

# Telehealth and Telenursing in COVID-19 Pandemic

## COVID-19 Pandemisinde Telesağlık ve Telehemşirelik

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**ABSTRACT** The use of masks, personal hygiene and social distance were recommended as protective measures in combating coronavirus (CoV). Some CoV disease measures (stay at home, social distance) taken due to the pandemic, prevented individuals from accessing routine health care. During this period, people should both stay at home and also benefit from routine health services. Telehealth applications come into service to help people while staying at home and supporting them with home-caring applications. While telehealth applications are used for provision of services in the fields of diagnosis, treatment, disease prevention, education and research, their use for tele-counseling, remote diagnosis and treatment and follow-up were also widespread. While telehealth applications reduces contamination risk through restricting inter-personal contact, they also enabled to treat the symptoms and other medical problems of diseased individuals. During the pandemic, telehealth applications increased the satisfaction of healthcare professionals and patients and medical and nursing associations supported the use of telehealth in the coronavirus disease-2019 (COVID-19) pandemic. As a result; the COVID-19 pandemic increased the need for telehealth applications and in the pandemic, health services provided by telehealth applications allow to limit the transmission of infection, to ensure continuity of care, to increase the participation of patients and their relatives in care, and to save time and costs. In addition to all the downsides of the COVID-19 pandemic, it is thought to contribute to the development and spread of telehealth practices. However, the COVID-19 pandemic may have increased nurses' familiarity with the concept of telenursing and accelerated their adaptation to tele-nursing practices.

**Keywords:** Coronavirus; nursing; pandemic; telehealth; telenursing

**ÖZET** Koronavirüsle [coronavirus (CoV)] mücadelede koruyucu önlemler olarak maske kullanımı, kişisel hijyen ve sosyal mesafe önerildi. Pandemi nedeniyle alınan bazı yeni CoV hastalığı önlemleri (evde kalma, sosyal mesafe), bireylerin rutin sağlık hizmetlerine erişimini engelledi. Bu dönemde toplumun hem evde kalması hem de rutin sağlık hizmetlerinden yararlanması gerekiyordu. Telesağlık uygulamaları, insanlara evde kalırken yardımcı olmak ve onları evde bakım uygulamalarıyla desteklemek için hizmete girdi. Telesağlık uygulamaları; tanı, tedavi, hastalık önleme, eğitim ve araştırma alanlarında hizmet sunumunda kullanılırken, tele-danışmanlık, uzaktan teşhis ve takip ve tedavi amaçlı kullanımları da yaygınlaştı. Telesağlık uygulamaları kişiler arası teması sınırlayarak, hastalık bulaşma riskini azaltırken, aynı zamanda virüs bulaşmış kişilerin semptomlarının ve diğer tıbbi sorunlarının tedavisine de izin verdi. Pandemi sürecinde telesağlık uygulamaları, sağlık profesyonellerinin ve hastaların memnuniyetini artırdı ve tıp ve hemşirelik dernekleri koronavirüs hastalığı-2019 [coronavirus disease-2019 (COVID-19)] pandemisinde telesağlık kullanımını destekledi. Sonuç olarak, COVID-19 pandemisi, yüz yüze temas olmadan sağlık hizmetleri sunmayı amaçlayan telesağlık uygulamalarına olan ihtiyacı artırdı ve pandemide telesağlık uygulamalarıyla sağlanan sağlık hizmetleri; enfeksiyon bulaşını sınırlamaya, bakımın sürekliliğini sağlamaya, hasta ve yakınlarının bakıma katılımını artırmaya, zaman ve maliyetten tasarruf yapmaya olanak sağladı. COVID-19 pandemisinin tüm olumsuzluklarının yanı sıra telesağlık uygulamalarının gelişimine ve yaygınlaşmasına katkı sağladığı düşünülmektedir. Bununla birlikte COVID-19 pandemisi, hemşirelerin telehemşirelik kavramına aşinalıklarını artırmış ve telehemşirelik uygulamalarına adaptasyonunu hızlandırmış olabilir.

