



Original Article

The effect of telehealth interventions on anxiety management in the COVID-19 pandemic: a systematic review

İ Gülten Tarhan,¹ İ Özlem Örsal,² İ Pınar Duru²

¹Eskişehir Yunus Emre State Hospital, Education Unit, Eskişehir, Türkiye

²Eskişehir Osmangazi University, Faculty of Health Sciences, Department of Public Health Nursing, Eskişehir, Türkiye

Abstract

Objectives: This systematic review aimed to evaluate the effectiveness of telehealth interventions used in anxiety management during the COVID-19 pandemic.

Methods: PubMed, Cochrane, Science Direct, Web of Science, ProQuest Central, and Google Scholar databases were searched. A total of 7 studies were included, 3 of which were randomized controlled trials and 4 of which were quasi-experimental designs, published between January 2020 and May 2021.

Results: For telehealth interventions in anxiety management, although mixed methods were also used, it was observed that online video conferencing (WeChat, SpinChat), telephone calls providing telenursing and tele-education, internet-based integrated intervention, and voice recording were effective. The time allocated for interventions and training included 5 sessions, including sessions of at least 15-20 minutes, and a total of 24 sessions, including sessions of 45-60 minutes at most.

Conclusion: According to the studies, telehealth interventions during the pandemic were effective in reducing the anxiety levels of systemic sclerosis patients, patients diagnosed with COVID-19, pregnant women, and vulnerable individuals, like mothers with preschool children with autism and people supported by charities.

Keywords: Anxiety; SARS-CoV-2; telehealth.

With the World Health Organization's declaration of COVID-19 as a pandemic on 11th March 2020, combating COVID-19 began in line with the emergency action plans, published guides, algorithms, and flowcharts. To control the pandemic and prevent its spread, measures have been taken in many administrative, social, and economic areas, such as prohibiting being in public and crowded areas and being in close contact, introducing masks, distance, hygiene rules, restricting public transportation and intercity travel, starting flexible or working from home practices, full or partial lockdown, social isolation, quarantine for contacted and sick individuals.^[1,2] These rules, precautions, and restrictions that had to be faced necessitated profound changes in interpersonal relations, daily life, and usual social lifestyle.^[3] The strict

measures implemented during the pandemic process played a role in the development of fear, depression, and anxiety, or the increase in psychopathological measurement scores in children, elderly people defined as the vulnerable group against infection, and people who faced increased hostility due to their high infection rate and had a previous psychiatric diagnosis.^[4,5] Studies conducted on people who have had COVID-19 show that psychiatric sequelae such as post-illness trauma, stress disorder, insomnia, depression, and anxiety have been observed.^[5,6] In a study conducted on individuals living in Türkiye, it was seen that one out of every four participants showed symptoms of anxiety, and one out of every three participants showed symptoms of hopelessness.^[7]

The pandemic had some adverse effects not only in the field

Address for correspondence: Gülten Tarhan, Eskişehir Yunus Emre Devlet Hastanesi Eğitim Birimi, Eskişehir, Türkiye

Phone: +90 222 211 95 95 **E-mail:** gertugrul@gmail.com **ORCID:** 0000-0002-3828-3849

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What is presently known on this subject?

- Various examples of telehealth interventions such as mental health services and psychological self-help intervention systems have been seen during the COVID-19 pandemic, including online cognitive behavioral therapy to combat insomnia, depression, and anxiety.

What does this article add to the existing knowledge?

- During the pandemic, online video conferencing programs like WeChat and SpinChat, telephone calls providing telenursing and tele-education, and telehealth interventions offered that use voice recording, text messaging, and video have been found to be effective in reducing the anxiety levels of patients with systemic sclerosis, patients diagnosed with COVID-19, pregnant women, and fragile individuals, like mothers with preschool children with autism and people who are supported by charities.

What are the implications for practice?

- This systematic review study is valuable because it evaluates the anxiety states of people during the pandemic process and provides follow-up and treatment, in short, for the contribution of healthcare providers and researchers to the planning process of telehealth services in the management of anxiety.

of health but also in many social, psychological, cultural, economic, technological, military, and political areas.[3] In the first days of the pandemic, the excessive demand for masks and antiseptic products,^[8] and pre-closure food products revealed the negative behaviors of society regarding the anxiety experienced due to COVID-19, and it was seen that the anxiety level of society was at the highest level at the first stage and peak of the pandemic.^[9] People had to develop survival skills and defense mechanisms in the face of a chaotic situation and panic due to these negativities caused by the pandemic and the uncertainty of the process.^[3,4]

