Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Research Article

The effectiveness of motivational messages to intensive care unit nurses during the COVID-19 pandemic

Selmin Köse [a,*], Elif Gezginci [b], Sonay Göktaş [b], Merve Murat [a]

[a] Department of Nursing, Health Sciences Faculty, Biruni University, Istanbul, Turkey
[b] Hamidiye Faculty of Nursing, University of Health Sciences Turkey, Istanbul, Turkey

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ABSTRACT

Objectives: To examine the effect of motivational messages on optimism, hopelessness, and life satisfaction of intensive care nurses during the COVID-19 pandemic.
Study design: This is a multicentre, randomized controlled, open-label study.
Research methodology/design: The study was conducted with a total of 87 nurses working in the COVID-19 intensive care units of three hospitals in Istanbul. Motivational messages were sent via SMS to the participants in the motivational group (n = 41) for 21 days. The data were obtained using a Personal Information Form, the Life Orientation Test, Beck Hopelessness Scale and the Satisfaction with Life Scale.
Results: The nurses' mean age in the motivational and control groups was 28.4 ± 7.6 and 26.9 ± 3.7 years, respectively. Before the messages, no statistically significant difference was found between the two groups in terms of life orientation ($p = 0.059$), hopelessness ($p = 0.214$), and satisfaction with life ($p = 0.898$) scores. After the messages, life orientation ($p = 0.042$) and life satisfaction ($p = 0.040$) scores were significantly higher in the motivational group compared with the control group, and the hopelessness score was significantly lower ($p = 0.005$).
Conclusion: According to our study, motivational messages sent to intensive care nurses during the pandemic increased their level of optimism and life satisfaction and decreased their level of hopelessness.
Trial registration: NCT04751474.

Implications for clinical practice

- Intensive care nurses working at the forefront during the COVID-19 pandemic are negatively affected mentally.
- Evidence-based studies are needed to increase the motivation of intensive care nurses during the pandemic.
- Motivational messages sent to intensive care nurses during the COVID-19 pandemic have positive effects on nurses' optimism, hopelessness and life satisfaction.

Introduction

The coronavirus disease (2019) COVID-19 pandemic has affected health systems globally and required healthcare professionals to perform at a high level. In this process, the mental health and well-being of intensive care nurses, who bear the greatest burden in health systems, is negatively affected. When factors that affected nurses were examined, they were the long working hours and high patient care burden, dealing with uncertainties due to COVID-19, and worrying about themselves and their families (Shen et al., 2020; Azoulay et al., 2020). In countries where the number of cases is high and increasing, intensive care nurses have been affected primarily from a professional standpoint, but also mentally, emotionally, and socially (Hong et al., 2021; Pappa et al., 2020).

* Corresponding author.
E-mail addresses: skose@biruni.edu.tr (S. Köse), elif.gezginci@sbu.edu.tr (E. Gezginci), sonay.goktas@sbu.edu.tr (S. Göktaş), mmurat@biruni.edu.tr (M. Murat).

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Nurses have to deal with many challenging situations throughout the day. These difficult situations may be caused by patients or relatives, colleagues or organization-related (e.g. *payment related, housing, staff shortages*). In everyday life, they cause high stress among nurses, which can create burnout (Guo et al., 2018). In a systematic review, stress and burnout syndrome in critical care nurses was examined and it was emphasized that burnout syndrome was a serious problem for the healthcare system (Friganović et al., 2019). High stress can turn into serious psychological problems such as post-traumatic stress disorder, depression and anxiety disorder in the long term (Hong et al., 2021; Pappa et al., 2020).

When the literature is reviewed, pessimistic thinking, feelings of hopelessness and anhedonia, which are considered among depressive symptoms, can be observed in intensive care nurses. The results of the study conducted by Shen et al. (2020) with 85 intensive care nurses showed that nurses had fatigue, decreased appetite, sleep problems, aggression and suicidal thoughts, albeit at low rates (Shen et al., 2020). In another study in the United States of America (USA), it was found that 80.1% of nurses experienced moderate/high stress, 43% had anxiety, and 26% had depression (Kim et al., 2021). In the study conducted by Murat et al. (2021)** in Turkey during the COVID-19 pandemic, it was found that the level of stress and burnout was high and the level of depressive symptoms was moderate among nurses (Murat et al., 2021). As the COVID-19 pandemic continues, these symptoms are predicted to be higher in nurses who have not previously provided critical patient care due to the intensive care unit (ICU) patient volume (Shen et al., 2020; Pappa et al., 2020; Chen et al., 2020).