**Anahtar Kelimeler:** Koronavirüs; hemşirelik; pandemi; telesağlık; telehemşirelik

On December 31, 2019, 27 pneumonia patients of unknown etiology were detected in Wuhan, Hubei province of the People's Republic of China. Dry cough, shortness of breath, fever, and bilateral lung infiltrates images were detected in these patients. This disease was named as severe acute respiratory syn-

drome-coronavirus-2 by the Chinese Center for Disease Control and Prevention.<sup>1</sup> On January 12, 2020, World Health Organization (WHO) named this disease as the new coronavirus (CoV), and on January 30, 2020, WHO declared the new CoV disease as an "international public health emergency of interna-

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tional concern".<sup>1,2</sup> Since then, the disease has spread rapidly, and as of December 27, 2020, the number of cases diagnosed with coronavirus disease (COVID-19) have been reported as 79 232 555 worldwide.<sup>3</sup>

While the symptoms of dry cough, sore throat and fever recover spontaneously in some patients diagnosed with COVID-19, it causes various fatal complications such as organ failure, septic shock, pulmonary edema, severe pneumonia and acute respiratory distress syndrome in several patients.<sup>4</sup> Suspected COVID-19 patients, and confirmed COVID-19 patients presenting with mild symptoms with good general condition and contact COVID-19 patients were followed and treated at home.<sup>5</sup> Treatment of COVID-19 patients with poor general condition should be done in the intensive care units of the hospitals.<sup>6</sup>

## TELEHEALTH APPLICATIONS IN COVID-19 PANDEMIC

The use of masks, paying attention to personal hygiene and keeping social distance were recommended as protective measures in combating this fatal disease. For this reason, it was emphasized that people should stay at home as much as possible and should not leave their homes except the compulsory cases.<sup>7</sup> While some measures taken due to the pandemic, prevented individuals from accessing routine health care, it was stated that face-to-face consultations, treatment and care in hospitals/clinics facilitated the spread of the disease.<sup>8,9</sup> Therefore, it should be provided for the people staying at home ensured to have benefited from the routine health services.<sup>10</sup> In this point, telehealth applications come into service to help people while staying at home and supporting them with home-caring applications. Telehealth was defined as; the use of communication and information technologies in the provision of health services for the information, care and treatment needs of the society.<sup>11,12</sup>

While telehealth applications are used for provision of services in the fields of diagnosis, treatment, disease prevention, education and research, their use for tele-counseling, remote diagnosis and follow-up were also widespread.<sup>12</sup> Telehealth applications reduced the risk of disease transmission by limiting interpersonal contact, while also allowing the treatment

of symptoms and other medical problems of people infected with the virus.<sup>13</sup> As a result, the COVID-19 pandemic increased the need for telehealth applications that aim to provide health-care services without face-to-face contact.<sup>14,15</sup>

During the course of pandemic process, telehealth applications could be used for various purposes for different patients and age groups. Telehealth applications were frequently preferred as they have provided the opportunity to reach rural areas during the pandemic process and eliminate the need for travel for reaching health care services.<sup>15,16</sup> Smrke et al. specified that for oncology patients during the pandemic process, the use of telehealth services saved time and costs by eliminating the distance to be traveled to reach the hospital.<sup>17</sup> Health care services could be delivered to rural, remote and poorly populated areas by the help of telehealth applications.<sup>18</sup>

Telehealth applications contributed to meet the health-care requirements of elderly people who were in the risk group due to the pandemic. It is worrying that for disease transmission concerns the elderly people were not going to the health institutions for their other health problems. In these cases, telehealth applications were preferred.<sup>19</sup> In Spain; telephone-based support and television-based health applications and social media were used to support elderly dementia patients and their caregivers during the pandemic process.<sup>20</sup> Fisk et al. in their study evaluating the COVID-19 pandemic situation of three countries (Australia, the United Kingdom, and the United States), stated that telehealth applications provided great benefits for the elderly, who were at the most risk group.<sup>15</sup>

Also during the pandemic period, telehealth applications were used for the protection of the mental health of the society and for the close follow-up of psychiatric patients. Chakeri et al. found that; patient follow-up by phone was effective in reducing anxiety in patients with suspected or confirmed COVID-19.<sup>21</sup> Pasadino et al. found that fear and anxiety decreased in women and their families who were given perinatal care with virtual class and webinars during the pandemic.<sup>22</sup> In the studies of Petrelli et al., patients

with insulin pumps were provided remote health-care through video conferencing by a team of doctors, nurses, dieticians and technical staff during the crisis period. It has been determined that this intervention also helped to protect the psychological health of the patients and prevented the progression of their current diseases.<sup>23</sup>

