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EXPERIENCES OF PHYSICAL THERAPISTS WORKING IN NEUROLOGICAL REHABILITATION DURING COVID-19

ORIGINAL ARTICLE

ABSTRACT

Purpose: The study aimed to identify the experiences of physical therapists working in neurological rehabilitation during the COVID-19 process.

Methods: The draft survey was created by two physical therapists working in the field of neurological rehabilitation, and Lawshe method was used to assess its content validity. The survey included demographic information and questions regarding clinical practice, and psychological states. The final survey was administered via Google forms. Only physical therapists working in the field of neurology were involved in the study.

Results: The content validity ratio of the draft survey was found to be 0.745. According to this survey, the number of patients per week decreased significantly during the first 3 months and normalization process ($p<0.01$). Usage of tele-health applications significantly increased during the pandemic/normalization period ($p<0.01$). The mean score of physical therapists' anxiety about their family's health was 7.72±2.39 (min=0, max=10). The study showed that working conditions changed, number of patients decreased ($p<0.01$), some precautions were taken, and the use of tele-health applications increased in clinics during pandemic period ($p<0.01$).

Conclusion: The COVID-19 pandemic has had a significant impact on neurological rehabilitation services according to this study. As a result, methods to provide the most appropriate treatment without endangering patients and physiotherapists and policies to be followed in extraordinary situations need to be developed.

Keywords: COVID-19, Experience, Neurorehabilitation, Pandemic, Physical Therapy

NÖROLOJİK REHABİLİTASYON ALANINDA ÇALIŞAN FİZYOTERAPİSTLERİN COVİD-19 SÜRECİNDEKİ DENEYİMLERİ

ARAŞTIRMA MAKALESİ

ÖZ

Amaç: Bu çalışma, nörolojik rehabilitasyon alanında çalışan fizyoterapistlerin COVID-19 sürecindeki deneyimlerini belirlemek amacıyla yapılmıştır.

Yöntemler: Taslak anket nörolojik rehabilitasyon alanında çalışan iki fizyoterapist tarafından oluşturuldu ve bu oluşturulan taslak anketin kapsam geçerliliğini değerlendirmek için Lawshe yöntemi kullanıldı. Anket, demografik bilgi, klinik uygulama ve psikolojik durumları talep eden soruları içeriyordu. Son olarak oluşturulan anket Google formlar aracılığıyla uygulandı. Çalışmaya sadece nöroloji alanında çalışan fizyoterapistler dahil edildi.

Sonuç: Taslak anketin kapsam geçerlilik oranı 0,745 olarak bulundu. Anket sonuçlarına göre haftalık hasta sayısı ilk 3 ayda ve normalleşme sürecinde istatistiksel olarak anlamlı şekilde azaldı ($p<0,01$). Pandemi/normalleşme döneminde tele-sağlık uygulamalarının kullanımı önemli ölçüde arttı ($p<0,01$). Ailelerinin sağlığı ile ilgili ortalama kaygı puanı 7,72±2,39 (min=0, maks=10) idi. Çalışma, pandemi döneminde çalışma koşullarının değiştiğini, hasta sayısının azaldığını, bazı önlemlerin alındığını ve tele-sağlık uygulamalarının kullanımının arttığını gösterdi.

Tartışma: Bu çalışmaya göre COVID-19 pandemisinin nörolojik rehabilitasyon hizmetleri üzerinde önemli bir etkisi olmuştur. Sonuç olarak, hastaları ve fizyoterapistleri tehlikeye atmadan en doğru tedaviyi sunma yöntemlerinin ve olağan dışı durumlarda izlenecek politikaların geliştirilmesi gerekmektedir.

Anahtar Kelimeler: COVID-19, Deneyim, Nörorehabilitasyon, Pandemi, Fizyoterapi

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INTRODUCTION

The novel coronavirus disease (COVID-19) is a contagious disease that causes severe acute respiratory syndrome (1). The World Health Organization (WHO) officially declared the global COVID-19 outbreak a pandemic on March 11, 2020 due to the virus's frightening rate of spread and the severity of its symptoms (2). Various precautions and restrictions have been implemented around the world to minimize the risk of transmission of virus, which is transmitted through close contact and droplets (3).

