

RESEARCH

Open Access



Effects of a remote social support on midwifery students' anxiety and attitudes during distance education: a randomized controlled study

Refika Genç Koyucu¹ and Elif Balkan Kuru^{2*}

Abstract

Background With the COVID-19 outbreak, distance education has become a necessity rather than an option. Some specific features of distance education have brought some short- and long-term concerns for students, families, teachers, and the education system. Another problem for midwifery students is that practical clinical training is not fully possible with distance education. This can be a serious cause of future and professional concern for them.

Method This randomized controlled study was conducted to evaluate the effects of distance social support program on anxiety and attitudes towards distance education with 89 midwifery students who switched to distance education due to the COVID-19 at a university in Istanbul, Türkiye, between June-September 2020. Data collected via The Student Form, MSPSS, STA-I, and ASDE. A remote social support program was applied to the experimental group. A p value of <0.05 was considered as statistically significant.

Results After the intervention, experimental group's social support perception scores, and attitude scores towards distance-education were significantly higher, and the anxiety score was lower than the control group ($p < 0.05$). There was a positive correlation between social support perception scores and attitude scores towards distance education ($r = 0.2, p = 0.04$), and a negative correlation between state anxiety scores and attitude scores towards distance education ($r = -0.33, p = 0.02$).

Conclusion In distance education, remote social support positively affects students' attitudes towards distance education through their perceptions of social support. For continuity of education, distance support programs are required as well as distance education. It is suggested for the educators that students should be supported not only academically but also socially during their education process.

Trial registration Clinical Trials Protocol Registration and Results System (Clinicaltrials.gov), NCT06691789 Date of registration 14.11.2024, retrospectively registered.

Keywords Anxiety, Distance education, Pandemics, Social support

*Correspondence:
Elif Balkan Kuru
e.balkan96@hotmail.com; elif.balkan@yalova.edu.tr

¹Department of Midwifery, Faculty of Health Sciences, Işinye University, Istanbul, Türkiye

²Department of Obstetrics and Gynecology Nursing, Faculty of Health Sciences, Yalova University, Yalova 77200, Türkiye



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

Introduction

The COVID-19 outbreak has broadly affected almost every aspect of individual and social life. Education was one of the most important systems that were heavily affected. Schools have been closed in many countries in order to reduce the spread of the infection. In Turkey, face-to-face education was suspended in mid-March. On the same date, the number of countries that had closed their schools was 112, and the number of affected students worldwide was 790.5 million. This figure was 45.1% of all students, globally. The number of students affected in our country was approximately 25 million [1].

Distance education is a teaching and learning model, planned through various communication channels within an organization. It joins students and teachers, who cannot physically come together for various reasons [2]. With the COVID-19 outbreak, distance education has become a necessity rather than an option. Some specific features of distance education, as well as the unprepared and rapid transition to this model, have brought some short- and long-term concerns for students, families, teachers, and the education system. Social isolation, infrastructure deficiencies, economic difficulties, lack of experience were among these problems [3–7]. Feelings of psychological isolation can result from positional separation and the lack of contact with other students and teachers. Students define isolation as an obstacle to their learning [8]. Apart from social isolation, another serious problem for students involved in midwifery training is that practical clinical training is not fully possible with distance education. This can be a serious cause of future and professional concern for them. Additionally, it is known that pandemics and other similar disasters have a negative impact on people's mental health [9]. Social isolation, professional and educational concerns, and other pandemic conditions can threaten the mental health of students. Acute and chronic psychosocial stressors are important predictors for anxiety disorders and depression [10]. In particular, for young adult students, anxiety and depression symptoms could interfere in their academic performance. Deficits in familiar relationships and social isolation can alter physical and mental health in young students, producing a reduction in their capacities for facing stressors in their education [10]. Zhang et al. determined that the course performance of nursing students studying via distance education during the COVID-19 period was poor [11]. Özkan et al. stated that nursing students experienced various difficulties related to distance learning during the COVID-19 period [12]. Acar Bektaş et al. found that most midwifery students who received distance education during the COVID-19 period did not approve of distance education and that the transition to distance education negatively affected laboratory and clinical practices [13]. Since the distance

education model is not generally suitable for health sciences vocational training, which includes practical training, it is a new application for these professions. Although there are many health professions, the reason for choosing midwifery students in this study was that midwifery students have official case numbers to complete along with their clinical practice and the researchers also work in the midwifery department, so it was easy to access the students.