Besides, Sahu et al. stated that during the pandemic process, the use of e-consultation in the management of psychiatric care and treatment in patients with substance use disorder has been widely accepted by nurses and doctors.<sup>24</sup> In other study, one child with autism spectrum disorder have been managed with a telehealth based system during pandemic and telehealth was found effective in management of process 14-day quarantine.<sup>25</sup> Telehealth applications improved the satisfaction of healthcare professionals and patients during the pandemic process. Telehealth applications reduced the exposure risk of patients and healthcare professionals to infection and enabled patients to receive safe care and treatment.<sup>15,26,27</sup> Aydemir et al. reported that the use of telehealth was welcomed by patients and healthcare professionals.<sup>28</sup> In another study, virtual visits enabled patients to receive health care in a safe environment and were widely accepted by patients.<sup>29</sup> During the COVID-19 pandemic, patients and healthcare professionals were found to be highly satisfied with the telehealth care services usage.<sup>17</sup>

Apart from patient-oriented interventions in the pandemic, the use of telehealth applications for healthcare workers fighting on the front line was also encountered in the literature and the contribution of telehealth interventions were emphasized.<sup>30</sup> Remote psychotherapy intervention for nurses showing signs of depression or anxiety was welcomed by the nurses. In addition, it was determined that the deterioration of the psychological state was prevented.<sup>31</sup> Viswanathan et al. provided individual mental care services to doctors and nurses with peer group support using video conferencing and telephone.<sup>32</sup> It has been determined that telehealth services contributed to doctors and nurses in coping with crisis and emotion management. Similarly, it has been determined by Feinstein et al. that, the mental health crisis line (helpline) established for healthcare workers is supportive in pro-

tecting the mental health of healthcare workers.<sup>33</sup> It is seen that the telehealth applications utilized during the pandemic period have a positive effect on patients and healthcare professionals.

It was stated that telehealth applications provide active benefits to patients with in-patient COVID-19, patients with good general conditions with confirmed COVID-19 and contact patients during home care, hospitalization and post-pandemic recovery periods.<sup>34</sup> However, it was emphasized that telehealth applications should not be seen as an alternative to traditional health services and that their use should be expanded by integrating them into the trainings of all health professionals after the pandemic.<sup>15</sup>

## TELENURSING APPLICATIONS IN COVID-19 PANDEMIC

With advancement in technology, nursing science continues to be influenced by telehealth practices.<sup>26</sup> Telenursing is the nursing practices that provide communication by overcoming the distance barrier between nurses-patients, nurses-nurses and nurses-health care professionals by means of technology.<sup>35</sup> Health services are provided to all age groups from newborn babies to the elderly using communication and information technologies with telenursing applications.<sup>36</sup> During the pandemic process, by reducing clinical visits, postponing elective surgical procedures and routine controls, nurses resort to telehealth practices in order to manage physical resources and help individuals to access routine care in order to meet new requirements.<sup>27,37,38</sup> Telenursing, has been accepted as an effective strategy for infection control especially during the pandemic process. Nurses use telehealth technologies in patient education, patient monitoring and complication prevention.<sup>39</sup> Many medical and nursing associations support the use of telehealth during the COVID-19 pandemic. The European Society of Gastrointestinal Endoscopy and the European Society of Gastroenterology and Endoscopy Nurses and Associates recommend online care for patients, if appropriate.<sup>40</sup> The Wound, Ostomy, and Continence Nurses Society and European Association of Urology also emphasizes the necessity of telehealth practices to maintain patients' care effectively and safely.<sup>41,42</sup>