Motivation affects the daily life of individuals, helps them to be ready and changes their behaviours. With this, motivation got affected from external factors such as life satisfaction, life orientation, and feeling hope (Rathore et al., 2015). Change can be affected by using tools that increase motivation in individuals positively. Motivational messages are one of the tools that are effective, cheap, and easy-to-use and help to increase the motivation of the individual.

The literature shows that COVID-19 affects nurses' psychological well-being negatively. Besides, interventions to prevent mental health problems or promote mental health should be planned in accordance with the restrictions taken to prevent the spread of COVID-19. From the beginning of the pandemic, internet use has increased in many sectors such as health, economy, and education and mobile phones are very effective in this increase (De' et al., 2020). In the literature, mobile phone technology was used for individuals to help gain healthy behaviours and to improve disease management (Newton et al., 2018; De Vries et al., 2017; Xu et al., 2019; Hawkins et al., 2018). Interventions other than motivational messages have been performed to increase the well-being of nurses via mobile phones. In China, call centres (*30-minute interviews*) provide healthcare professionals with support for their mental state and well-being. It was reported that interventions could help nurses with the problems experienced during the pandemic by supporting self-efficacy without the need for advanced intervention (Chen et al., 2020).

During the COVID-19 pandemic, using mobile phones can be the best option to support nurses, regardless of the location and time. Although several studies are mobile-message based (De Vries et al., 2017; Hawkins et al., 2018), there is a paucity of data regarding the effectiveness of text message programs as a motivational tool. Therefore, we aimed to provide support to ICU nurses' mental health with motivational messages sent over the phone because increasing the mental health and well-being of nurses is as important as fighting the pandemic. Hence, the study's purpose was to examine the effect of motivational messages on optimism, hopelessness, and life satisfaction of intensive care nurses during the COVID-19 pandemic, and it was hypothesized that motivational messages would increase the nurses' life orientation and life satisfaction while decreasing hopelessness.

Research questions:

RQ1. How did motivational messages affect ICU nurses' optimism during the COVID-19 pandemic?
RQ2. How did motivational messages affect ICU nurses' hopelessness during the COVID-19 pandemic?
RQ3. How did motivational messages affect ICU nurses' life satisfaction during the COVID-19 pandemic?

Methods

Trial design

This research was a multi-centre, open-label, randomized-controlled clinical trial. The study was conducted in accordance with the Consolidated Standards of Reporting Trials (CONSORT) and prospectively registered on clinicaltrials.gov.tr (No: NCT04751474).

Participants

This research was performed with nurses working in the COVID-19 ICUs of three training research hospitals and a university hospital, which were designated as pandemic hospitals and affiliated to the Ministry of Health in Istanbul between February 1st, and March 1st, 2021. The population of the study consisted of nurses working in the COVID-19 ICUs of these hospitals (n = 120). The criteria for inclusion in the study were being a nurse, working only during the day shift on weekdays in the COVID-19 ICU, using a mobile phone, and accepting to participate in the study. In the institutions where the study was conducted, nurses work one month of night shifts and one month of day shifts according to the monthly working schedule. Nurses, who worked between February and March 2021 were included in the study. The exclusion criterion for the study was not fully completing the data collection forms.

Randomization

Randomization was performed using computer-based random sequence numbers (www.random.org). The random allocation sequence and the assignment of the participants to the groups were conducted by the researchers. Participants were numbered according to the order of inclusion in the study and assigned to the motivational group or control group according to random order numbers on the randomization list. Due to the research design, the principal investigator and patients were not blinded to allocation; however, the evaluator was blinded to the group allocation.

