


Effects of love glove application on vital signs for COVID-19 patients in the intensive care unit

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Abstract

Aim: To evaluate the effects of love glove application on vital signs for COVID-19 patients in the intensive care unit.

Design: A single-group pretest-posttest quasi-experimental design was used. TREND Statement Checklist was followed during the present study.

Methods: The study was conducted on 30 intubated/extubated adult patients. The gloves were filled with warm water and air to prevent pressure injuries. Then they were tied together and applied to both hands of the patient for 30min. The patient's vital signs were recorded before and after the application. A Wilcoxon signed-rank test was performed.

Results: It was determined that respiratory rate, systolic blood pressure, diastolic blood pressure and oxygen saturation were significantly affected after the application of the love glove. The application of love gloves is a cheap and non-pharmacological method with no side effects.

Patient or Public Contribution: Patients were involved in the design and conduct of this study.

KEYWORDS

care, intensive care, nursing intervention, patient-centred care, vital signs

1 | INTRODUCTION

The COVID-19 epidemic, which started in Wuhan, China, in December 2019, quickly drew the whole world into a health struggle (Alexandridi et al., 2022). The highly contagious Corona virus has pushed the units in the hospital to an intense working tempo in order to cope with the epidemic. One of the most important places where these health studies take place is in intensive care units (Liew et al., 2020). Some of the patients who got COVID-19 needed

treatment in intensive care units (Phua et al., 2020). Globally, as of 21 February 2023, there have been 757,264,511 confirmed cases of COVID-19, including 6,850,594 deaths, reported to the WHO. As of 22 February 2023, a total of 13,223,135,400 vaccine doses had been administered (WHO, 2023).

COVID-19 can cause respiratory, enteric, hepatic, nephrotic and neurological problems (Aiyegbusi et al., 2021; Sze et al., 2020). It can lead to severe acute respiratory syndrome from an asymptomatic condition. The main cause of morbidity and mortality in

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COVID-19 is acute respiratory distress syndrome due to acute viral pneumonia (Selickman et al., 2022). In the course of time, it can progress to multiple organ failures (Zhao et al., 2022). Depending on the differences between countries and institutions, it has been seen that the rate of needing intensive care in COVID-19 patients varies between 32% and 56% (Abate et al., 2020; Armstrong et al., 2020; Quah et al., 2020). Low- or high-flow oxygen therapy, noninvasive or invasive mechanical ventilation and pharmacological treatments are included in the treatment of these patients in the intensive care process (Rollas & Senoglu, 2020). The most important and first step of the treatment and follow-up process is the evaluation of the patient's vital signs. The patient's heart rhythm, respiratory rate, blood pressure, body temperature and oxygen saturation are evaluated at regular intervals (Youssef Ali Amer et al., 2021).

2 | BACKGROUND

Patients are struggling against COVID-19 in isolation in intensive care units. They may feel lonely away from their family and friends. This feeling causes stress in the body. In intensive care treatment, patients are in a physical and emotional struggle to regain their health. It is very important for patients to feel their loved ones with them during the recovery process (Hwang et al., 2020; Navarra-Ventura et al., 2022).

It has been seen that the "hands of love" applied by intensive care nurses in Brazil provide emotional support to patients and contribute to their recovery. Two nurses filled latex medical gloves with some warm water while working in the emergency care unit. They used this application, which gives the feeling of imitation of human touch, in the healing of patients. It was thought that the application gave the patients the feeling of holding hands, thus providing emotional support. In addition, it is thought that the application may have positive effects on the regulation and monitoring of blood oxygen levels and blood flow (Reuters, 2021).

Nurses convey messages such as closeness, interest, trust, courage, sincerity, warmth and support to patients through touch. Effective touch is a powerful therapeutic intervention. It has also been seen in studies that this intervention has a positive effect on respiration, pulse and blood pressure (Bagci & Cinar Yucel, 2020; Fritz & Fritz, 2020a, 2020b; Tabatabaee et al., 2016; While, 2021; Zare et al., 2010).