The COVID-19 pandemic has affected many areas. The healthcare system is one of the fields most affected by the COVID-19 pandemic. Hospital capacities and service delivery have been inadequate with the increase in the number of infected people (4). Therefore, the delivery of healthcare to patients with non-emergency problems has been minimized to reduce the overburden on healthcare institutions and the workload of health personnel (5).

Physical therapists are among the healthcare professionals affected by the COVID-19 pandemic. They perform different treatment methods including respiratory physical therapy, passive and active mobilization, strengthening training, airway clearance technique training, and positioning and exercise training in the course of various severity levels of the disease (6, 7). In addition, physical therapists continue to work in clinics on site and/or remotely during the pandemic. There have been changes in both the professional and personal lives of physical therapists with the COVID-19 pandemic.

Neurological rehabilitation is an active, dynamic process designed to help individuals with neurological diseases acquire knowledge and skills that will minimize their physical, physiological, and social limitations. Physical therapists evaluate and record the patient's current condition in terms of body structure and function, activity, and participation and determine rehabilitation goals within the framework of personal and environmental factors (8). Positive effects on recovery have been obtained with effective rehabilitation in the early stages of neurological disease (9). Early rehabilitation is especially important because it can minimize the patient's severity of disability (10-12).

In addition to the early initiation of neurological rehabilitation, continuity, follow-up, and effectiveness are very important (10, 11, 13). Physical therapists working in the field of neurological rehabilitation continued to work actively during the COVID-19 pandemic. Therefore, they are among the groups affected by the changes caused by the pandemic conditions (14, 15), and also affected by the changes in the health system during the pandemic. Therefore, the aim of this study was to determine the experiences of physical therapists working in the field of neurological rehabilitation during the COVID-19 process, and to compare their clinical practice and psychological state in the pandemic period with the pre-pandemic period. The hypothesis of the study is that the clinical practice and psychological state of physical therapists working in the field of neurological rehabilitation are changed during the COVID-19 compared to pre-pandemic period.

METHODS

Design

This online cross-sectional survey study was conducted at Hacettepe University, Faculty of Physical Therapy and Rehabilitation between January and May 2021. The Non-interventional Clinical Research Ethics Board was approved the study protocol (Approval Number = GO21/28).

The study has two stages including designing a survey and online application of the survey to the physical therapists working in the neurological rehabilitation.

Participants

Responses from physical therapists who were (i) working in neurological rehabilitation services at least one year, (ii) having worked in the pre-pandemic period, (iii) working during the pandemic period and (iv) consenting to participate in the study were included.

A post-hoc power analysis performed by using the G*Power Version 3.1.9.6. It was found that the sample size of 107 physical therapists has 99% statistical power with α=0.05 and 0.502 effect size according to the change in the number of patients among the pandemic period, in the first three months of pandemic period and during the pandemic normalization periods.

Outcome measures

An initial draft survey was created by two physical therapists working in the field of neurological rehabilitation services based on literature review and their clinical experiences. The survey had three main domains consisting of the demographic information of physical therapists (7 questions), information about clinical practice (42 questions), and information about the psychological state of physical therapists (6 questions).

An expert-panel approach was used to determine the content validity of the draft survey. Eleven physical therapists with expertise in neurological rehabilitation that were blind to the survey participated as expert panel members. First, the aim of the study was explained, and the survey was introduced to them. Then, each expert was asked to score each question individually as 'Appropriate', 'Appropriate but should be corrected' or 'Should be removed'. The Lawshe method was used to assess the content validity of this draft survey (16). The content validity ratio was calculated according to the formula below. The content validity ratio was taken as a minimum of 0.636 for 11 experts at the p=0.05 significance level (17).