Data collection & interventions

Motivational group: Before starting the study, the opinions of the nurses working in the COVID-19 ICU about the content of motivational messages that would positively affect their level of optimism, hope, and life satisfaction were obtained. Motivational messages prepared by the researchers in line with the feedback received from the nurses were presented for expert opinions. Necessary arrangements were made with the recommendations of an expert team consisting of three nurse academics and two psychologists. The experts' evaluation was performed by considering the Davis technique (Davis, 1992). Experts scored each statement on a scale of 1–4 (1 = not suitable, 2 = item needs to be tailored, 3 = suitable, but needs minor change 4 = very convenient). As a result of content validity, the messages consisted of 44 statements and the Content Validity Index of the content was found as 94%. Nurses were allowed to take a short break (5–10 minutes) by the head nurse and access messages after they heard the message tone at the time of notification. Motivational messages were sent to the mobile phones of the nurses in the motivational group at 09:00 AM, 12:00 PM, 05:00 PM, and 07:00 PM for 21 days (Table 1). Different motivational messages were sent to the participants every day by the researchers. One-day sample

Table 1
Motivational messages.

Time	Messages
09:00 AM	'Good morning' message *(Example: You are very precious to us. Do not despair and remember what kind of struggle you are in. We can only win this war together. Good Morning…)*
12:00 PM	Breathing exercises *(Example: Breathing heals the soul. Count to 5 while breathing in and out. Try to focus yourself on your breathing for 1 min.)*
05:00 PM	Healthy life reminder message *(Example: You don't have to get off to a great start. But to be great, you have to get started. Now drink a glass of water and walk around for 1 min.)*
07:00 PM	Breathing exercises *(Example: Exercise breathing when you feel tense and want to relax your body. Take a deep breath and count to 5 as you exhale. Continue for 1 min.)*

motivational messages are shown in Table 1.

Table 1

Control group: Motivational messages were not sent to nurses in the control group and they continued their routine work in the ICU. Nurses in the control group took breaks in accordance with their unit.

Outcome measures

Data in the study were collected online using a Personal Information Form, the Life Orientation Test (LOT), the Beck Hopelessness Scale (BHS), and the Satisfaction with Life Scale (SWLS). Due to the COVID-19 pandemic, the first meeting with the participants was held using an online platform, the participants were given the necessary information about the study and their consent was received. The Personal Information Form, LOT, BHS, and SWLS were administered to the participants before the interventions began (*at the first day of the study*) as a pre-test. At the end of the interventions (*at the end of the 21st day of the study*), the LOT, BHS, and SWLS were readministered to the participants as a post-test. The primary outcome of this study was the difference in life orientation scores between the two groups as measured using the LOT. The secondary outcomes were the difference in hopelessness scores and life satisfaction levels between the two groups as measured using the BHS and the SWLS.

Personal information form

The 19-question personal information form, created by the researchers in line with the literature, included questions that would contribute to determining the sociodemographic characteristics of the individuals and their professional lives during the COVID-19 pandemic (Topuz, 2018; Polat et al., 2016; Atasoy and Turan, 2019; Yesilcinar et al., 2020).

Life orientation test (LOT)

A revision of LOT was developed by Scheier et al., in 1994. The Turkish validity and reliability study of the revised version of the test was conducted by Kahleoğulları in 2017. The test aims to reveal the differences between individuals in terms of optimism and pessimism. The test is evaluated as a 5-point Likert type (1: I do not agree at all, 5: I strongly agree). Items 3, 7 and 9 are scored in reverse. The lowest score that can be taken from the test is 6 and the highest is 30; low scores indicate pessimism and high scores indicate optimism. The Cronbach's alpha coefficient was 0.78 in the original study of the scale, and 0.75 in the study of Kahleogullari (Scheier et al., 1994; Kahleoğulları, 2017). In the present study, Cronbach's alpha coefficient was found as 0.71.

Beck hopelessness scale (BHS)

The BHS was developed by Beck et al., in 1974. Its Turkish validity and reliability study was conducted by Durak and Palabıyıkoğlu in 1994. The purpose of this scale, which was developed taking into account Beck's cognitive theory, was to determine the hopelessness level of individuals. The scale consists of 20 items and three sub-dimensions: emotions and expectations about the future, loss of motivation, and hope. The lowest possible score on the scale is 0 and the highest is 20, and the higher the score, the higher the hopelessness level of the individual. In the original study of the scale, the reliability coefficient of Kuder-Richardson-20 was 0.93. In Durak and Palabiyikoglu's study, the Cronbach alpha coefficient was found as 0.78 for emotions and expectations about the future, 0.72 for loss of motivation, and 0.72 for hope (Beck et al., 1974; Durak and Palabıyıkoğlu, 1994). In the present study, Cronbach's alpha coefficient was found as 0.85.