It is thought that this application, which gives a feeling of human touch, may have a positive effect on the vital signs of patients with a diagnosis of COVID-19 followed in the intensive care unit. This application may provide positive physiological as well as emotional support during the healing process of patients. When the national and international literature is examined, it has been seen that there is no scientific study for this application. In the present study, it was aimed at evaluating the effect of love glove application on vital signs for COVID-19 patients in the ICU.

3 | METHOD

3.1 | Study design and aim

In the study, a pretest-posttest quasi-experimental design with a single group was used. The study aimed to evaluate the effect of love glove application on vital signs for COVID-19 patients in the ICU. The TREND Statement Checklist was followed during the present study (Des Jarlais et al., 2004).

3.2 | Settings and participants

The research was conducted in the COVID-19 intensive care unit of a state hospital in Istanbul. All COVID-19 patients treated in the intensive care unit between September 2021 and February 2022 were included in the study, and no sample selection was used. 30 adult patients (age ≥ 18 years) who remained intubated/extubated for more than 24 h after admission to the ICU participated in the study. Intubated patients's Glasgow Coma Scale points were 3, and extubated patients' coma scales were 15.

3.3 | Data collection

Data were collected using the "patient identification form" and the "vital signs follow-up form".

- There were five questions (age, gender, intubation status, consciousness status, Glasgow Coma Scale) in the patient identification form.
- Vital signs follow-up forms included body temperature, pulse rate, blood pressure, oxygen saturation and respiratory rate.
- Before the application, the vital signs of the patients were checked and recorded. Latex medical gloves were filled with warm water and air to prevent pressure injury and to give a feeling of human touch, like the same method that was developed by nurses in Brazil. They tied together and placed on both hands of the patient, like someone holding their hands for 30 min just for a day. After the application, the vital signs of the patient were recorded.

3.4 | Statistical analysis

The data were analysed with the SPSS 24 program. To analyse the relationship between independent variables and dependent variables, firstly, it was examined whether the data showed a normal distribution. Since the Kolmogorov-Smirnov p value was less than 0.05, the data did not show a normal distribution. Because the pretest-posttest difference scores of the patients were not normally distributed, a Wilcoxon signed-rank test was performed. A Wilcoxon

signed-rank test is used to compare two related samples, matched samples, or to conduct a paired difference test of repeated measurements on a single sample to assess whether their population mean ranks differ.

3.5 | Ethical considerations

This study was conducted in accordance with the Declaration of Helsinki. Ethics Committee approval was obtained from the Istanbul Gelisim University Ethics Committee (2021-27-20) for the implementation of the study. Institutional permission was given by the Association of Public Hospitals General Secretarial. The patients and their relatives who agreed to participate in the study were informed about the purpose of the study. Consent was obtained from the conscious patients themselves and from the families of the unconscious patients.

4 | RESULTS

The individual features of participants in the study are indicated in [Table 1](#). 70% of the patients were male, and the mean age was 60.83 (min: 37–max: 91). Half of the patients (50%) were intubated and unconscious. Similarly, 50% of the patients had a Glasgow Coma Scale score of 3.

The mean vital signs of pre- and post-application that belong to the participants of the study are indicated in [Table 2](#) comparatively. While the body temperature of the patients included in the study was $36.37 \pm 0.37^\circ\text{C}$ before the application, it was $36.47 \pm 0.38^\circ\text{C}$ after the application, and this result was statistically non-significant ($p > 0.05$). The mean respiratory rate was determined as $22.96 \pm 4.84/\text{min}$ before the application and $24.30 \pm 5.08/\text{min}$ after the application. It was seen that there was an increase in the respiratory rate, and the result was found to be statistically significant ($p < 0.05$). While the mean pulse rate was

$88.86 \pm 18.8/\text{min}$ before the application, the mean pulse rate was $92.70 \pm 17.17/\text{min}$ after the application. It was seen that there was an increase in the pulse rate, but the difference was not statistically significant ($p > 0.05$).