Telehealth is a field where digital information and communication technologies such as computers and mobile devices (two-way video, e-mail, smartphones, wireless devices, and other telecommunications technology) are used to access and manage health care remotely. Telehealth has been used effectively during the pandemic as it provides health services to people who are physically distant from healthcare providers.^[10] Telehealth can assist the protection process in cases of COVID-19 and other infectious diseases by limiting exposure to infection for vulnerable populations and healthcare professionals.^[11] During the COVID-19 pandemic, with reduced opportunities for routine clinical visits, patients with chronic illnesses particularly have rapidly adopted a variety of telehealth services due to its advantage in reducing hospital visits and facilitating triage and its role in supporting home isolation patients with mild symptoms.^[12,13] Various examples of telehealth interventions, such as mental health services (e.g. WeChat, SpinChat), psychological self-help intervention systems, and online cognitive behavioral therapy to combat insomnia, depression, and anxiety, were also seen in this process.^[14-17]

This study is valuable because of the contributions of healthcare providers to the planning process of telehealth services in the management of anxiety, in the evaluation of the anxiety states of people, and in their follow-up and treatment during the pandemic. This systematic review aimed to evaluate the

effectiveness of telehealth interventions used in anxiety management during the COVID-19 pandemic.

Research Questions

1. What are the telehealth interventions used in anxiety management during the pandemic process?
2. What is the effect of telehealth interventions used during the pandemic on the healthcare outcomes of individuals experiencing anxiety?
3. What is the effectiveness of telehealth interventions used in pandemic conditions?

Materials and Method

The PRISMA-P (Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols) checklist was used to design the systematic review protocol and write this article.^[18]

Literature Review Strategy

An electronic database search was conducted between 1 March 2021 and 1 May 2021 using PubMed, Cochrane, Science Direct, Web of Science, ProQuest Central, and Google Scholar. The review was limited to research articles published in Turkish and English between January 2020 and May 2021. Turkish and English combinations of the keywords “telehealth / tele-sağlık”, “telemedicine / teletıp”, “telenursing / tele-hemşirelik”, “ehealth / e-sağlık”, “mobile health / mobil sağlık”, “telephone / telefon”, “phone / telefon”, “WeChat / kısa mesaj”, “telegram / anlık mesaj”, “mobile applications / mobil uygulamalar”, “mobile apps / mobil uygulamalar”, “mhealth / mobil sağlık”, “tele-education/ tele eğitim”, “tele-counselling / tele-danışmanlık”, “anxiety disorders / anksiyete bozuklukları”, “anxiety / anksiyete”, “generalized anxiety disorder / genel anksiyete bozuklukları”, “COVID-19/coronavirus / koronavirüs”, “2019-nCoV/Sars-CoV-2 / CoV-19” were used while reviewing. A detailed review strategy is presented in Table 1.

Inclusion Criteria

The inclusion and exclusion criteria of the study were determined per PICOS. Only studies published in peer-reviewed journals with the full text available free of charge were included in the systematic review. In this context, the criteria for inclusion in the study were:

P (Patient): All individuals over the age of 18 who have anxiety problems, regardless of socio-demographic discrimination such as gender or occupation

I (Intervention): Telehealth interventions used in anxiety management

C (Control group): Routine maintenance

O (Outcome): Prevention of anxiety

S (Study design): Randomized controlled trials, quasi-experimental studies, case-control, cohort studies

Exclusion criteria from the study: Studies that did not meet the inclusion criteria and repetitive studies were excluded.

Study selection

There were 3732 articles in the study, which were gathered from the included databases and added to the Endnote library. Later, these articles were sorted through, and relevant ones were selected. After removing 534 articles that were found to be duplicates, the titles and abstracts of the remaining 3198 articles were examined, and 3139 articles were eliminated. A full-text review of 59 articles considered to be potentially relevant was conducted, and 52 more articles that did not meet the inclusion criteria were excluded from the study. As a result, it was decided to include seven full-text studies evaluated for suitability in the synthesis. Studies that met the inclusion criteria were evaluated by one researcher (GT), controlled by another researcher (PD), and a consensus was reached by consulting the third researcher (OO) in case of differences of opinion. The research selection process for the systematic review is given in the PRISMA-P flow diagram in Figure 1.

Obtaining Study Data

Two independent reviewers (GT and PD) were involved in each phase of the review (reviewing, eligibility, and inclusion). The third reviewer (OO) checked the accuracy of the stages. The review strategy was documented at each step by recording the date of searches in each database, the search terms used in each database, and the total number of publications found, and a PRISMA-P flow diagram was created (Fig. 1). All articles found in searches were exported to create an Endnote database. The reference part included author, year, journal title, and page numbers to enable duplication screening. After duplications were removed, author and journal details were removed, so only article titles and/or abstracts were displayed during the study selection process. Studies were included and excluded by one researcher (GT) based on inclusion criteria. Afterward, another researcher examined the titles and abstracts in the exclusion category. Articles that the second researcher (PD) thought should be included were transferred to the inclusion category. A full-text review was performed for all articles in the inclusion category. The full text was independently evaluated for relevance by two researchers (GT, PD). Any disagreements were resolved by mutual agreement

and completed with the opinion of a third researcher (OO). From this point forward, the reason for exclusion for all excluded studies was noted and documented in the database and PRISMA-P flow diagram. A data extraction tool in Excel was created based on the data collection form developed by the researchers. The tool was approved by team members before the scan started. A researcher (GT) completed the data extraction database by extracting the included articles. Other researchers independently checked the accuracy of the data extraction database. Any inconsistencies were resolved through discussion. If disagreements could not be resolved, a third person (OO) from the study team was asked to participate in the discussions.