CVR = [NA / (N/2)] - 1

CVR = Content validity ratio

NA = Number of experts who scored as 'Appropriate'

N = Total number of experts

The final survey with an invitation text including the purpose of the study and describing the required participant characteristics was sent electronically to the physical therapists via the e-mail network of the Turkish Physiotherapy Association. The informed consent was provided when the physical therapists clicked the start button of the survey.

The survey included questions including (i) demographic information, (ii) clinical practice and (iii) psychological states of physical therapists. It took to complete the form approximately 15 minutes. The pre-pandemic period in the questions describes the period 'before 11 March 2020', the pandemic period '11 March - 1 June 2020' and the normalization period 'from 1 June 2020 to the present'.

In the demographic information part, there were 5 questions including the type and place of institution, duration of working experience and presence of any chronic disease.

In the clinical practice part, there were 38 questions related to the status of their clinics (changes in working conditions, number of physical therapists and COVID-19 transmission situations), the number of patients per periods, the precautions (screening procedures, protective equipment, usage of institution-specific directives, usage of any guideline), practices related to evaluation and rehabilitation, and tele-health practices during pandemic period (tele-health method, duration, frequency, difficulties, facilities, etc).

In the psychological state part, there were 5 questions. The level of anxiety about their own and their families' health, and their sleep status during the pandemic period were questioned.

Statistical analysis

The SPSS for Windows version 22 software made in Armonk, New York, USA (IBM Corporation) was used for statistical analysis. The visual (histograms, probability plots) and analytical methods (Kolmogorov–Smirnov/Shapiro–Wilk's test) were used to determine whether the assessed parameters were normally distributed. Descriptive statistics were calculated as a number/percent for qualitative data, and mean, standard deviation, minimum and maximum values for quantitative data. Friedman test was conducted to test whether there is a significant change in the clinical practice before pandemic period, in the first three months of pandemic period and normalization period. The McNamar's test was used to compare the change in using tele-health applications between before and during pandemic. A p value of less than 0.05 was considered to show a statistically significant result.

RESULTS

The content validity ratio was found to be 0.745 as sufficient, and the final survey included 48 questions after the adjustments made in line with the expert opinions. A total of 107 physical therapists who were working in the neurological rehabilitation services were included in the study. A percentage of 54.2 (n = 58) of the physical therapists have attended from the capital city of Turkey, Ankara. Answers were collected from 20 different provinc-

Table 1. The Descriptive Information Related to the Physical Therapists.

	N	%
City		
Ankara	58	54.21
İstanbul	12	11.21
Others (18 Different Cities)	37	34.68
Institution		
Special Education Center	29	27.10
University Hospital	22	20.56
Private Physical Therapy and Rehabilitation Center	16	14.95
Training And Research Hospital	14	13.08
Private Hospital	13	12.15
Public Hospital	10	9.35
Others	3	2.80
Presence of Chronic Disease		
No Chronic Disease	87	81.31
Chronic Respiratory Diseases	7	6.54
Diabetes	3	2.80
Oncological Diseases	1	0.94
Others	9	8.41

es. A percentage of 27.1 (n = 29) of the physical therapists were working in special education centres. Most of the physical therapists had no chronic diseases (n = 87, 81.3%). The mean professional experience was 8.29 ± 7.79 years (min = 1, max = 30), and the mean experience in neurological rehabilitation was 6.93 ± 6.86 years (min = 1, max = 30). Table 1 represents the descriptive information related to the physical therapists.

In the first 3 months from the start of the pandemic period, 46.73% (n = 50) of the institutions were closed. During the normalization period, 73.83% (n = 79) started working face-to-face. Most institutions employed new physical therapists (n = 82, 76.64%). The mean number of physical therapists was 6.86 ± 7.48 (min=1, max=50), and the mean number of physical therapists who were infected with COVID-19 was 1.08 ± 2.07 (min=0, max=12). A percentage of 26.17 (n=28) of the physical therapists were infected with COVID-19, and 35.71%

