patient with COVID-19"	2020	%17.9	%48.2	%25	%9	.926
	2021	%13.8	%50.8	%24.6	%10.8	
4. "I feel uncomfortable while treating a patient with COVID-19"	2020	%5.4	%42.9	%28.6	%23.2	.684
	2021	%3.1	%36.9	%27.7	%32.3	
5. "I have confidence in treating a COVID-19 patient"	2020	%8.9	%42.9	%37.5	%10.7	.370
	2021	%20	%41.5	%30.8	%7.7	
6. "I have enough information about the treatment of the patients with COVID-19"	2020	%10.7	%48.2	%35.7	%5.4	.630
	2021	%4.65	%49.2	%41.5	%4.65	
7. "I'm worried to cause any complications while treating patients with COVID-19."	2020	%0	%46.4	%39.3	%14.3	.214
	2021	%6.2	%33.8	%43.1	%16.9	

For this reason, it is important to evaluate the approach of young physiotherapists toward these patients for further planning of prevention and educational steps. According to the results of this study, physiotherapists who graduated in 2021 have concerns about this disease, despite the increase in knowledge about the disease and widespread vaccination. Several factors are

thought to be effective in this result. First of all, several different variants of the virus have emerged since the beginning of 2021. It is thought that the anxiety, which had started to decrease, increased again, especially with the extremely high spread rate of the Omicron variant compared to the others (15). It is clear that the inconsistency of the course of the pandemic and the irregular fluctuations in the number of cases resulted in this concern continuing with a special emphasis on healthcare workers. Additionally, the number of unvaccinated is also undeniable.

According to the results of our study, it has been observed that most of the new graduated physiotherapists approach patients with COVID-19 with hesitation and anxiety. They also reported that they do not feel confident about their knowledge regarding the treatment. This result was found to be similar in participants of both graduation years. Noticing that the virus leads to complicated and prolonged clinical problems by time may also have affected that result. During the pandemic, it has been realized that the disease, which was previously thought to only affect the pulmonary system, results in problems in all body systems, even vital organs like the heart (16-18). For this reason, we think that the complex clinical problems caused by the virus cause the continued anxious attitude in physiotherapists.

Previously, uncertainty about the virus and the uncertainty of the disease were effective in the anxiety of 2020 graduates. 2021 graduates were also worried, but the reasons for concern were different. The last two semesters of physiotherapy and rehabilitation education include practical and applied courses. However, due to pandemic restrictions, those lessons could not be held face-to-face in the 2020-2021

academic year. Therefore, it is thought that online education made them to feel unconfident regarding their professional skills and this issue contributes to their anxiety. Parallel to our interpretation, both under- and postgraduate physiotherapy students were shown to experience difficulties in online education, especially in communication with the lecturers (19). In another study evaluating the attitudes of physiotherapy students towards distance education, it was reported that it is necessary to find alternative methods for applied courses. In that study, distance education efficiency was found to be low in %87.5 of undergraduate students in applied lessons and %78.5 in theoretical lessons. More than %90 of the students stated that they preferred in-person education (20).

In our study, there was no statistically significant difference between the answers given to the questions. However, there is a remarkable point in the answers given to the last question, which evaluates whether they have sufficient information about the complications that may occur during the treatment of COVID-19. While there are no physiotherapists among 2020 graduates who "fully" agree that they are distressed about these complications, %17 of the 2021 graduates felt fully distressed (7. statement in Table 2). Although it did not create a statistical difference in the distribution of the answers, this result is considered to be important. Because while we were unaware of the complications of the COVID-19 disease in 2020, studies showed that the disease has long-term complications such as prolonged COVID (long-COVID) and post-COVID as the pandemic continued (21-23). Complications caused by new variants of the disease and the emergence of long-term effects may have increased the feeling of confidence in physiotherapists.

There is also research examining the attitudes of other healthcare professionals towards COVID-19. These studies are related to nurses who have many practical application courses. Like the physiotherapists, the nurses who graduated from the pandemic could not practice enough during the process. For this reason, studies have been carried out with the thought that they will approach COVID-19 patients with anxiety. Similar to our study, fear and avoidance attitudes were reported in most of the studies conducted with newly graduated nurses (29,30). In addition, in one of these studies, it is thought that it would be safe for newly graduated nurses to receive both educational and psychosocial support (25).