The mean systolic blood pressure (SBP) of the patients was $123.90 \pm 21.16\text{mmHg}$, and the mean SBP after the application was $120.30 \pm 22.50\text{mmHg}$, which was found to be statistically significant ($p < 0.05$). The mean diastolic blood pressure (DBP) of the patients was $71.06 \pm 11.42\text{mmHg}$ before the application and $70.03 \pm 8.77\text{mmHg}$ after the application, and the difference was statistically significant ($p < 0.05$). It was seen that both SBP and DBP decreased after application. While the oxygen saturation of the patients was $91.80 \pm 6.79\%$ before the application, it was determined to be $93.03 \pm 6.34\%$ after the application. It was seen that there was an increase in oxygen saturation, and the difference was statistically significant ($p < 0.05$).

5 | DISCUSSION

This study was planned to examine the effect of love glove application on body temperature, respiration, pulse, systolic blood pressure, diastolic blood pressure and oxygen saturation in patients with COVID-19 hospitalized in the intensive care unit.

Touching a person has the effect of eliciting positive reactions in both physical and psychological terms. It is known that tactile interventions can lead to changes in parameters such as blood pressure and heart rate. Touch has been shown to decrease the release of the stress hormone cortisol and increase the release of serotonin and oxytocin. Touch also produces social intimacy. For this reason, touching is very important when individuals need social support and protection. One of the places where this need is felt most is in intensive care units (Muehlenpfordt et al., 2020).

The management of body temperature is extremely important in the follow-up treatment of critically ill patients, and intensive care units include patients in critical condition (Drewry & Mohr, 2022). Individual factors (comorbidities, age, physical activity, stress, etc.), temporal variables and environmental conditions are important in body temperature measurement and monitoring. Environmental conditions in intensive care units are monitored with certain protocols (Dell'Isola et al., 2021). Considering the stable temperature management strategy in intensive care units and the absence of a definitive result in the literature that touch causes a change in body temperature, it was thought that the body temperature of our patients did not change after the application, which is an expected result within the literature.

It has been seen that the application of love glove, which is similar to the feeling of human touch and holding the hand, shows similarities with the studies in the literature in some aspects and differences in some aspects. In the study conducted by Maville et al. (2008), it was observed that the pulse rate and systolic blood pressure of the individuals decreased after the healing touch. In the same study, no change was observed in diastolic

TABLE 1 Individual features of patients ($n=30$).

Individual features	N	%
Gender		
Female	9	30.0
Male	21	70.0
State of consciousness		
Conscious	15	50.0
Unconscious	15	50.0
State of being intubated		
Intubated	15	50.0
Non-intubated	15	50.0
Glasgow Coma Scale score		
Total score 3	15	50.0
Total score 15	15	50.0

Vital signs	Before	After	p-Value
Body temperature (°C)	36.37±0.37	36.47±0.38	0.06
Respiratory rate	22.96±4.84	24.30±5.08	0.02*
Pulse rate	88.86±18.81	92.70±17.17	0.62
Systolic blood pressure (mmHg)	123.90±21.16	120.30±22.50	0.01*
Diastolic blood pressure (mmHg)	71.06±11.42	70.03±8.77	0.00*
Oxygen saturation (%)	91.80±6.79	93.03±6.34	0.00*

* $p < 0.05$ (Wilcoxon signed-rank test).

TABLE 2 Comparison of vital sign values before and after the love glove application.

blood pressure (Maville et al., 2008). Similarly, in another study, a decrease in pulse rate and a decrease in respiratory rate were observed after therapeutic touching (Zare et al., 2010). The variability between hand holding and heart rate was examined by Pishbin et al. (2012). In that study, it was observed that sympathetic activity decreased and parasympathetic activity increased (Pishbin et al., 2012). In our study, it was determined that the blood pressure that decreased after the application of love glove was similar to the above-mentioned studies, but there was an increase in heart rate, although it was not statistically significant. Unlike other studies, the increase in heart rate was thought to be a rebound effect of blood vessels in the fingers on the application. In addition, it was thought that the presence of COVID-19 disease, ventilation treatments and medical treatments may also affect the heart rate change (increase) in the study. It was thought that all of these also had an effect on the change (increase) in the respiratory rate in the study.