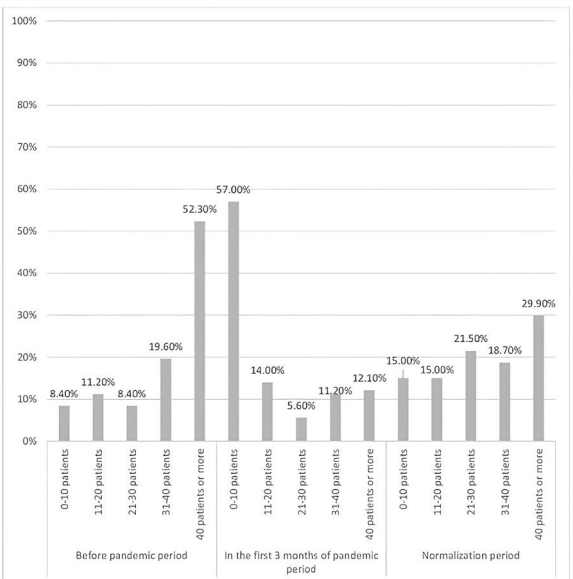

Figure 1. Change in number of patients

Table 2. Status of the Clinic

Pandemic Period	**N**	**%**
Completely Closed	50	46.73
Worked With Flexible Working Hours	38	35.51
Worked Face to Face	13	12.15
Worked Remotely (Online Methods)	6	5.61
Normalization Period		
Completely Closed	2	1.87
Worked with Flexible Working Hours	22	20.56
Worked Face to Face	79	73.83
Worked Remotely (Online Methods)	4	3.74
Physical Therapy Team Exchange		
New Physical Therapists Joined (Team Expanded)	82	76.64
Continued with the Same Team	11	10.28
Fired Physical Therapists (Team Downsized)	10	9.35
Included in the Filiation Team	9	8.41
Being COVID-19 And Potential Cause of Transmission		
No Transmission	79	73.83
Family Member	10	9.35
Patient Contact	6	5.61
Not Known	10	9.35
Other	2	1.87

Table 3. The Information Related to Precautions

Screening Procedures	**N**	**%**
Temperature Check	90	84.11
Risk Assessment With Anamnesis	36	33.64
Covid-19 Custom App Code Control	31	28.97
Nasopharyngeal Swab Test	10	9.35
Saturation Measurement	9	8.41
Precautions During Evaluation and Rehabilitation		
Surgical Mask	107	100
Gloves	76	71.03
Face Shield	55	51.40
Standard Gown	39	36.45
Overshoe Covers	17	15.89
FFP3 Mask	13	12.15
Glasses	12	11.21
Water Resistant Gown	4	3.74
Institution-Spesific COVID-19 Directive		
Developed and Implemented	72	67.29
Developed but not Implemented	19	17.76
Do not Developed	16	14.95
Social Distancing Rule in the İnstitution		
Yes, It's Very Carefully Observed.	16	14.95
Yes, but It is Sometimes Overlooked.	54	50.47
Yes, but It is Often Overlooked	24	22.43
No, It is not Obeyed	13	12.15
Followed Information Guide		
None	26	24.30
Ministry of Health Guidelines	65	60.75
World Health Organization Guidelines	27	25.23
Free Guidelines	12	11.21
World Confederation for Physical Therapy Guidelines	9	8.41

(n=10) stated their family members as the potential cause of transmission (Table 2). Considering the number of patients in the clinics, the number of patients per week decreased statistically significant in the first 3 months and normalization process compared to the pre-pandemic period ($p < 0.01$) (Figure 1).

The information related to precautions during the pandemic period is given in Table 3. The most frequently used screening procedure in acceptance of the patients to the institutions was temperature measurement (n=90, 84.11%), and mostly used precautions taken during patient admission were surgical mask (n=107, 100%) and gloves (n=76, 71.03%). Supply of hygiene equipment increased in 70.10% (n=75) of the institutions. It was stated that there was an increase in the amount of daily hand washing in 94.39% (n=101) of the physical therapists, the amount of weekly bathing in 57.94% (n=62), the frequency of hand washing after coughing, rubbing the nose and sneezing in 85.98% (n=92) and the frequency of hand washing after object contact in 91.59% (n=98). A percentage of 53.27 (n=57) of the physical therapists stated that they needed training to perform risk assessment, and 61.68% (n=66) needed training on infection transmission precautions. The responses of the physical therapists regarding the changes in patient evaluation and rehabilitation are summarized in Figure 2. A percentage of 10.28 (n = 11) of the institutions had a special physical therapy team for COVID-19, and 32.71% (n = 35) of the participants stated that either they or their colleagues have applied treatment to a COVID-19 patient.