The satisfaction with life scale (SWLS)

The scale was developed by Diener et al., in 1985 and adapted into Turkish by Dağlı and Baysal in 2016. The scale, built on the concept of life satisfaction, which is one of the components of subjective well-being, aims to evaluate general life satisfaction. The scale consists of a single dimension and five items. In the Turkish version, it is a 5-point Likert-type scale and is scored between 1 and 5 (1: strongly disagree, 5: totally agree). The lowest score that can be obtained from the scale is 5 and the highest score is 25, and the higher the total score, the higher the life satisfaction level. In the original study, the Cronbach alpha coefficient was 0.87, and in the study of Dagli and Baysal it was 0.88 (Diener et al., 1985; Dağlı and Baysal, 2016). In the present study, Cronbach's alpha coefficient was found as 0.76.

Sample size and data analysis

The size of the study sample was calculated using the G*Power (v. 3.1.9.6.) program. A similar study using the Beck Hopelessness Scale was used for sample calculation (Topuz, 2018). As a result of the power analysis (80% representation ability, $\alpha = 0.05$, and effect size $= 0.6$), it was calculated that a total of 78 nurses would be required as a sample of

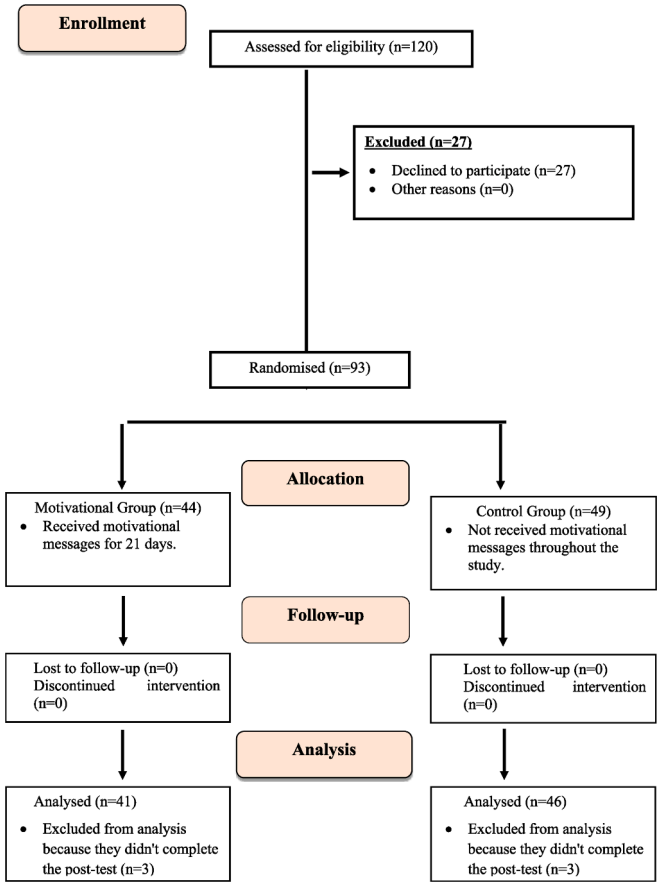

Fig. 1. CONSORT flow diagram.

39 interventions and 39 as the control group. However, taking into account possible losses during the study, the number of participants was increased by 10% and 93 nurses were included, 44 in the motivational group and 49 in the control group. The study was completed with a total of 87 nurses (41 interventions and 46 controls) because three nurses from the motivational group and three from the control group did not respond to the final test (Fig. 1).

The data obtained from the research were evaluated using the Statistical Package for the Social Sciences software package (SPSS–IBM Corporation v.24 Armonk, NY). Number, percentage, mean, standard deviation, median, minimum, and maximum values were used for the descriptive statistics of the study. The compatibility of the variables to normal distribution was evaluated using the Shapiro-Wilk test. Categorical data comparisons between independent groups of the study were analysed using the Chi-square test and Fisher's exact test. It was determined that the LOT and SWLS data showed normal distribution, whereas the BHS data were not normally distributed. In comparing the mean scores between the two groups, Student's *t*-test was used for variables with normal distribution, and the Mann-Whitney *U* test was used for variables that did not show normal distribution. Comparison of the pre-test and post-test mean scores of the groups were evaluated using the paired-sample *t*-test for data with normal distribution, and Wilcoxon's rank-sum test for data that did not show normal distribution. Variables were considered significant at the 95% confidence level and with p-values <0.05.