In this study, it was aimed to evaluate the effects of distance social support and continuous communication program on midwifery students' anxiety, and their attitudes towards distance education. Hypotheses of this study were:

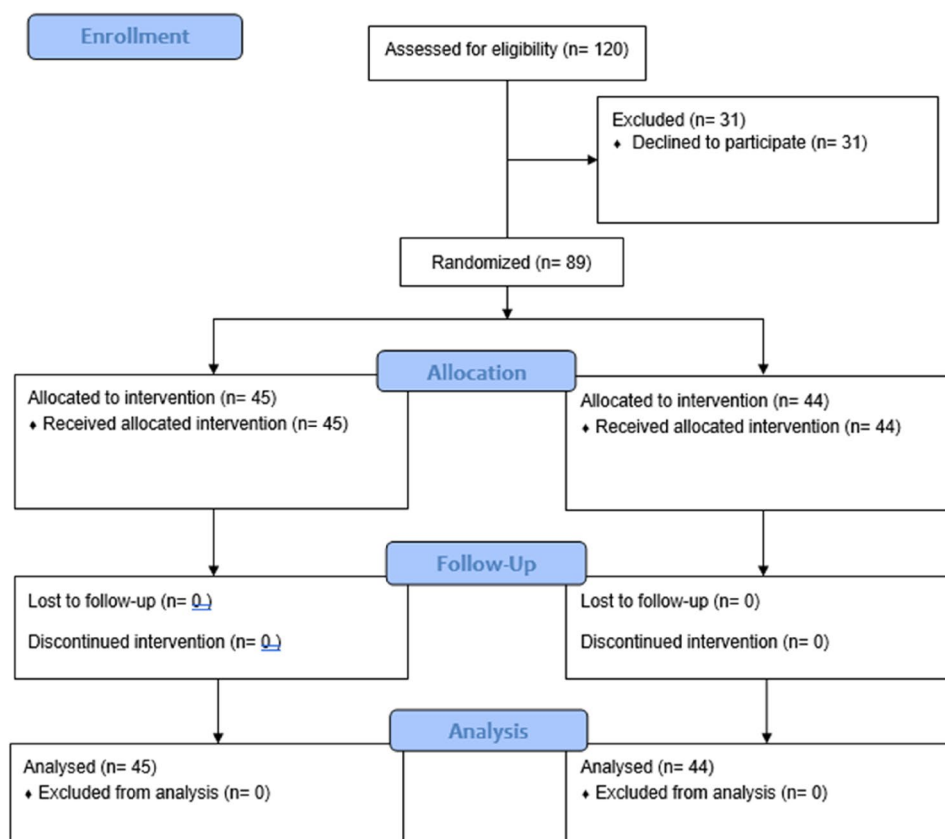
- (i) Distance social support program reduces midwifery students' anxiety levels.
- (ii) Distance social support program has a positive impact on midwifery students' attitudes towards distance education.

Materials and methods

Study methodology

This randomized controlled study was planned in the early phase of the pandemic. In this phase, home isolation was frequently and intensely encouraged in Turkey, and from time-to-time it was supported by curfews. In the same period, face-to-face education has been rapidly switched to distance education. Midwifery education is an education that mostly consists of face-to-face theoretical courses and clinical practice. Students whose clinical practices were interrupted due to the COVID-19 pandemic expressed their concerns about whether they could meet the requirements for graduation, and this led to the planning of this study for researchers. First, it was planned to evaluate the anxiety levels of our students who have switched to the distance education method and to implement a distance support program in order to reduce their concerns.

A chat group was created by the researchers and students were invited to participate in this study through academic groups which includes students and faculty members. Consent forms were obtained from the students who agreed to participate in the study and participated in the chat group through Google Forms. The study included pre-test and post-tests, which were administered online. Firstly, the pre-test was conducted with the data collection tools and after the pre-test, participants were randomized according to student numbers. Student numbers are in sequential order. Thus, the numbers of each student who wanted to participate were entered into "randomizer.org" website by an independent instructor (a lecturer of the nursing department, volunteered to randomize the groups), creating two separate sets

CONSORT 2010 Flow Diagram**Fig. 1** CONSORT flow diagram of the Study**Table 1** Content of the social support programme