While 14.95% (n = 16) of the participants used telehealth applications before the pandemic, 32.71%

Table 4. The Information Related to Tele-Health Applications

Tele-Health Method	N	%
Telephone	27	77.14
Online Connection (i.e.; Skype, Zoom, Facetime)	25	71.43
Hospital System	1	2.86
Duration of Tele-Health Session		
0-10 Minute	10	28.57
10-20 Minute	8	22.86
20-30 Minute	5	14.29
30 Minutes and Above	12	34.29
Frequency of Re-Check Patients		
Every 1-3 Days	6	17.14
Every 3-5 Days	12	34.29
Every 5-7 Days	5	14.29
7 Days or More	12	34.29
Shared Material Types		
Video	19	54.29
Audio	14	40.00
Written Material	12	34.29
Application Link	12	34.29
None	8	22.86
Challenges in Tele-Health		
No Difficulties	8	22.86
Internet Connection	17	48.57
Compliance with Physical Examination	17	48.57
Technological Device Access/Use İssues	15	42.86
Communication Problems	14	40.00
Difficulty in Applicability	9	25.71
Billing İssues	1	2.86
Foreign Language Barrier	0	0
Challenges in Tele-Health		
High Accessibility	26	74.29
Patient Safety	20	57.14
Expert Safety	15	42.86
Helping More Patients	11	31.43
Psychological Support	8	22.86
Using A Standardized Protocol	3	8.57

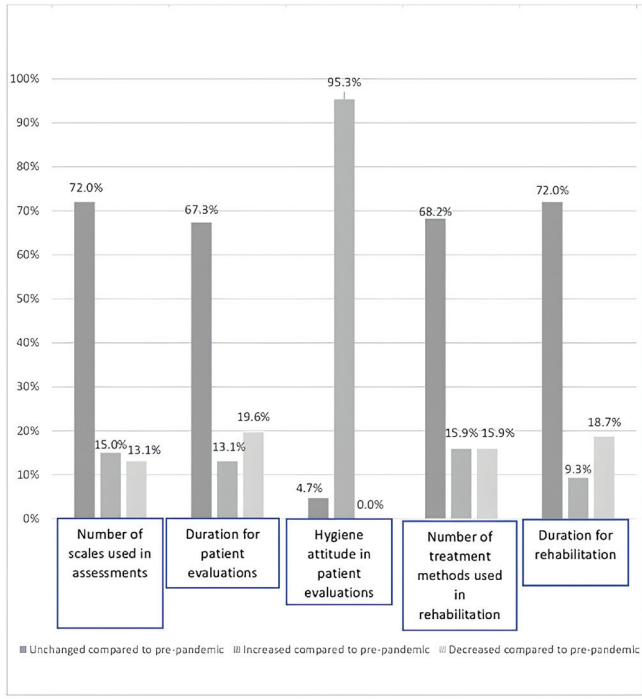

Figure 2. Changes in patient assessment and rehabilitation compared to pre-pandemic

(n = 35) of the physical therapists started to use tele-health applications during the pandemic/normalization period (p <0.01). The information about the physical therapists who have used tele-health application is given in the Table 4. The mean trust level of the physical therapists in the evaluations made with the tele-health applications was 6.00 ± 2.38 (min=1, max=10), the mean trust in the treatment recommendations was 6.74 ± 2.42 (min=2, max=10), and the mean of the recommending the use of tele-health applications in neurological rehabilitation was 6.34 ± 3.00 (min=0, max=10).