Telehealth practices have played an active role in controlling the increase in the number of cases in the pandemic and in the efficient use of health resources and improving patient care.<sup>27</sup> In Ergöncü et al.'s study, patients with cancer-related pain have been treated via home visits or telemedicine. Telehealth applications have become an alternative solution in the pandemic process.<sup>43</sup> Zeneli et al. indicated in their study that during the pandemic, nurses followed oncology patients by phone and provided patient care on issues such as infection control (COVID-19 symptom screening, early detection, risk assessment and doctor referral), patient education and triage before hospital visits. Thus, by controlling the increase in the number of oncology patients infected with COVID-19, nurses contributed to patient care outcomes and the protection of institutional resources.<sup>44</sup> Marchiori et al. determined that the use of telehealth is effective in the management of nurses to support breastfeeding in a crisis environment and ensure its sustainability.<sup>45</sup> Thomas et al. indicated in their study that with the use of telemedicine (such as anamnesis, patient education, triage, visit preparation) under the management of a Parkinson's disease specialist nurse, the multidisciplinary team was coordinated to prevent complications during the pandemic process.<sup>46</sup> Winkelman et al. found that video visits performed under the supervision of 2 pediatric urologists and 2 nurses resulted in 81% success.<sup>47</sup> Hundreds of thousands of patient calls were answered in the COVID-19 pandemic by the call center, which was served by a team of operator doctors, nurses and healthcare professionals.<sup>48</sup> Especially in patients with confirmed COVID-19 surgery patients, postoperative follow-up and photographing of the wound revealed the positive contribution of telehealth services in postoperative complication management.<sup>49</sup> Similarly, patients with confirmed COVID-19 could be followed up by nurses for 48 hours with virtual visits after their discharge from the hospital.<sup>29</sup> Morgan et al. indicated in their study that; patients with or confirmed COVID-19, 24/7 symptoms follow-up were performed by nurses using the program named COVID Watch and the nurses were guided when necessary. With this nurse-led program, efficiency in patient management and

patient satisfaction has been achieved.<sup>50</sup> In Rabuñal et al.'s study, patients with confirmed COVID-19, were followed by internal medicine physicians and nurses using TELEA (Hospital Universitario Lucus Augusti, Lugo, Spain), (a web-based electronic tool) and TELEA was found useful in patient who high-risk patients with COVID-19 who do not meet criteria for hospital admission.<sup>51</sup> Schaumberg stated that especially patients with severe and persistent mental illness needed telenursing practices more in pandemics to reduce the negative effect of quarantine on psychological health.<sup>52</sup> In a meta-analysis covering 8 studies, it is stated that telehealth is an important solution in minimizing the risk of COVID-19 transmission and maintaining care. In addition, it is emphasized that telehealth has the power to reduce morbidity and mortality in the COVID-19 outbreak.<sup>53</sup>

#### ■ MATTERS TO BE CONSIDERED IN TELEHEALTH APPLICATIONS IN COVID-19 PANDEMIC

Nurses have responsibilities such as monitoring the electronic health outcomes of patients within the scope of telehealth practices during the pandemic process, determining the care needs, controlling the effectiveness of the treatment and the accuracy of the care practices, meeting the information needs, ensuring patient safety, keeping the infection under control and referring to the physician when necessary.<sup>39,54</sup> In addition, nurses have important roles in maintaining preventive health services, providing psychosocial support to the community in this process, and preventing and managing complications.<sup>21,55</sup>

Nurses' readiness and willingness to meet the technologies used in patient care are important in integrating and expanding the use of telehealth services into the conventional care.<sup>26</sup> Nurses who would provide telenursing services are expected having clinical experience, skilled technology using such as computers, and having the professional communication ability.<sup>56</sup> In this regard, nurses should be trained in telehealth practices and supported for selecting appropriate telehealth practices according to patient requirements.<sup>25</sup> On the other hand, protecting the



privacy of patients' health data could be difficult in telehealth applications. Therefore, new legal regulations are needed to ensure the privacy of patients and to protect healthcare professionals.<sup>26</sup>

In addition, potential barriers for reaching telehealth applications should also be considered. Some of those were stated as; indicators of patient care outcomes based on patient reports, inability to access materials to be used during care, insufficient technology literacy, inability to access technology, cost and reimbursement of telehealth applications low income, physical disabilities, aging and rural population.<sup>57,58</sup> Measures should be taken against these barriers to increase the effectiveness and availability of telehealth applications.

## CONCLUSION

In the COVID-19 pandemic, health services provided by telehealth applications allow to limit the transmission of infection, to ensure continuity of care, to increase the participation of patients and their rela-

tives in care, and to save time and costs. In addition to all the downsides of the COVID-19 pandemic, it is thought to contribute to the development and spread of telehealth practices. However, the COVID-19 pandemic may have increased nurses familiarity with the concept of telenursing and accelerated their adaptation to telenursing

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### Conflict of Interest

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### Authorship Contributions

*All authors contributed equally while this study preparing.*

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