Ethical approval

For authorization of the research, an application was made to the COVID-19 Scientific Research Platform under the Republic of Turkey Ministry of Health, General Directorate of Health Services on January 8th, 2021, and the necessary approval was obtained (Number: 2021-01-05T13_54_08). In addition, the research was found ethically appropriate by the Ethics Committee on January 29th, 2021 (Decision Number: 2021/47-31). The study was conducted in compliance with the principles of the Helsinki Declaration. Before asking the research questions, an informed consent form explaining the purpose of the research and the use of personal data for scientific research was included in the online system. Participants were asked to answer the questions after first reading and approving this prepared statement. For data security, only individuals with the link were allowed to access the research questions; the participants' data was encrypted and only researchers were allowed access.

Results

Nurses' sociodemographic characteristics

The mean age of the motivational group and control group was 28.4 ± 7.6 and 26.9 ± 3.7 years, respectively. Women constituted 80.5% of the nurses in the motivational group and 73.9% of the control group. Considering their educational status, it was found that most of the nurses in both groups were undergraduates. It was determined that there was no statistically significant difference between the motivational group and control group in terms of sociodemographic characteristics ($p > 0.05$) (Table 2).

The nurses' characteristics regarding their profession during the COVID-19 pandemic

The years of experience as a nurse was 6.0 ± 8.1 for the motivational group and 4.4 ± 3.2 years for the control group, and the years of experience in the ICU was 4.4 ± 6.0 and 3.6 ± 3.1 years, respectively. Most (90.2%) of the nurses in the motivational group and 87.0% of the nurses in the control group worked in adult ICUs. The job satisfaction level of the nurses was determined as 31.7% in the motivational group and 54.3% in the control group, which was statistically significantly different ($p = 0.034$). Except for job satisfaction, no difference was found between the groups in terms of the characteristics of the nurses during the COVID-19 pandemic ($p > 0.05$).

Table 2
Nurses' sociodemographic characteristics (n = 87).

Variables	Motivational Group (n = 41)		Control Group (n = 46)		Test	p
	Mean ± SD (median)		Mean ± SD (median)			
Age	28.4 ± 7.6 (27)		26.9 ± 3.7 (26)		880.0[a]	0.590
	n	%	n	%	Test	p
Sex						
Female	33	80.5	34	73.9	0.529[b]	0.467
Male	8	19.5	12	26.1		
Educational Status						
Medical Vocational High School	5	12.2	6	13.0	0.054[b]	0.973
Graduate (Bachelor of Science)	30	73.2	34	73.9		
Post-graduate (Master or Doctorate Degree)	6	14.6	6	13.0		
Income status						
Income > Expense	16	39.0	11	23.9	2.390[b]	0.303
Income = Expense	20	48.8	29	63.0		
Income < Expense	5	12.2	6	13.0		

[a]Mann-Whitney U test. [b]Pearson Chi-square, $p < 0.05$.

During the COVID-19 pandemic, almost all nurses stayed in their own homes (motivational group: 97.6%, control group 97.8%). It was determined that 36.6% of the motivational group and 52.2% of the control group considered the isolation measures in their units to be sufficient and they similarly had no difficulty in finding personal protective equipment (PPE) (motivational group: 68.3%, control: 67.4%). The rate of diagnosing COVID-19 among colleagues was similar in both groups (motivational group: 97.6%, control group: 100%), and the rate of losing colleagues due to COVID-19 was 4.9% in the motivational group and 15.2% in the control group. Considering the volunteer working status of the nurses during the pandemic, 48.8% of the motivational group and 41.3% of the control group stated that they were willing to work voluntarily (Table 3).