A percentage of 58.88 (n=63) of the physical therapists were worried for their families, 44.86% (n=48) were worried about being carriers, 39.25% (n=42) were worried about getting sick and 26.17% (n=28) were worried about social unrest. The mean anxiety level of the physical therapists about their own health was 4.36 ± 2.42 (min=0, max=10), and the mean anxiety about their family's health was 7.72 ± 2.39 (min=0, max=10). The mean anxiety about working during the pandemic period was 6.78 ± 2.50 (min=0, max=10), and the mean amount of experiencing sleep problems during the pandemic period was 2.07 ± 2.54 (min=0, max=10).

DISCUSSION

Healthcare systems worldwide underwent major changes due to the COVID-19 pandemic (18). The healthcare system focuses on patients with COVID-19; therefore, other areas have been negatively affected, including neurological rehabilitation. However, early rehabilitation in neurological disorders is very important to minimize the severity of disability (9). Therefore, it is important to define the changes in these clinics and determine best practices for taking precautions while improving service delivery. The current study shows that there has been a decrease in the number of patients, an increase in hygiene measures and an increase in the use of tele-health applications with the pandemic. In addition, this study shows that physical therapists were particularly concerned about their families' health.

The most notable findings in this study are the significant changes in working conditions and patient numbers. Most institutions were completely or partially closed, especially in the first 3 months of the pandemic. During the normalization period, most institutions returned to face-to-face working. In parallel with this, the number of patients in clinics has decreased. These results are supported by

research (19-22). In a study examining dental hospitals in China, it was reported that non-emergency patients were not treated at the beginning of the pandemic, and 9/10th of dental services were delivered using a web-based system (19). A study conducted in the USA reported a 32% decrease inpatient admissions in the first 3 months, which later increased (20). In another study conducted in Turkey, it was observed that the number of admissions to the Physical Medicine and Rehabilitation Polyclinic decreased at the beginning of the pandemic (21). A study conducted in European countries, including Italy, France, and Germany reported that the number of patients in stroke care units decreased considerably during the pandemic period (22). They concluded that stroke patients may be adversely affected by this situation. Decreases in the admission of neurological patients due to COVID-19-related precautions have prevented individuals with chronic diseases from attaining neurological rehabilitation services. This may lead to negative consequences, such as an unmanageable increase in the demand for neurology clinics in the future, and continued inability to access neurological rehabilitation services. In pandemic situations, it is very important for both patients and physical therapists to emerge with minimal damage. Therefore, it is important to define the roles of physical therapists working in the field of neurology in emergency situations like pandemics in order to regulate the working conditions of clinics and to plan appropriate strategies.

Many countries have permitted the reopening of centers that require one-on-one contact, such as dental clinics, physical therapy centers, and aesthetic centers, as long as they strictly adhere to infection control guidelines (23). According to our study, some screening procedures were followed before patient admission, and temperature check was reported with a percentage of 84.1 as recommended. A temperature check is usually performed with hand-held, non-contact thermometers. However, temperature assessment may not be sufficient to identify COVID-19 carriers who are taking paracetamol to reduce fever prior to treatment or those who do not have a fever (24). In addition, most institutions developed institution-specific COVID-19 directives, and there has been an increase in provision of hygiene equipment, which suggests that institutions are prioritizing the health of both patients and their employees.

Physical therapists stated that most frequently used equipment was surgical masks (100%) and gloves in clinical settings, and there was an increase in personal hygiene precautions including frequency of hand washing and weekly bathing. These results were found to be in accordance with the published guidelines (23, 25). The majority of physical therapists reported that they followed various informational guidelines specific to COVID-19, which showed that physical therapists working in neurological rehabilitation had a high awareness of the need for hygiene. One remarkable finding is that although they paid great attention to their personal hygiene in practice, they reported that they needed training on risk assessment and transmission precautions, and they felt inadequate in this regard.

