



Mini-Review Article

# Medical Investigation of the Use of Telenursing in Covid 19 Pandemic: A Mini-Review Study

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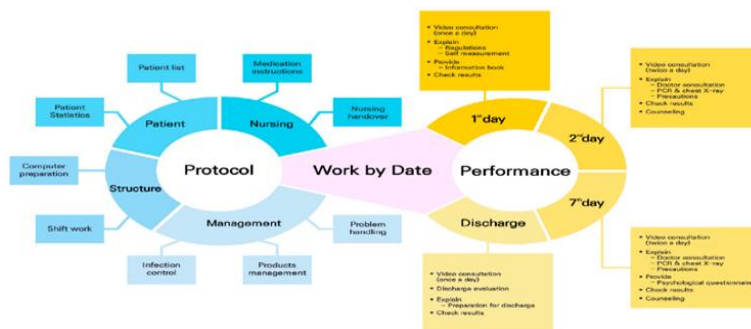
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## ABSTRACT

Tele-nursing is an evolving subject and with the advent of new technologies, the scope of nurses' practice is expanding. As a systematic review, in this study after reading the summary and full text of the articles related to the research topic, we extracted the required data, including author name, year, place, type of study, sampling method, data collection instruments and results. Finally, the data obtained from the articles was categorized and finally reported in the full text of a review article. The steps performed were designing the research question, searching and extracting research-related studies, selecting related studies, tabulating and summarizing the data, and reporting the results. The tele-nursing is a medical method to provide high quality nursing care in the field of COVID-19. Distance education by nurses is essential to promote the mental health of families and children in the field of Covid 19. Tele-nursing is a solution to meet the challenges of efficient and quality health services.

## GRAPHICAL ABSTRACT



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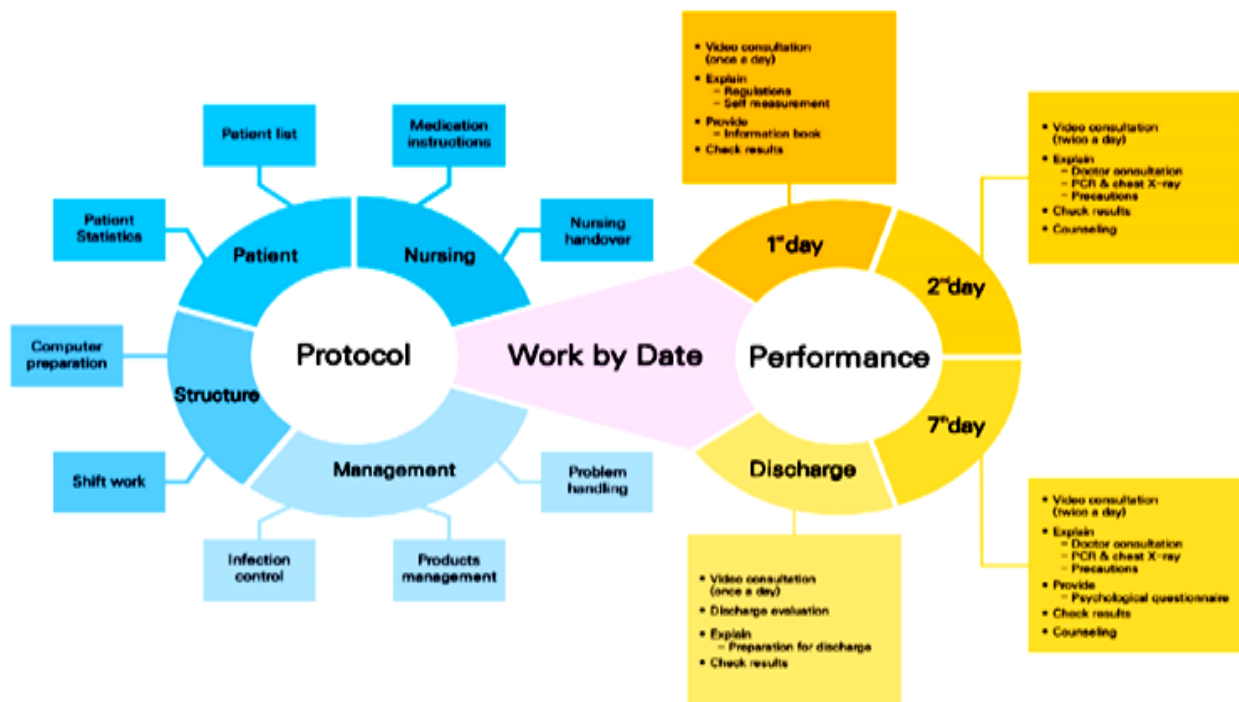
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**Introduction**