Evaluation of Methodological Quality and Risk of Bias in Studies

Studies included in the systematic review were evaluated for quality using the checklist for randomized controlled trials and quasi-experimental studies created by the Joanna Briggs Institute.^[19] Each item in the checklists is scored as yes=1, no=0, uncertain=0, or not valid=0, and a maximum of 13 points can be obtained for randomized controlled studies and 9 points for quasi-experimental studies.

In the bias evaluation of the studies, the "revised Cochrane risk-of-bias tool for randomized trials (RoB2)"^[20] and the "risk of bias in non-randomized studies - of interventions (ROBINS-1)"^[21] designed by the Cochrane group were used. It can be said that the risk of bias is uncertain if there is insufficient information to make a "low-risk" or "high-risk" decision in the evaluation of the bias risk criteria. Studies with a quasi-experimental design included in the systematic review scored an average of 8 (min. 7; max. 9), while randomized controlled studies scored an average of 9.66 (min. 9; max. 10) (Table 2). The risk of biased assessments of the studies is presented in Table 3.

Synthesis of Data

Descriptive statistics for continuous variables include means and standard deviations. Categorical variables were summarized using frequencies and ratios. Because the studies were

Table 1. Reviewing strategy

	First group	Second group	Third group
Keywords	Telehealth, Telemedicine, Telenursing, eHealth, Mobile health, Telephone, Phone, WeChat, SpinChat, Telegram, Mobile applications, Mobile apps, mHealth, Tele-education, Tele-counselling	Anxiety disorders, anxiety, generalize d anxiety disorder	COVID-19, Coronavirus, 2019-ncov, Sars-Cov-2, Cov-19
Reviewing sample	(anxiety disorders [Title] OR anxiety [Title] OR generalized anxiety disorder [Title]) AND (COVID-19 [Title] OR coronavirus [Title] OR 2019-ncov [Title] OR Sars-CoV-2 [Title] OR CoV-19 [Title])) AND (telephone [Title] OR phone [Title] OR tele-nursing [Title] OR telehealth [Title] OR telemedicine [Title] OR telemonitoring [Title] OR telepractice [Title] OR telenursing [Title] OR telecare [Title] OR SpinChat [title] OR WeChat [title])		