Physical therapists generally complied with social distance in the working environment, but the rate of complete compliance was very low. The possible reasons were (i) inability to quit habits immediately, (ii) probability of clinics being small, (iii) the necessity of close contact in performing neurological rehabilitation, (iv) since the rehabilitation team does not only consist of physical therapists. Similarly, in a study conducted in England, it was reported that the majority of the participants did not fully comply with the social distance rules (26). However, it is known that maintaining social distance reduces the spread of the virus (27). This result highlights the necessity of planning social distance rules in neurological rehabilitation clinics. Therefore, it is necessary to focus on raising awareness and improving behaviour on this issue.

Telehealth has allowed health care professionals to evaluate, diagnose, and treat patients, thereby its usage is widespread (28). The popularity of telehealth applications has considerably increased due to the COVID-19 pandemic (29). Similarly, the use of tele-health applications in neurological rehabilitation has increased during the pandemic period according to our study. A review of patients with neurological disease found a significant effect in favour of telerehabilitation compared to face-to-face rehabilitation (30). Intensive treatment programs were required in neurological diseases (31),

and this may not always be possible due to time constraints in face-to-face treatments. Therefore, it can be concluded that the use of tele-health applications in neurological rehabilitation would become more widespread in the future, and clinicians should be more informed about this issue. However, confidence of physical therapists in telehealth applications were slightly above the average, which shows that trust of physical therapists in telehealth practices in neurological rehabilitation is not enough. Although accessibility, patient and specialist safety are high, difficulties such as compliance problems with physical examination and internet connection problems may have led to this result. Similarly, in a study conducted with physical therapists working in the field of neurology, they stated that they encountered certain obstacles during tele-rehabilitation practices and concluded that tele-rehabilitation practices needed to be strengthened (32). In addition, technologies used in some telehealth applications including more comprehensive sensors and devices can be expensive and require training (30). The confidence of physical therapists working in the neurological rehabilitation on tele-health applications could be increased by improving the internet infrastructure, creating close treatment protocols with physical examination, training on transferring tele-health applications to the clinical practice.

In this current study, the anxiety levels of physical therapists were also questioned. It has been found that physical therapists working in neurology had high concerns about their families and their own health during the COVID-19 process. It has also been observed that working during pandemic period negatively affected the psychological state of physical therapists. This is a highly anticipated situation during the pandemic period. Various negative psychological effects including burnout syndrome, decreased tolerance, psychological fatigue, anxiety, depression, and post-traumatic stress disorder have been reported in health professionals during the pandemic process (33-35). Similar to our results, it was stated that the physical therapists working in Nigeria were negatively affected during the pandemic process (36). Similarly, in a study conducted on nurses in China, a significant relationship was found between the fear of disease transmission to family members and the level of stress (37). It is more important to prevent psychological problems compared to provide treatment during this process (38). Studies conducted in health professionals provide recommendations for the protection of mental health. Some suggestions include resolving housing and transportation issues to reduce the fear of spreading the disease to family members, organizing motivating activities such as regular praise and rewards, arranging working hours, not keeping risky health professionals at the forefront, organizing trainings and psychological support conversations, and providing update trainings (36, 39). Implementing such recommendations is also important for protecting the mental health of physical therapists who are actively working.

Although this study had a sufficient number of physical therapists, it is thought that the results can be strengthened with the participation of more physical therapists, including the whole country, and studies that reveal the differences between institutions. In addition, the study may not adequately reflect the experience of physical therapists in other parts of the world during the COVID-19 pandemic, as the physical therapist's profession and legal situations may vary from country to country.

The current study defines the status and procedures followed in neurological rehabilitation services during the COVID-19 pandemic. It was found that working conditions changed, number of patients decreased, some precautions have been taken, and the use of tele-health applications increased throughout pandemic period. Also, it has been found that physical therapists working during the pandemic period have high concerns about their families and their own health, which negatively affects their psychological state. It can be concluded that there is a need for more attention related to clinical and/or individual precautions, developing most accurate ways of accessing the treatment without risking the health of the patient and physical therapists, the creation of policies to be followed in extraordinary situations considering also psychological states of healthcare professionals, and the development of special tele-health practices for neurological rehabilitation.

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