The spread of the coronavirus around the world has become a global challenge. Nurses, meanwhile, are one of the leading experts in combating COVID-19, helping to screen suspected patients, prevent the spread of infection and provide information on COVID-19 prevention measures. On the one hand, increasing technology growth and access to nursing services, has necessitated the use of tele-nursing in patient care. Many countries have tried various measures to control the spread of the virus, including social distancing, house arrest orders, closure of unnecessary businesses, travel restrictions and quarantine. Although these measures have been useful in controlling infection, they have posed challenges [1-3]. In the care of patients with COVID-19, the main goal is to minimize the risk of transmission of infection between nurses and patients. Even World Health Organizati (WHO) has called for infection control

in suspected patients. Therefore, self-care education is the best option for treating infectious diseases [4-6]. As said earlier, nurses play a pivotal role in preventing this disease [7-9]. Therefore, in general, the role of nurses is to provide physical, psychological, social and spiritual care to people who have been affected by coronavirus epidemic [10-12]. It should be noted that patients with COVID-19 even after completion of hospital treatment still requires regular follow-up. One of the suitable tools in this field is tele-nursing [13-15].

On the one hand, tele-nursing in patient care has become more demanding by increasing technology growth and access to nursing services [16-18]. Technology development can change the way nursing care is provided and help to enable nurses to provide nursing care to patients, families, and the community through communication [19-21].



**Figure 1:** Medical investigation of the use of tele-nursing in Covid 19 pandemic [22]

Absenteeism interventions after discharge is one of the most important aspects of modern nursing, which is called tele-nursing in modern nursing care. Tele-nursing aims to improve the quality of care, patient safety and rapid access to nursing care by removing geographical barriers and using landlines, mobile phones, SMS and new

technologies [23-25]. According to the International Association of Nurses, tele-nursing is the use of telecommunication technology to provide nursing services, and a cost-effective way, which is supported by communication and electronic processes and in which various means of communication such as mobile phone, SMS,

email, video and voice calls, telephone software, Internet, radio are used to transmit information (Figure 2) [26-28]. Further, as stated previously, telephone follow-up acts an effective branch of telemedicine as it can be accessed by many people [29-31].

Tele-nursing is more accessible and efficient for patients and guides the caller to the right path to

reach the desired level of health and self-care (Figure 2) [32-35]. Tele-nursing reduces referral to emergency departments and increases productivity in nursing procedures [36-38]. In many cases, after discharge from the hospital, the patient is primarily responsible for self-care at home [39].

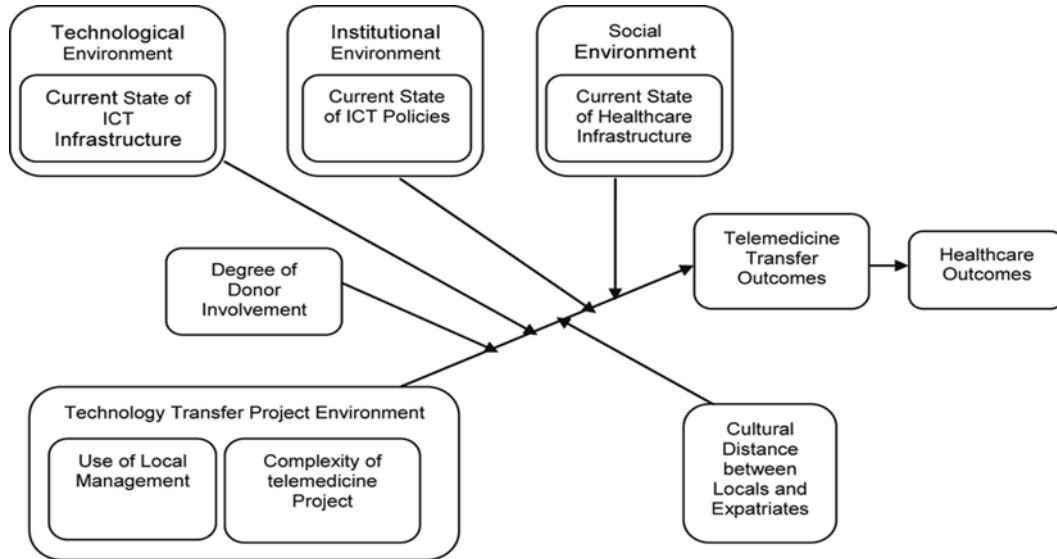


Figure 2: Tele-nursing is the use of medical telecommunication technology [40]