Within the scope of our study, we examined the attitudes of physiotherapists who graduated during the pandemic period towards COVID-19 patients. We compared the difference between 2020 and 2021 graduates. In the literature, there are also studies investigating the attitudes and knowledge of physiotherapists who are actively working during the pandemic period. A study conducted in Saudi Arabia showed that physiotherapists exhibit good knowledge, attitude and practice against COVID-19 (26). In a study conducted in Poland, it was reported that physiotherapists working in clinical departments experienced occupational and emotional burnout during the COVID-19 pandemic. The result of the study states that this burnout increased significantly during the COVID-19 outbreak compared to the beginning of the pandemic (27). Most of the studies investigating the attitudes and knowledge of physiotherapists in the pandemic process show that they exhibit insufficient knowledge, perception and attitude towards COVID-19. It is also

among the research results that physiotherapists need training courses to increase their knowledge about COVID-19 and improve their perceptions and attitudes towards COVID-19 (28).

Participants in the study were physiotherapists who completed the same undergraduate curriculum and were evaluated in the same time frame. This is the period when the participants graduate and have not started work yet. Despite this strength, the fact that our study was conducted on only one university graduate may limit the interpretation of the results. We also did not ask physiotherapists if they had had COVID-19 before and if they had a family member who died from COVID-19. This may affect the results. The attitude of someone who has a relative who died of COVID-19 in their family may be different. These people may be more withdrawn and restless towards COVID-19 patients. This is a limitation of our study.

We did not include the physiotherapists working in the health institution in our study, thinking that they would be experienced and knowledgeable in approaching the COVID-19 patient. The attitudes of working and non-working patients towards this patient group may be different. In future studies, the difference between the attitudes of working and not working physiotherapists towards patients can be evaluated.

CONCLUSION

In conclusion, this study showed that physiotherapists who graduated in two consecutive years during the pandemic course did not differ significantly in their anxious and uncomfortable approach to patients with COVID-19. It has been observed that the dramatic increase in knowledge, experience and prevention methods about the disease does not make a

significant difference in the concerns of new graduate physiotherapists. It is thought that emerging new variants of the virus, multi-systemic involvement, and prolonged complications are effective in this result.

Highlights

- Post-COVID-19 syndrome causes anxiety in individuals.
- Due to the changing variants of the virus, the anxious attitude towards patients and the disease continues.

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REFERENCES

1. WHO Coronavirus (COVID-19) Dashboard. Available from: <https://covid19.who.int/>
2. Balcı A. COVID-19 Özeline Salgınların Eğitime Etkisi. Uluslararası Liderlik Çalışmaları Dergisi. 2020;3(3):75-85.