Comparison of the life orientation test, beck hopelessness and satisfaction with life scales' mean scores of the groups

There was no statistically significant difference in the mean LOT scores between the groups before the motivational messages ($p = 0.050$), but a statistically significant difference was found after the motivational messages ($p = 0.043$). In the motivational group, the increase in LOT scores after motivational messages (22.2 ± 3.5) compared with before (18.5 ± 3.1) was statistically significant ($p < 0.001$). In the control group, LOT scores of post-test (20.5 ± 4.3) compared with pre-test (20.0 ± 3.8) were found to be similar ($p = 0.536$).

There was no statistically significant difference between the motivational and control groups in the mean BHS scores before the motivational messages ($p = 0.214$), but a statistically significant difference was found after the motivational messages ($p = 0.005$). In the motivational group, the decrease in BHS scores after motivational messages (3.7 ± 3.2) compared with the messages (6.6 ± 2.8) was statistically significant ($p < 0.001$). Although BHS scores decreased in the post-test (5.9 ± 4.2) compared with pre-test (6.4 ± 4.4) in the control group, the difference was not statistically significant ($p = 0.983$).

Although there was no statistically significant difference in mean SWLS scores before motivational messages between the groups ($p = 0.853$), a statistically significant difference was found after the motivational messages ($p = 0.040$). In the motivational group, the increase in

Table 3
The nurses' characteristics regarding their profession during the COVID-19 pandemic (n = 87*).

Variables	Motivational Group (n = 41)		Control Group (n = 46)		Test	p
	Mean ± SD (median)		Mean ± SD (median)			
Years of experience in nursing	6.0 ± 8.1 (3)		4.4 ± 3.2 (3)		920.5[a]	0.846
Years of experience in critical care	4.4 ± 6.0 (3)		3.6 ± 3.1 (2)		936.0[a]	0.951
	n	%	n	%	Test	p
Type of ICU						
Adult	37	90.2	40	87.0	0.230[c]	0.446
Paediatric	4	9.8	6	13.0		
Are you satisfied with your professional life?						
Yes	13	31.7	25	54.3	4.517[b]	0.034*
No	28	68.3	21	45.7		
Are you willingly working in the intensive care unit?						
Yes	31	75.6	35	76.1	0.003[b]	0.959
No	10	24.4	11	23.9		
Are you satisfied with the financial payment of your profession?						
Yes	2	4.9	3	6.5	0.108[c]	0.555
No	39	95.1	43	93.5		
Where do you stay during the COVID-19 pandemic?						
At home-alone	40	97.6	45	97.8	2.013[b]	0.365
At home with friends	1	2.4	0	0.0		
Accommodation provided by the institution, e.g. hotel, dormitory	0	0.0	1	2.2		
Do you find the isolation measures taken during your work at the COVID-19 sufficient?						
Yes	15	36.6	24	52.2	2.130[b]	0.144
No	26	63.4	22	47.8		
Do you have difficulty finding personal protective equipment?						
Yes	13	31.7	15	32.6	0.008[b]	0.928
No	28	68.3	31	67.4		
Have you been diagnosed as positive for COVID-19 during the pandemic?						
Yes	18	43.9	15	32.6	1.174[b]	0.278
No	23	56.1	31	67.4		
Have you had a colleague (such as nurse, physician, and technician) who tested positive for COVID-19?						
Yes	41	97.6	46	100.0	1.135[c]	0.471
No	1	2.4	0	0.0		
Have you had a colleague (such as nurse, physician, and technician) who passed away due to COVID-19?						
Yes	2	4.9	7	15.2	2.499[c]	0.109
No	39	95.1	39	84.8		
Would you volunteer to work during the COVID-19 pandemic?						
Yes	20	48.8	19	41.3	0.490[b]	0.484
No	21	51.2	27	58.7		

[a]Mann-Whitney U test, [b]Pearson Chi-Square, [c]Fisher's Exact Test *p < 0.05
The data were collected before intervention.

SWLS scores after the motivational messages (17.4 ± 2.0) compared with before the messages (14.2 ± 2.3) was statistically significant (p < 0.001). SWLS scores increased in the post-test (16.0 ± 3.7) compared with pre-test (14.1 ± 4.1) in the control group, and the difference was statistically significant (p = 0.028) (Table 4).

Table 4
Comparison of the mean Life Orientation Test, Beck Hopelessness and Satisfaction with Life Scales' scores of the groups.