While patients often do not follow their care and treatment plan, various factors such as ineffective communication, incomplete understanding of the treatment plan, lack of access to facilities for the

treatment plan, the existence of a complex treatment regimen are the reasons why patients cannot understand the process without guidance (Figure 3) [13].

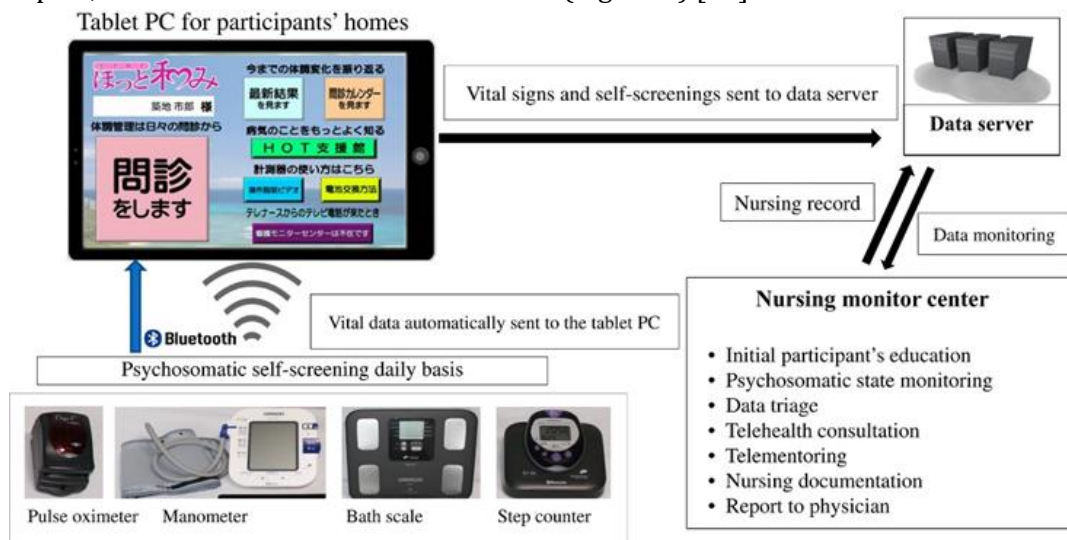


Figure 3: Tele-nursing is more accessible and efficient for patients [17]

Unfortunately, with the increase in workload, high admission of patients and lack of manpower, education to the client has been affected and not well implemented, while training and providing

manuals to patients can reduce readmission and complications of diseases. And it is recommended that patient education be accompanied by follow-up methods after discharge [46]. Therefore, due

to the increasing prevalence of Covid 19 disease and the importance of paying attention to nursing care through tele-nursing, a review study was conducted to investigate the use of tele-nursing in the Covid 19 pandemic [40].