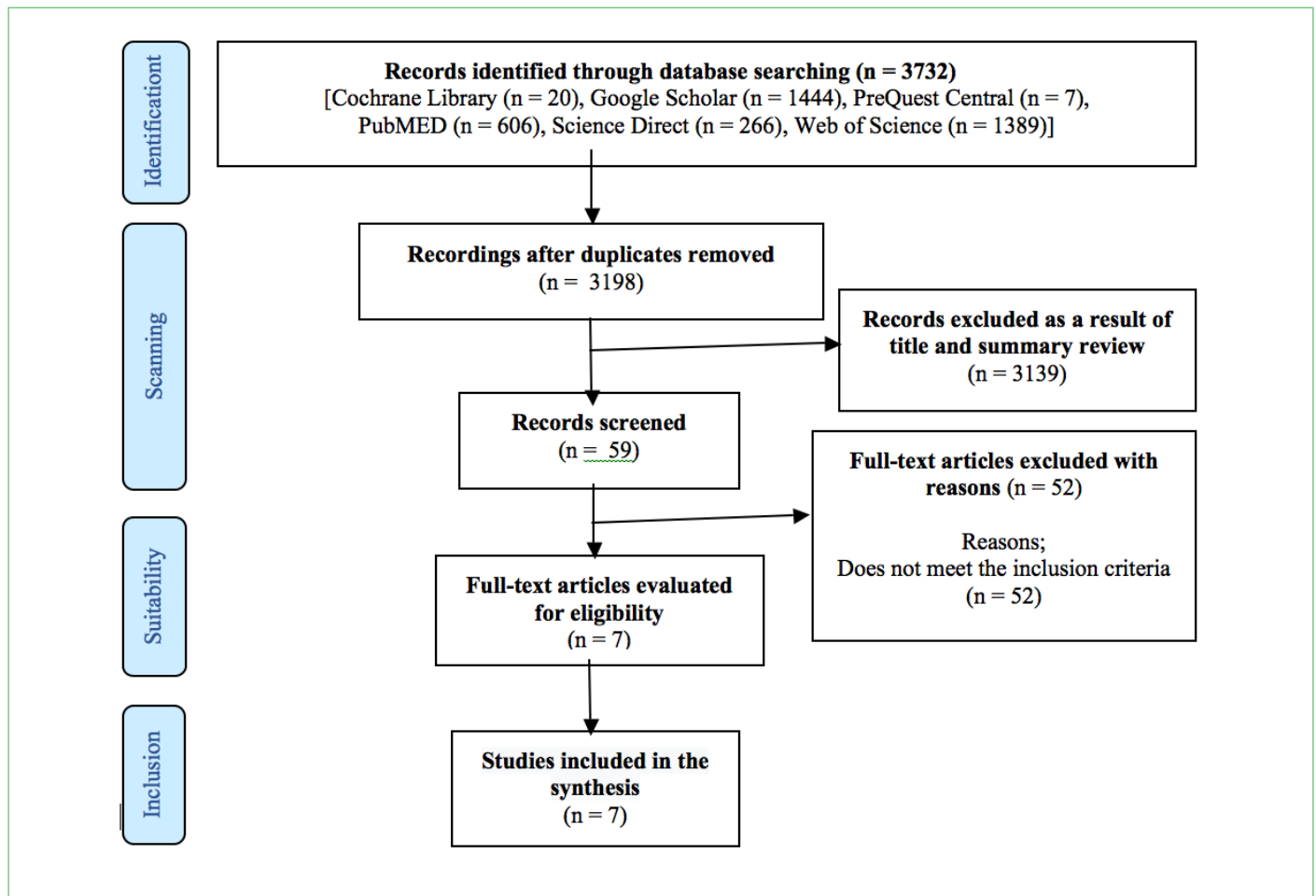


Figure 1. PRISMA-P flow diagram

heterogeneous, a narrative review process was used to discuss the similarities and differences in the findings of these different studies.

Ethical Considerations

Ethics committee approval is not required as the research data are obtained from publications scanned from the literature. There is no risk of material or moral harm to the researchers in the literature review. All articles included in the study are shown in the bibliography. The research protocol was registered in the "PROSPERO" database, allowing systematic reviews and meta-analysis studies to be registered, with the registration number CRD42021251138.

Results

A total of 7 studies published between January 2020 and May 2021 which met the inclusion criteria were reviewed. Three of them were randomized controlled trials, and four were quasi-experimental designs. Four were conducted in Italy,^[14] Türkiye,^[22] Iran,^[23] and the United States,^[24] two in China,^[15,17] and one in the United States, Australia, Canada, France, Mexico,

Spain, and the United Kingdom^[16] (Table 4).

Participant Features

The total number of participants in the studies reviewed was 789. The participants consisted of patients with cystic fibrosis (n=16) and their caregivers or parents (n=14),^[14] patients with systemic sclerosis (n=172),^[16] patients diagnosed with COVID-19 (n=126),^[17,23] pregnant women (n=96),^[22] mothers with preschool children with autism (n=125),^[15] and vulnerable individuals supported by a charity (n=240).^[24] There were a total of 24 male and 765 female participants, with an average age of 45.93.

Evaluation Criteria

Anxiety evaluation scales were used in 7 studies included in the systematic review. Generalized Anxiety Disorder Assessment (GAD-7) was preferred in two studies,^[14,24] while the Pregnancy-Related Anxiety Questionnaire (PRAQ-R2),^[22] the Spielberger State-Trait Anxiety Inventory,^[23] the Self-Assessment Anxiety Questionnaire (SAS),^[15] the Hamilton Anxiety Rating Scale,^[17] and the PROMIS Short Form Anxiety 4a version 1.0^[16,25] were preferred in the measurement of anxiety. Apart

Table 2. Methodological quality assessments of studies

Study ID	Criterion													Total %	
	1	2	3	4	5	6	7	8	9	10	11	12	13		
Graziano et al., 2021	Y	Y	Y	N	Y	Y	N	Y	Y						7/9 (%78)
Aksoy-Derya et al., 2021	Y	Y	Y	Y	N	Y	Y	Y	Y						8/9 (%89)
Chakeri et al., 2020	Y	Y	Y	Y	N	Y	Y	Y	Y						8/9 (%89)
Liu et al. 2021	Y	Y	Y	Y	Y	Y	Y	Y	Y						9/9 (%100)
Kahlon et al., 2021	Y	U	Y	N	Y	U	Y	Y	Y	Y	Y	Y	Y		10/13(%77)
Wei et al. 2020	Y	U	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y		9/13 (%69)
Thombs et al, 2021	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y		10/13 (%77)

Note. Y = Yes; N = No; U = Uncertain; NA = Not applicable; 1-9: Items from the checklist for quasi-experimental studies created by the JoannaBriggs Institute; 1-13: Items from the checklist for randomized controlled trials created by the JoannaBriggs Institute.

from anxiety, which is the primary outcome measure, patient health, perceived stress, prenatal distress, parenting stress index, depression, hope, fear of COVID-19, boredom, physical activity, frequency of social interaction, loneliness, feasibility, and satisfaction were evaluated as secondary outcome measures (Table 5).