	Motivational Group (n = 41)		Control Group (n = 46)		Test p
	Mean ± SD (median)	Min-Max	Mean ± SD (median)	Min-Max	
Life Orientation Test					
Pre-test	18.5 ± 3.1 (18)	12–25	20.0 ± 3.8 (20)	10–28	t: −1.987[c] 0.050
Post-test	22.2 ± 3.5 (21)	15–29	20.5 ± 4.3 (20)	13–30	t: 2.058 0.043
Test P	t: −5.159[a] <0.001		t: −0.624[a] 0.536		
Difference (△)	3.7 ± 4.6 (3)	−6–14	0.4 ± 5.1 (0.5)	−12–11	t: 3.0679[c] 0.003
Beck Hopelessness Scale					
Pre-test	6.6 ± 2.8 (6)	3–13	6.4 ± 4.4 (5)	1–17	Z: −1.244[d] 0.214
Post-test	3.7 ± 3.2 (3)	0–14	5.9 ± 4.2 (5)	1–18	Z: −2.835[d] 0.005
Test P	Z:−3.201[b] 0.001		Z:−0.021[b] 0.983		
Difference (△)	(−2,9) ± 3.8 (−3)	−11–9	(−0,2) ± 3.8 (0)	−12–8	Z: −2.958[d] 0.003
Satisfaction With Life Scale					
Pre-test	14.2 ± 2.3 (14)	10–22	14.1 ± 4.1 (14)	5–22	t: 0.0186[c] 0.853
Post-test	17.4 ± 2.0 (18)	14–22	16.0 ± 3.7 (15)	5–25	t: 2.089[c] 0.040
Test P	t:−5.032[a] <0.001		t:−2.266[a] 0.028		
Difference (△)	3.1 ± 2.7 (3)	−4–9	1.9 ± 5.7 (2)	−10–16	t: 1.268[c] 0.093

[a]Paired-Sample T-Test, [b]Wilcoxon signed-rank test, [c]Student T-Test, [d]Mann-Whitney U test, p < 0.05.

Discussion

The COVID-19 pandemic has affected the whole world and adversely affected health systems. This has caused significant psychological pressure on nurses involved in the care of critically ill patients with COVID-19 (Shen et al., 2020; Muller et al., 2020). In a comprehensive systematic review that examined studies to improve the well-being and mental health of healthcare professionals during the COVID-19 pandemic, it was reported that studies involving interventions to reduce mental health problems of healthcare professionals were limited and the effects of these interventions were not reported (Muller et al., 2020). In Hong et al.'s study, (2020), the stress levels of nurses who underwent comprehensive psychological intervention in the COVID-19 pandemic were found at an acceptable moderate level. In the same study, stress levels were associated with the health status of nurses and their families, the spread of the virus, and the concerns they experienced due to changes in their jobs **(Hong et al., 2021).

In a study of the psychological problems experienced by nurses during the COVID-19 pandemic, it was stated that the stress and burnout levels of nurses were high and their depression levels were moderate.[8] Similarly, in other studies, it has been reported that a significant portion of healthcare professionals working at the forefront of the pandemic, especially nurses, experience high rates of anxiety, depression, insomnia, and distress (Pappa et al., 2020; Murat et al., 2021; Muller et al., 2020). In the present study, it was determined that motivational messages significantly increased optimism levels in intensive care nurses during the COVID-19 pandemic compared with nurses who did not receive them, even though it was a single-site study. Although the COVID-19 pandemic causes various psychological problems for nurses, motivational support may have positive effects on nurses' life orientation.

In the study of Yesilcinar et al., it was stated that intensive care nurses had a moderate level of hopelessness, and their job motivation levels were high (Yesïlcinar et al., 2020). In the present study, it was

found that motivational messages sent to intensive care nurses had a significantly positive impact on hopelessness levels. It is thought that the nurses working in COVID-19 ICUs need motivational support and that the motivational support provided by professional members is effective in increasing the hope levels of nurses.