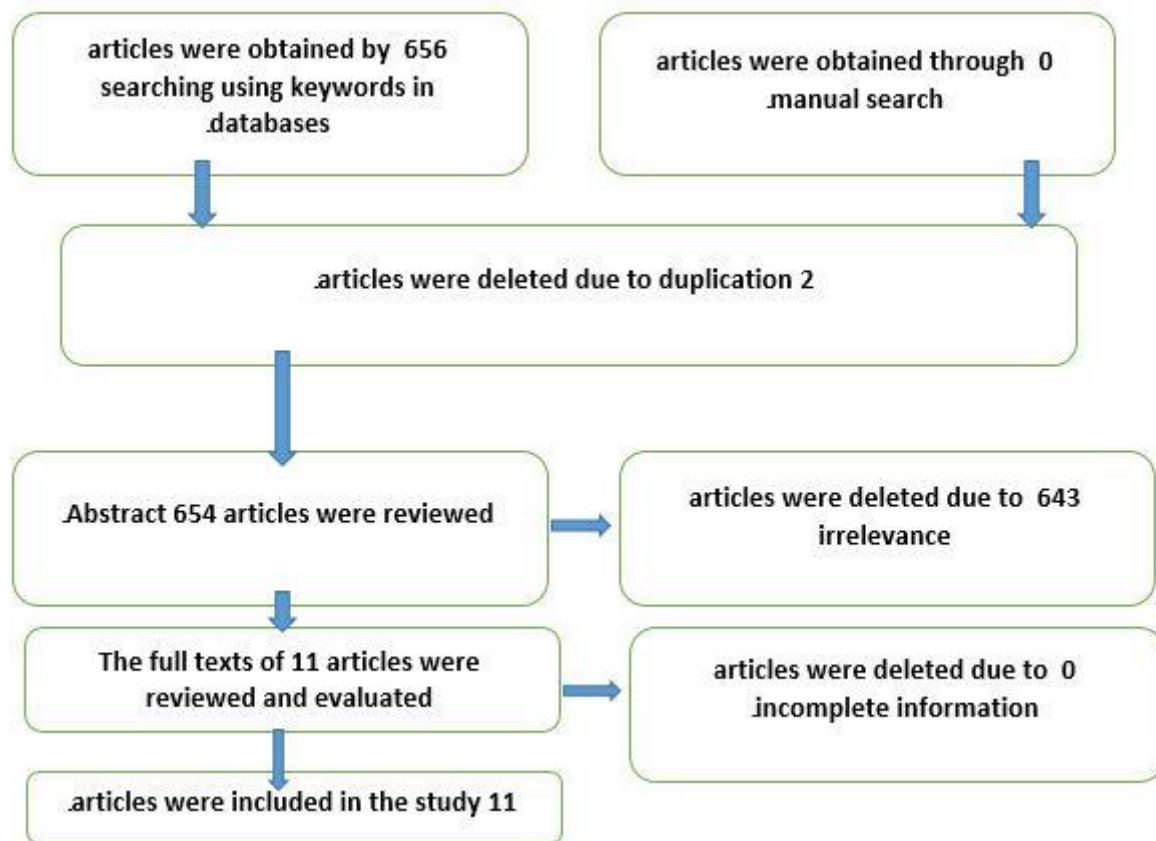
**Material and Methods**

This study was a conceptual review base on the following steps:

- a) Designing a research question;
- b) searching and extracting research-related studies;
- c) selecting related studies;
- d) tabulating and summarizing information and data, and

e) reporting the results.

Using the keywords in the searches, 44 articles from Persian databases and 612 articles from international databases and a total of 656 studies were collected. The studies were reviewed based on inclusion criteria. The selection of related studies was done in such a way that first a list of titles and abstracts of all articles in databases was prepared by researchers. And if after reading the title and abstract, it was not possible to make a decision about the study, the full text was studied. Then the related articles were independently entered into the research process [13].



**Figure 4:** Tabulating and summarizing information and data. At this stage, after the data were extracted, all study data were summarized based on the name of the first author, year, place, title, tools or research elements

**Results and Discussion**

After reading the summary and full text of the articles related to the research topic, the required data were extracted for writing, including author name, year, place, type of study, sampling method, data collection instruments and results. Finally, the data obtained from the articles was categorized and finally reported in the full text of a review article [26].

The use of new technologies and tele-nursing is a way to provide high-quality nursing care in the field of COVID-19. Distance education by nurses is essential to promote the mental health of families and children in Covid 19 [19]. Al-Afik (2021) showed that tele-nursing is a solution to meet the challenges of efficient and quality health services. A summary of 10 articles shows that there are significant benefits to using tele-nursing to promote good health. This is a manifestation of

the 21st-century nursing model that uses technology to provide nursing care [32]. According to a study by Kilova et al., tele-nursing is an evolving topic, and with the advent of new technologies, the scope of nurses' performance is expanding. Tele-nursing is an opportunity to fill the gap created by the current shortage of nurses during the corona epidemic. Tele-nursing is very suitable for COVID 19 patients, patients with chronic diseases and the elderly [15].

Lee's study showed that the provision of mental health services by tele-nursing during the COVID-19 pandemic met the expectations of most patients. Health care providers and psychiatric traps can be a practical and appropriate way to support patients and health care providers. A combined model of medical and telemedicine services will also meet the different needs of patients in the post-epidemic years [26].