Telehealth Interventions Used in Anxiety Management

Although there are studies in which mixed methods were used in anxiety management in the studies we examined, it was observed that online video conferencing (WeChat, SpinChat) methods were used in 4 studies,^[14-16,24] telephone interviews in which telenursing and tele-education were presented in 3

studies,^[22-24] and internet-based integrated intervention and voice recording in one study^[17] (Table 4).

In the studies carried out, cognitive-behavioral therapies for patients with chronic diseases (cystic fibrosis and systemic sclerosis) as interventions, self-care, and coping skills, exercises to improve mood, education about individual and emotional difficulties^[14] mental health coping strategies, and reduce isolation social support programs were carried out.^[16] In studies conducted on patients diagnosed with COVID-19, it has been observed that individuals were provided with prevention training for COVID-19 with telenursing counseling,^[23] and anxiety management was provided with techniques such as self-help intervention, breathing relaxation training, awareness

Table 3. Evaluation of the risk of bias in studies with experimental and quasi-experimental designs

ROB 2	Kahlon et al. 2021 Wei et al. 2020 Thombs et al. 2021			ROBINS 1	Graziano et al. 2021 Aksoy-Derya et al. 2021 Chakeri et al. 2020 Liu et al. 2021			
Risk of bias arising from the randomization process	+	+	+	Bias due to confounding	-	-	-	-
Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	+	+	+	Bias in selection of participants into the study	-	-	-	-
Risk of bias due to deviations from the intended interventions (effect of adhering to intervention)	+	+	+	Bias in classification of interventions	+	+	+	+
Risk of bias due to missing outcome data	-	-	-	Bias due to deviations from intended interventions	+	+	+	+
Risk of bias in measurement of the outcome	-	-	-	Bias due to missing data	+	+	+	+
Risk of bias in selection of the reported result	+	+	+	Bias in measurement of outcomes	+	+	+	+
				Bias in selection of the reported result	?	?	?	?

+ Low risk of bias
 ? Some concerns
 - High risk of bias

Table 4. Features of studies included in the systematic review

Study ID	Author(s) and Year	Country/Region	Design	Sample	Intervention	Telehealth Method	Intervention and Duration
Graziano et al., 2021	Italy; quasi-experimental	Italy	quasi-experimental	Cystic fibrosis (CF) patients and their parents (n = 30) CF patient (n = 16) Age: 22.5±6.9 Parent (n = 14) Age: 37±6.3	Online video conference	Online video conference	- Cognitive behavioral therapy (CBT) - Self care - Coping skills - Exercises to improve mood - Individual, emotional difficulties training 4 sessions of 30-40 minutes
Aksoy-Derya et al., 2021	Turkey; quasi-experimental	Turkey	quasi-experimental	Pregnant woman (n = 96) Intervention (n = 48) Age: 28.70±4.73 Control (n = 48) Age: 28.06 ±4.12	Tele-education (Phone call, Text message, Digital training booklet)	Tele-education (Phone call, Text message, Digital training booklet)	- Pregnancy and birth planning - Methods of protection from Coronavirus during pregnancy - Postpartum process - Coronavirus epidemic and precautions to be taken during breastfeeding - Coping with stress, anxiety, and depression 5 sessions of 15-20 minutes
Chakeri et al., 2020	Iranian; quasi-experimental	Iran	quasi-experimental	Patient diagnosed with COVID-19 (n = 100) Intervention (n = 50) Age: 42.66±9.39 Control (n = 50) Age: 42.44±9.02	Tele-nursing consulting	Tele-nursing consulting	- Protection from coronavirus and transmission - Tele-nursing counseling given every other day for 3 weeks Tele-nursing consultation every other day for 3 weeks (10 min)
Liu et al., 2021	Chinese; quasi-experimental	China	quasi-experimental	Mother with preschool child with autism (n = 125) Intervention (n = 65) Age: 33.18±3.89 Control (n = 60) Age: 32.57±3.45	WeChat based training (Online video conferencing)	WeChat based training (Online video conferencing)	- JASPER course Two sessions of 45-60 minutes per week for 12 weeks - Q&A session 30-40 minutes each week for 12 weeks - Parent psychological intervention course 45-60 minutes per session, 1 session every two weeks and 6 sessions in total
Kahlon et al., 2021	USA; Randomized controlled	USA	Randomized controlled	Vulnerable people supported by a charity (n = 240) Intervention (n = 120) Age: 69.4±11.5 Control (n = 120) Age: 68.7±12.8	Phone call Online video conferencing	Phone call Online video conferencing	- Empathy-focused telephone support program At least 2 sessions per week for 4 weeks with 6 to 9 participants at least 10 min. meeting
Wei et al., 2020	Chinese; Randomized controlled	China	Randomized controlled	Patient diagnosed with COVID-19 (n = 26) Intervention (n = 13) Age: 40.8±13.5 Control (n = 13) Age: 48.5±9.5	Internet-based integrated intervention Sound recording	Internet-based integrated intervention Sound recording	- Self-help intervention - Breath relaxation training - Awareness (body scan) - Asylum skills - Butterfly hug method Two weeks, daily, 50-minute sessions
Thombs et al., 2021	(Australia, Canada, France, Mexico, Spain, UK, and USA); Randomized controlled	Australia, Canada, France, Mexico, Spain, UK, and USA	Randomized controlled	Patient with Systemic Sclerosis (n = 172) Spin-Chat (n = 86) Age: 56.0±11.9 Control (n = 86) Age: 54.0±10.9	SpinChat (Online video conference)	SpinChat (Online video conference)	- Strategies for coping with mental health - Social support to reduce isolation 4 weeks, 3 sessions per week (Groups 6-10 people)