3. T.C. Sağlık Bakanlığı COVID-19 Bilgilendirme Platformu. Available from: <https://covid19.saglik.gov.tr/TR-66300/covid-19-nedir-.html/>
4. Akkuş MS. Koronavirüs ve COVID-19. Aksaray University Journal of Medical Sciences. 2020;1(2):8-12.
5. Şahin M. Korku, Kaygı ve Kaygı (Anksiyete) Bozuklukları. Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi. 2009;6(10):117-35.
6. Güloğlu B, Yılmaz Z, İstemihan FY, et al. COVID-19 Pandemisi Sürecinde Bireylerdeki Anksiyete ve Umutsuzluk Düzeylerinin İncelenmesi. Kriz Dergisi. 2020;28(3):135-50.
7. Söğütü Y, Söğütü L, Göktaş SŞ. Relationship of COVID-19 Pandemic with Anxiety, Anger, Sleep and Emotion Regulation in Healthcare Professionals. Journal Contemporary Medicine. 2021;11(1):41-9.
8. Arpacıoğlu MS, Baltacı Z, Ünübol B. COVID-19 Pandemisinde Sağlık Çalışanlarında Tükenmişlik, Covid Korkusu, Depresyon, Mesleki Doyum Düzeyleri ve İlişkili Faktörler. Çukurova Medical Journal. 2021;46(1):88-100.
9. Tuna Z, Farzinmoghaddam F. The Attitudes of New Graduate Physiotherapists Towards the Patients with COVID-19. Archives of Health Science and Research. 2022; 9:38-42.
10. T.C. Sağlık Bakanlığı COVID-19 Aşısı Bilgilendirme Platformu. Available from: <https://covid19asi.saglik.gov.tr>
11. Shah ASV, Gribben C, Bishop J, et al. Effect of Vaccination on Transmission of SARS-CoV-2. The New England Journal of Medicine. 2021;385(8) 1718-20.
12. Baden LR, El Sahly HM, Essink B, et al. COVE Study Group. Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine. The New England Journal of Medicine. 2021;(384):403-16.
13. Polack FP, Thomas SJ, Kitchin N, et al. Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine, The New England Journal of Medicine. 2020;383(27):2603-15.
14. Thomas SJ, Moreira ED, Kitchin N, et al. Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine through 6 Months. The New England Journal of Medicine. 2021;(385):1761-73.
15. Mohsin M, Sultan M. Omicron. SARS-CoV-2 Variant of Concern: A Review on Its Transmissibility, Immune Evasion, Reinfection and Severity. Medicine (Baltimore). 2022;101(19):29165.
16. Kostopanagiotou K, Schuurmans M, Incia I, et al. COVID-19 Related End Stage Lung Disease: Two Distinct Phenotypes. Annals of Medicine. 2022;54(1): 588-90.
17. Okan S, Okan F, Yücesoy D. Evaluation of Pulmonary Function and Exercise Capacity After COVID-19 Pneumonia. Heart & Lung. 2022; 54:1-6.
18. Fox SE, Heide VRS. Role of Cardiac Inflammation in the Pathology of COVID-19; Relationship to The Current Definition of Myocarditis. Cardiovascular Pathology. 2022; 59:107429.
19. Keskin M, Özer KD. COVID-19 Sürecinde Öğrencilerin Web Tabanlı Uzaktan Eğitime Yönelik Geri Bildirimlerinin Değerlendirilmesi. İzmir Katip Çelebi Üniversitesi Sağlık Bilimleri Fakültesi Dergisi, 2020;5(2):59-67.
20. Yılmaz NA. Yükseköğretim Kurumlarında COVID-19 Pandemisi Sürecinde Uygulanan Uzaktan Eğitim Durumu Hakkında Öğrencilerin Tutumlarının Araştırılması: Fizyoterapi ve Rehabilitasyon Bölümü Örneği. Necmettin Erbakan Üniversitesi Sağlık Bilimleri Fakültesi Dergisi. 2020;3(1):15-20.
21. Zapatero CD, Chalon P, Kohn L, et al. Pathophysiology and Mechanism of Long COVID: A Comprehensive Review. Annals of Medicine. 2022;54(1):1473-87.
22. Zinounea L, Bourouisa I, Assamtia M. et al. Concomitant acute myopericarditis and multiple systemic arteriovenous thrombosis as a rare manifestation of post-COVID-19 syndrome. Radiology Case Report. 2022;17(8):2737-41.
23. Raveendran AV, Jayadevan R, Sashidharan S. Long COVID: An Overview, Diabetes & Metabolic Syndrome. Clinical Research & Reviews. 2021;15(3):869-75.
24. Powers K, Pate K, Montegrigo J, Pagel J. Faculty perceptions of the impact of the COVID-19 pandemic on new graduate nurses' transition to practice: A qualitative study. J Prof Nurs. 2022 Nov-Dec;43:33-41
25. Crismon D, Mansfield KJ, Hiatt SO, Christensen SS, Cloyes KG. COVID-19 pandemic impact on experiences and perceptions of nurse graduates. J Prof Nurs. 2021 Sep-Oct;37(5):857-65.
26. Alshahrani A, Gautam AP, Asiri F, Ahmad I, Alshahrani MS, Reddy RS, Alharbi MD, Alkathami K, Alzahrani H, Alshehri YS, et al. Knowledge, Attitude, and Practice among Physical Therapists toward COVID-19 in the Kingdom of Saudi Arabia—A Cross-Sectional Study. Healthcare. 2022; 10(1):105.
27. Kanaan, S. F., Yabroudi, M. A., Khader, Y., Aburub, A. S., Khraise, H., & Al-Omari, A. A. (2022). Physiotherapists' knowledge, perception, and attitude regarding COVID-19 and infection control: An online cross-sectional survey in Jordan. Work, 72(3), 797-805.
28. Pniak, B., Leszczak, J., Adamczyk, M., Rusek, W., Matłoz, P., & Guzik, A. (2021). Occupational burnout among active physiotherapists working in clinical hospitals during the COVID-19 pandemic in south-eastern Poland. Work, 68(2), 285-295.