When the studies in the literature were analysed about the mechanical ventilation support needs of the patients, Akbudak reported that 72.2% of the COVID-19 patients needed invasive respiratory support (Akbudak, 2021). A systematic analysis by Ouyang et al. (2021) revealed that the use of invasive mechanical ventilation was 47%, 76.2% and 80.2% in Asia, Europe and North America, respectively. In line with the data on the need for mechanical ventilation related to COVID-19, in this study, 50% of the patients were intubated.

In the study in which patients with a diagnosis of COVID-19 were examined, an increase in respiratory rate and heart rate was observed. In the same study, a decrease in saturation value and a stable course in body temperature and blood pressure values were observed (Pimentel et al., 2020). In the study conducted by Erzincanli and Kasar (2021), the effect of hand massage on vital signs and anxiety was examined. In this examination, it was found that there was a decrease in blood pressure and heart rate (Erzincanli & Kasar, 2021). In the study conducted by Kwon et al. (2018), it was seen that hand holding helped to decrease heart rate and systolic blood pressure. At the same time, a decrease was found in the pain levels and anxiety levels of the patients (Kwon et al., 2018). The love glove application, which has similar effects to hand holding, provides positive effects on the spirituality of the patients in this respect.

It is known that planned sensory input applications (touch, therapeutic touch and expressive touch) positively affect the sensory perceptions, reduce the psychosocial problems of the patients, increase their sense of value and improve physiological parameters by regulating blood pressure and pulse (Arslan & Ozer, 2007; Turan, 2015). In our study, an increase in the oxygen saturation of the patients was observed. There is no finding in the literature that touching increases the saturation value in patients. However, studies have shown that haemoglobin is increased in patients who have been treated with expressive touch. In the study of Arslan and Ozer (2007), when the post-touch pre-test and post-test haemoglobin averages of the experimental and control groups were compared, the haemoglobin average of the experimental group was found to be higher than the control group (Arslan & Ozer, 2007). The research findings are similar to those of our study.

Our study results support the idea that this application provides support to patients in increasing spiritual well-being and improving some vital signs. However, when the national and international literature is examined, it has been determined that there is no scientific study for this application.

6 | CONCLUSION

This study shows that the application of the love glove is a cheap and non-pharmacological method that can be used to improve the spiritual well-being of patients with COVID-19. The application also has a positive effect on the follow-up and treatment of vital signs such as systolic and diastolic blood pressure, respiratory rate and oxygen saturation.

6.1 | Limitation

Due to the decrease in intensive care hospitalizations of patients diagnosed with Covid-19, 30 patients could be reached during the study. The study can be repeated with a larger and different sample group. Also since the Glasgow Coma Scale score of the intubated patients was 3, psychosocial evaluation could not be performed. Therefore, only physiological parameters were measured in the

study. For future research, it may be recommended to plan studies with patients whose state of consciousness is clear and who can respond to stimuli.

7 | RELEVANCE TO CLINICAL PRACTICE

The findings from this research demonstrate that the glove of love can be applied to intensive care patients. Because the patients in the intensive care unit may experience stress due to the difficulties they experience, this application, which can make patients feel human warmth, can provide emotional support to patients and contribute to their recovery. Considering the positive effect of the application and the fact that it is an easy method, it has been determined that it can be applied to different patient groups and units.

AUTHOR CONTRIBUTIONS

Study conception and design: FK, AG, MR, GY, GUJ, ANYS; Data collection: RA; Data analysis and interpretation: FK, AG, ANYS; Drafting of the article: FK, AG, ANYS, MR, GY, GUJ, BSS; Critical revision of the article: FK, AG, ANYS, MR, GY, GUJ, RA, BSS,.

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CONFLICT OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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