Table 5. Measurement tools used in studies included in the systematic review

Study ID	Graziano et al., 2021	Aksoy-Derya et al., 2021	Chakeri et al., 2020	Liu et al., 2021	Kahlon et al., 2021	Wei et al., 2020	Thombs et al., 2021
	Italy; quasi-experimental	Turkey; quasi-experimental	Iranian; quasi-experimental	Chinese; quasi-experimental	USA; Randomized controlled	Chinese; Randomized controlled	(Australia, Canada, France, Mexico, Spain, UK, and USA); Randomized controlled
Measuring Tools	1. Patient Health Questionnaire (PHQ-8) 2. Generalized Anxiety Disorder (GAD-7) 3. Perceived Stress Ratings 4. Feasibility and Satisfaction Rating	1. Revised Prenatal Distress Questionnaire (NuPDQ) 2. Pregnancy-Related Anxiety Questionnaire-Revised (PRAQ-R2)	1. Spielberger Anxiety Inventory	1. Parenting Stress Index-Short Form (PSI-SF) 2. Self-rating Anxiety Scale (SAS) 3. Self-rating Depression Scale (SDS) 4. Herth Hope Index (HHI)	1. UCLA Loneliness Scale 2. De Jong Giervald Loneliness Scale 3. Personal Health Questionnaire for Depression (PHQ-8) 4. Generalized Anxiety Disorder (GAD-7) 5. Short Form Health Survey Questionnaire (SF-12)	1. Hamilton Depression Scale 2. Hamilton Anxiety Scale	1. PROMIS Anxiety4a version 1.0 2. Patient Health Questionnaire-8 (PHQ-8) 3. UCLA Loneliness Scale (ULS-6) 4. COVID-19 Fears Questionnaire for Chronic Medical Conditions 5. Multidimensional Situational Boredom Scale (MSBS-8) 6. International Physical Activity Questionnaire – Modified for the Elderly (IPAQ-E) 7. Symptoms of Depression (PHQ-8) 8. Stress 9. Frequency of Social Interaction

(body scan), shelter skills, and butterfly hug method.^[17] Pieces of training including various strategies (home protection, external protection, diet, coping strategies for common problems, medical guidance and parent-child games, cartoons, and sports) to overcome pandemic psychology at home, question-answer sessions and online parental psychological intervention courses were organized for mothers with preschool children with autism.^[15] Moreover, an empathy-oriented telephone support program was conducted for vulnerable individuals who were supported by a charity organization.^[24] For pregnant women, it has been seen that pieces of training were given on pregnancy and birth planning, ways to protect against coronavirus, methods of protection from coronavirus in pregnancy, postpartum period, precautions to be taken in the coronavirus pandemic and breastfeeding, coping with stress, anxiety, and depression.^[22] The time allocated for practices and training includes five sessions, including sessions of 15-20 minutes at least, and 24 sessions, including sessions of 45-60 minutes at the most (Table 4).

In the telehealth program in which online videos are used,

the anxiety levels of patients with cystic fibrosis were found to be 1.1 units lower than their parents, but statistically significant results were not found.^[14] It has been determined that tele-education offered to pregnant women on pregnancy and birth planning during COVID-19 reduced prenatal distress and anxiety levels by 5 units.^[22] In the WeChat-based parenting education research conducted with the parents of children with autism, it was observed that the anxiety levels of the mothers who received the education were 3 units lower than the control group.^[15] In the study measuring the effect of telenursing on the anxiety levels of COVID-19 patients, it was seen that COVID-19 increased anxiety in most patients, and the education offered through telenursing had a 37-unit effect on reducing anxiety.^[23] Another study of patients diagnosed with COVID-19 showed a pleasing effect of the internet-based integrated intervention on mild to moderate depression and anxiety symptoms.^[17] Furthermore, empathic phone calls on the loneliness, depression, and anxiety levels of vulnerable individuals supported by a charity gave positive results of 1.8 units.^[24] While the telehealth intervention offered to systemic