Although intensive care nurses are satisfied with providing compassionate care to patients and their families, they are also at risk in terms of fatigue. The quality of professional life depends on the balance between compassion satisfaction and work fatigue (Jakimowicz et al., 2018). In a study conducted with healthcare professionals during the COVID-19 pandemic, it was found that nurses had less compassion fatigue and burnout, and compassion satisfaction was higher than in physicians (Ruiz-Fernández et al., 2020). In another study, it was found that intensive care nurses providing care to patients with COVID-19 had a high burnout level and a moderate level of life satisfaction. As the burnout levels of intensive care nurses increase, their life satisfaction levels decrease (Cin and Hosgor, 2020). In the present study, the post-intervention life satisfaction levels were found to be significantly higher in the nurses who received motivation messages than in those who did not. As a result of these studies, it is seen that intensive care nurses are at risk in terms of compassion fatigue during the COVID-19 pandemic, but motivational messages have an effect on their life satisfaction.

The COVID-19 pandemic has had a significant impact on people's mental health and emotions and has also led to changes in coping strategies. The national measures and decisions taken in the COVID-19 pandemic are similar to those in the severe acute respiratory syndrome (SARS) epidemic process that emerged in Hong Kong in 2003. It is known that the mental state of nurses and the community is similarly affected (Liu et al., 2012). In a study that examined healthcare workers in high-risk areas in Beijing for 3 years, post-traumatic stress symptoms associated with SARS were observed in 10% of the participants, mostly nurses (Wu et al., 2009). Owing to the experience gained from the SARS epidemic, Hong Kong has been managed the impact of COVID-19 on the mental health of nurses with effective the preventative measures. (Cheung et al., 2021). In Spoorthy et al.'s study, the effect of the COVID-19 pandemic on the mental health of healthcare professionals and the interventions used for mental health were examined. The authors stated that healthcare professionals are less interested in professional help, pay more attention to social support and communication, and have fewer mental health problems with social support (Spoorthy et al., 2020).

Life satisfaction, hope, and optimism are the positive keys that enhance the psychological well-being of individuals. All three keys define a multidimensional approach such as professional life, family life, social life, and should be considered with a holistic approach (Rathore et al., 2015). In Spoorthy et al.'s (2020) study, positive motivational factors such as supportive environment, positive role models, appreciation by peers/patients helped to increase the motivation of healthcare professionals (Spoorthy et al., 2020). In the present study, it was determined that motivational messages sent to intensive care nurses in the COVID-19 pandemic had positive effects on nurses' mental health and well-being, increasing optimism and life satisfaction, and decreasing hopelessness. In line with the literature, it is seen that social support, communication, and motivation given to intensive care nurses working in the frontline during the pandemic are of great importance.

Limitations

There are some limitations that should be addressed with future research. First, the results obtained from this small single-site study are limited to the research participants, they cannot be generalized to all nurses working in COVID-19 ICUs. Besides, the study was conducted in a short time and the researchers cannot be sure that nurses continued with the intervention after the study. In addition, the intervention has short-term effects. There is a need for longitudinal research to determine the long-term effectiveness of motivational messages. Second, all data were based on nurses' self-reports. Moreover, before the research, the mental health status of nurses was not examined. Third, the researchers cannot be sure about the amount of participation in the intervention group such as applying the interventions written in the text, or cross-over effects from colleagues. Also, the participants could not be blinded due to the research design and demoralization and performance threats could be a limitation for validity.

Conclusion

Obtained results distinguished that our hypothesis were confirmed and motivational messages sent to intensive care nurses during the COVID-19 pandemic increased their levels of optimism and life satisfaction, while decreasing levels of hopelessness. Motivational techniques applied to intensive care nurses during the pandemic have great importance for the nurses' mental health. It is recommended to increase professional and social support systems to improve the motivation and mental health of nurses working in pandemic wards. More evidence-based studies are needed to increase the motivation of intensive care nurses during the pandemic.

CRediT authorship contribution statement

Selmin Köse: Conceptualization, Data curation, Investigation, Methodology, Project administration, Resources, Supervision, Writing – original draft, Writing – review & editing. **Elif Gezginci:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Supervision, Validation, Writing – original draft, Writing – review & editing. **Sonay Göktaş:** Conceptualization, Investigation, Methodology, Resources, Supervision, Writing – original draft, Writing – review & editing. **Merve Murat:** Data curation, Formal analysis, Investigation, Methodology, Validation, Writing – original draft.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.iccn.2021.103161.

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