Gholipour showed that there is no statistically significant difference between the general comfort score of the group that received 6 training sessions through tele-nursing and the group that did not receive it (control group) [37]. According to Shariati *et al.*, the use of telecommunications (web-based) between nurses and family members is effective in reducing their perceived stress. The perceived stress scale score (PSS 14) was higher among the telemedicine group. In addition, the use of tele-nursing, in addition to being cheap, is a safe way to communicate with patients and families in the current state of medical centers. Therefore, its use is recommended to nurses, staff and physicians [15].

Abdo's study also showed that the use of educational program using tele-nursing had a positive effect on improving the standard scale of preventive measures (CSPS) of the studied nurses. Telecommunication is a new opportunity in the COVID-19 epidemic to reduce the risk of infection. In the Ozkan Sat's study, the mean total score of the Tilberg Pregnancy Anxiety Scale (TPDS) in pregnant women who used mobile education was significantly different from the control group, which was lower. The use of mobile education in pregnant mothers during the COVID-19 epidemic seems appropriate [1]. Tele-

nursing makes it possible to provide medical services to patients and, by removing geographical barriers, provide more maternal health education. Tele-nursing has also improved the health of pregnant mothers during the COVID-19 epidemic [29].

The high positive rate of Covid-19 in Indonesia has caused stigma in Covid-19 patients, which has happened due to excessive concern in the community. A safe distance from Covid-19 patients should indeed be observed for Covid transmission. But they should not be rejected, they need support and psychosocial counseling. Hence, one of the most convenient options in the present age to prevent social stigma is the use of technology in this area for consulting and training. Therefore, tele-nursing seems to be suitable for training in this field [20].

The results of the current study and those of previous research showed that accurate identification of the benefits and barriers of tele-nursing for home care of patients with COVID-19 can be effective. Although the COVID-19 epidemic has led to a complex situation for nursing care systems, the efficient implementation of this technology can be a great opportunity to manage this disease and its patients. The results of this study highlight identifying the capacities of nursing education through tele-nursing and its gradual use in the field of nursing services in the future; the reason is that nursing care is a leading profession in the management of these patients and should be strengthened based on the current needs of society and the increasing development of technology. Further, due to the appropriate access of people to the Internet, tele-nursing should be taken more seriously to perform nursing care. Therefore, it is recommended that more efforts be made to apply the results in the field of tele-nursing [31].

Electronic management of chronic diseases is an effective way to provide reliable information, empower patients, change people's attitudes and behaviors, and potentially improve their medical condition; and due to the effect of tele-nursing on reducing complications, reducing the number of patients admitted, reducing the number of days in bed, reducing costs, facilitating access to

effective health care and removing barriers to place and time, can be a great help to nursing care [32]. Stanley *et al.* (2006) focused on the effect of tele-nursing on improving clinical outcomes and reducing home care costs; the results showed that tele-nursing provides comfortable services at the lowest cost [33].

Katsani *et al.* (2018) showed that tele-nursing has increased self-care. Tele-nursing has also increased patients' motivation for self-care [34]. Borhani *et al.* (2010) showed that tele-nursing improved patient self-care [35]. Tausandley *et al.* (2013) reported that the use of tele-nursing and video contact with diabetic patients helped control blood sugar in diabetic patients. Thus, tele-nursing has been able to promote health behaviors [35].

Kawaguchi *et al.* (2004) found that the tele-nursing system helps chronic patients to have better self-care, which may be due to regular follow-up and reminders of patients through tele-nursing, continuous patient education, emphasis on regular use of drugs, mentioning the side effects of the disease in telephone calls to patients and also controlling patients' weight [36]. Williams *et al.* (2012) investigated the impact of tele-nursing in special wards and found that tele-nursing reduced costs, increased patient safety, and improved health care. This may have been due to the increase in patients' awareness through tele-nursing and the possibility of questions and answers from the calling nurse [37]. Kami *et al.* (2013) found that tele-nursing significantly reduced the use of clinical health care [19]. Rajan *et al.* (2013) showed that tele-nursing increased awareness, and improved quality of life, their anxiety, self-care awareness, and drug side effects of patients [38].

A study by Rawat *et al.* (2018) showed that tele-nursing reduces the distance between the patient and health care providers and also reduces various health costs [39]. Rierson *et al.* (2011) declared a different role for the nurse as tele-nursing. Therefore, it is suggested that training in this new role be done to nursing students and nurses working in the clinic [40].