Table 6. Findings of primary (anxiety) and secondary outcomes evaluated in studies included in the systematic review

Study ID	Anxiety Measurement Tool	Anxiety	Depression	Stress	Distress	Fear	Worrying about having a disabled child	Worrying about one's own appearance	Hope	Loneliness	Social isolation	Mental health	Physical health/activate	Feasibility								
														Satisfaction	Finding it useful /	Meeting their needs	Practical / Easy	Practical / Easy	Practical / Easy	Acceptable		
Graziano et al., 2021	Generalized Anxiety Disorder (GAD-7)	C. Fibrosis Pre: 6.9±4.4	↓	↓	↓										2.8/4	2.9/4	3.3/4	3.2/4	3.2/4			
		C. Fibrosis Post: 5.6±2.9	↔																			
		Parent Pre: 8.1±5.4																				
		Parent Post: 7.9±2.7																				
Aksoy-Derya et al., 2021	Pregnancy-Related Anxiety Questionnaire	I. Pre: 29.29±9.96																				
		I. Post: 24.25±4.9	↓																			
		C. Pre: 29.08±8.46																				
		C. Post: 30.04±8.48																				
Chakeri et al., 2020	(PRAQ-R2)	I. Pre: 68.09±4.47																				
		I. Post: 31.01±4.23	↓																			
		C. Pre: 67.06±5.23																				
		C. Post: 44.39±4.47																				
Liu et al., 2021	Spielberger State-Trait Anxiety Inventory	I. Baseline: 48.65±6.53																				
		I. Week 12: 44.44±6.63																				
		I. Week 20: 42.64±6.32	↓																			
		C. Baseline: 49.52±7.78	↓																			
Kahlon et al., 2021	Self-Assessment Anxiety Scale (SAS)	C. 12th week: 47.85±8.02																				
		C. Week 20: 46.53±7.67																				
		I. Pre: 5.9(4.9-6.9)																				
		I. Post: 4.1(3.2-5.0)	↓																			
Wei et al., 2020	Generalized Anxiety Disorder (GAD-7)	C. Pre: 5.8(4.8-6.9)																				
		C. Post: 6.0(4.9-7.0)																				
		Averages are not presented in the article.	↓																			
		I. Pre: 62.8±5.0																				
Thombs et al., 2021	Hamilton Anxiety Scale	I. Post: 55.1±6.7																				
		C. Pre: 63.2±5.5	↓																			
		C. Post: 58.2±8.2																				

↓ Prenatal distress, ↔ Multidimensional case shortage, ^ Fear of birth, ^^ Fear of COVID-19, I. Intervention, C. Control

sclerosis patients through SpinChat did not influence anxiety symptoms immediately after the intervention, it was found to have a positive effect on anxiety and depression symptoms 6 weeks after the intervention (Table 6).^[16]

In the secondary results obtained from the studies included in the study; in the telehealth program applied to cystic fibrosis patients and their parents, in which online videos were used, it was seen that the levels of stress and depression decreased, and the feasibility and satisfaction were positive.^[14] On the other hand, it was determined that tele-education offered to pregnant women during COVID-19 reduced their anxiety, fear of giving birth, and having a physically or mentally disabled child and did not cause any change in their concerns about their appearance.^[22] Besides, in the WeChat-based parenting education research conducted with parents of children with autism, it was seen that stress and depression levels decreased, and feasibility and satisfaction were positive.^[15] In the study of patients diagnosed with COVID-19, it was observed that the empathy-focused phone call program reduced loneliness, depression, and anxiety compared to the control group; moreover, while there was no change in social isolation and physical health perceptions, there was an increase in satisfaction and mental health perception.^[24] In another study in which internet-based integrated intervention and voice recording was applied, it was seen that depression levels decreased.^[17] Furthermore, it has been determined that the telehealth intervention offered to systemic sclerosis patients with the SpinChat videoconferencing method significantly reduced the depression levels, the feasibility and satisfaction were positive, and there was no change in the perceptions of distress, fear of COVID-19, and loneliness (Table 6).^[16]

Discussion

During the COVID-19 pandemic, telehealth is thought to be a rapidly accepted practice by staff and patients, ensuring that hospital-based psychiatric services remain open, active, and clinically effective while meeting the needs of protecting personal protective equipment and maximizing social distance.^[11] However, it has been observed that 7 studies used in the management of anxiety during the pandemic process and included in this systematic review have a heterogeneous structure, and the studies carried out in this field are few in terms of quantity. Although significant increases were observed in telehealth use in the United States at the beginning of the COVID-19 pandemic, it is stated that there are inequalities in the use of telehealth services depending on age, marital status, geographical location, and rural-urban divide.^[26] Moreover, telehealth was considered poor by users compared to face-to-face medical appointments/personal care due to ineffective communication, limitations on technology, problems with obtaining prescriptions and pathology, reduced trust in physicians, the additional burden of complex care, and the inability to be physically examined.^[27] This explains why the number of quantitative studies is limited since health service

providers do not feel equipped with telehealth methods yet and inadequacies in the infrastructure.

In the studies we reviewed, it was seen that the online video conferencing method was preferred in the anxiety management of cystic fibrosis patients, systemic sclerosis patients, and mothers of preschool children with autism,^[14-16] while both phone calls and online video conferencing methods^[24] were preferred in the anxiety management of fragile individuals supported by charities. In addition, it was observed that telenursing,^[23] internet-based integrated intervention, and voice recording^[17] were preferred in the anxiety management of patients with COVID-19, while telephone calls and short message applications were preferred in the anxiety management of pregnant women.^[22] It was determined that the telehealth interventions included in the studies effectively reduced the participants' anxiety levels in the entire study population, except for cystic fibrosis patients, regardless of the differences in the type of intervention, the number of sessions, and the duration of the sessions. Fear of the unknown is expressed as the strongest predictor of anxiety.^[28] That is, people often experience anxiety in the face of uncertainty. In the study conducted on patients with cystic fibrosis, researchers found that because the cause of the disease was known to be hereditary, and because the anxiety measurement was not focused on cystic fibrosis disease but instead used the Generalized Anxiety Disorder Assessment (GAD-7), which evaluates generalized anxiety disorders, the telehealth intervention did not affect anxiety.

When the studies that reported a decrease in the anxiety levels of the participants were examined, the highest result in the studies in which anxiety assessments were made before and after the intervention (before the intervention: 68.09 ± 4.47 - after the intervention: 31.01 ± 4.23) was achieved in the telenursing, telephone counseling, and training program for individuals with COVID-19 disease, with a decrease of 37 units. A difference of 14 units was found between the intervention and control groups of the same study.^[23] This finding supports the view that telenursing is effective in changing the symptoms associated with the health of patients and can be used to improve mental health and education in clinical areas and to encourage self-care behaviors.^[29]

Providing mental health support (especially through telehealth) is likely to help individuals maintain their psychological well-being and cope with acute, and post-acute health needs more positively.^[30] When studies conducted with individuals with chronic diseases are examined, it is seen that the anxiety of patients with cystic fibrosis who received 4 sessions of telehealth intervention was reduced by 1.3 units.^[14] The anxiety of patients with systemic sclerosis who received 12 sessions of telehealth intervention was reduced by 5.9 units.^[16] When the studies carried out in the groups that take care of individuals with chronic diseases are examined, it has been observed that the anxiety levels of the parents of the patients with cystic fibrosis, in which 4 sessions of telehealth intervention were applied, decreased by 0.2 units.^[14] In addition, a decrease of 2

units in the first 12 weeks and 6 units in total were determined in the anxiety levels of parents with autistic children to whom 24 sessions of telehealth intervention were applied.^[15] These results obtained from the studies suggest that more effective results can be obtained in reducing the level of anxiety by increasing the number of sessions. As a telehealth intervention, studies in which internet-based telephone interviews were conducted show a decrease in the anxiety levels of patients diagnosed with COVID-19, who were called every day for 2 weeks^[17] and called every other day for 3 weeks.^[23] At the same time, it is seen that the anxiety levels of pregnant women who were given tele-education with 5 sessions of phone calls and who were in a particular group,^[22] and fragile people (individuals with at least one chronic disease sponsored by a charity, 63% over 65 years old and 79% female) who were made 8 sessions of empathy-focused phone calls decreased.^[24] These results suggest that telephone conversations effectively reduce the anxiety levels of individuals regardless of the number and frequency of sessions.

Limitations

From the beginning of the COVID-19 pandemic, including the peak periods, the effects of the concepts of fear and anxiety about the pandemic on humans and the studies on these effects took place in a limited time frame. This limitation meant that we could not get any results in national publications in our searches, and the studies in the international literature were quantitatively limited. Moreover, there are no studies conducted in psychiatry clinics on patients with an anxiety diagnosis. In addition, the limitations of the studies on similar sample groups created a constraint in the compilation and interpretation of the findings.

Conclusion

In the pandemic process, telehealth interventions offered with online video conferencing programs such as WeChat and SpinChat, telenursing and tele-education phone calls, and internet-based integrated interventions such as voice recording, text message, and video are effective in reducing the anxiety levels of patients with systemic sclerosis, patients diagnosed with COVID-19, pregnant women, and fragile individuals. In this context, integrating telehealth interventions into anxiety management by identifying risky groups can help provide supportive interventions effectively. To reveal and expand the potential of telehealth, it is necessary to increase the number of relevant studies, specifically for at-risk groups and diagnosed patients.

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