However, it has been stated that tele-nursing can increase patients' safety, increase the quality of

care and reduce side effects. However, there is a discrepancy in the research evidence on tele-nursing. For example, in a study on the effect of tele-nursing on the improvement of clinical complications, there was no difference between mortality between the two groups receiving tele-nursing and control [2]. Also, tele-nursing had no effect on improving the quality of life of patients with asthma. In another study, there was a decrease in HbA1C in both telemedicine and control groups [7]. Telepresing also had the same effect on smoking in both telepresing and control groups [22]. In the case of hypertension control at home, even an increase in blood pressure was reported in the tele-nursing group [1] while another study showed that tele-nursing reduced 2.8 mm Hg pressure in the intervention group, compared with 1.3 mm Hg common in the care group [19].

According to literature review, barriers to tele-nursing include uncertainty of patients' privacy, less understanding of patients' feelings, taking technology as a threat, limited view of the environmental status of space and disruptions of technology and the Internet [4]. In the matter of safety in tele-nursing, in addition to paying attention to the malfunction of communication equipment (such as mobile phones, Internet, etc.), the possibility of misunderstanding or incorrect transmission of information or suggestions by nurses should also be considered [17]. Therefore, in addition to the advantages of teleworking, its disadvantages and limitations should be noted, including lack of face-to-face interaction with patients, expensive systems required, ethical problems for nurses, due to the possibility of disclosing information and specifications, patients' inability to use equipment, various communication applications and device failure, and low nursing knowledge in some nurses.

Also, the required competencies in distance nursing should be considered by managers, including ability to work with e-mail, use of database software, mastery of video conferencing software, ability to work with Internet browser, and ability to work with various communication and mobile applications. Therefore, the roles of

informatics nurses in distance nursing should be considered, which can be helpful in areas such as software installation, patient education on how to use monitoring devices, the ability to solve potential problems of devices.

Remote nursing can provide services to patients regardless of time and place. Patients with special conditions, including those living in rural areas or suffering from chronic conditions, can seek medical advice without having to go to a health center, thus reducing health care costs. It also saves patient's time. The length of hospital stay decreases with the use of this technology and patients' independence and self-management increase. Tele-nursing provides an opportunity to continue and improve the training process. Finally, tele-nursing leads to improved medical care and reduced health costs. Therefore, tele-nursing can be used as a way to educate and follow up patients after discharge, and to improve the level of patients' independence and their quality of life.

### **Dissection and Conclusion**

The aim of the present study was to investigate the application of tele-nursing in the Covid 19 pandemic. Studies in this area have shown that tele-nursing is a way to increase patient care and can be cost-effective. It also includes the use of electromagnetic devices to transmit sound and information and video communication signals. Remote nursing is a cohesive program that provides effective nursing care for a large number of patients. Tele-nursing is a strategy that strengthens nursing activities and in fact allows nurses to use it professionally to guide and monitor patients who need help. On the other hand, it saves time, resources and further strengthens self-care. It is a common service in most countries and particularly western nations. It actually serves two purposes: It is accessible and safe for patients, and it is used to provide more efficient health care. The task of telecommunication is to steer the recipient of the information in the right direction to reach the level of health care and care line and telecommunication is a new opportunity in the COVID-19 epidemic to reduce the risk of infection. Using clinical knowledge, technical

skills, listening skills can lead to patient education and information transfer through nursing students. Tele-nursing is a coherent care program that saves time and maintains patients' self-care. On the other hand, nursing is a new technique and regardless of time and place, it can provide services to patients and help patients and families to actively participate in patient care at home, in other words, their follow-up. Mobile phone, which is an electronic service, helps to provide the necessary care in the health sector for the patient. Tele-nursing is a major source of investment in the health system, which has led to the advancement of nursing work in providing high quality services, patient-centered and evidence-based services. Tele-nursing has been mentioned as a new role of nurses and has been planned as part of the care plan and adherence to the treatment plan in chronic patients, especially diabetes. On the other hand, by providing reliable care and promoting health, it has reduced their anxiety and changed their lifestyle. Therefore, tele-nursing can be an important and practical tool in responding to the needs of patients in the Covid 19 pandemic, and it is a great opportunity for health managers to pay more attention to this area.

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### **Authors' contributions**

All authors contributed toward data analysis, drafting and revising the paper and agreed to be responsible for all the aspects of this work.

### **Conflict of Interest**

The authors declare that they have no competing interests.

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