Part of the session	Details
Setting up	General introduction to the session
Expressing feelings	How the participants feel? How is their health status? How are their family members?
Providing information about COVID-19	General information about the disease and its prevention
Providing relaxation and self-emotional management skills (these exercises shared with the participants as an information for reducing stress)	Breathing exercises Positive thinking Colouring exercises Keeping a journal Meditation Dancing
Current topics that students need	COVID-19 drug experiments, exposure process, what to do and not to do to avoid COVID-19, the best mask type, disinfection effectiveness, vaccine studies etc. and COVID-19's impact on daily life
Summary	End of the session

representing the experimental and control groups. Since the independent instructor does not know student's ID numbers, blinding was applied during randomization.

Each student number appeared in only one set. The first set represented the participants who would participate in the experimental group, and the second set represented the participants who would participate in the control group. Remote distance support was applied to the experimental group. No additional application was applied to the control group, and the natural process was subsequently followed (Fig. 1).

The content of the distance support program was developed by the researchers and implemented within the period of strict social isolation and curfews in accordance with Kong et al.'s study [14]. A summary of the content has been given in Table 1.

While a separate pilot study was not conducted, the feasibility and appropriateness of the content were ensured through expert review. Expert opinions (background with 2: midwifery; 1: obstetrics& gynecology nursing; 1: pediatric nursing experts) were obtained from department academics regarding the content of the social

support program to be implemented. Experts' feedback was incorporated into the final version.

The program aimed to follow the demands of the students, rather than strict boundaries and strict rules. Basically, it was aimed to keep the communication at the highest possible level in this different and difficult process. The program basically had two components:

- 1) Video calls via different online platforms (currently the smoothest running) every 10–20 days about 45–50 min.
- 2) Continuous active communication via social media and mobile group chat applications.

Participants

Of a midwifery department of a university, 2nd and 3rd grade students that switched to distance education were included in the study. First-grade midwifery students were not included in the study since they did not have sufficient education experience. Fourth-grade midwifery students were not included in the study because they were in clinical practice on a full-time basis and did not participate in the distance education method. 2nd and 3rd grade students previously had distance-learning experience for some theoretical courses. They received mandatory distance education for one month after the schools were closed due to the COVID-19 pandemic. Their clinical placements were terminated, and they lost one month of their clinical practice at the end of 2019–2020 academic year. So, the inclusion criteria for this

study were (i) being 2nd or 3rd grade midwifery student, and (ii) participating the study voluntarily. The exclusion criteria were (i) being 1st or 4th grade midwifery student, (ii) studying another undergraduate program. The post-test of the study was conducted at the beginning of the 2020–2021 academic year. All theoretical courses in the new academic year were planned online. Clinical practices, on the other hand, contained important restrictions compared to the past.

In this study, a pretest-post-test control group design was used to examine the effect of a remote social support intervention. Since no directly comparable study could be identified in the literature, the expected effect size was assumed to be medium (Cohen's $d=0.50$). The sample size was calculated using the G*Power 3.1.9.7 software based on an independent samples t-test. The power level was set at 80% ($1-\beta=0.80$), with a significance level of 5% ($\alpha=0.05$). Equal group sizes (1:1 allocation ratio) were assumed. Based on this analysis, the required sample size was determined to be 32 participants per group, totalling 64 participants. A total of 120 students in these grades were informed about the study, and it was stated that participation in the study would not have any effect on academic achievement and that participation was completely voluntary. 89 out of 120 students agreed to participate in the study, other students were not included in the study. All participants who met the inclusion criteria and volunteered to participate in the study were included in the sample. There was no difference between the experimental and control groups in terms of the characteristics of the participants. There were no dropouts during the intervention. (Table 2).

Table 2 Comparison of sociodemographic findings

	Experimen- tal group	Control group	<i>p</i>
	Mean $\pm$ SD <i>n</i> (%)	Mean $\pm$ SD <i>n</i> (%)	
Age	22.4 $\pm$ 3.3	22.2 $\pm$ 2.69	0.762
Grade	34 (75.6)	29 (65.9)	0.358
2nd	11 (24.4)	15 (34.1)	
3rd			
Number of family members	4.20 $\pm$ 1.8	4.34 $\pm$ 2.06	0.732
Economic condition	32 (71.1)	29 (65.9)	0.382
Poor-moderate	13 (28.9)	15 (34.1)	
Good			
Employment	39 (86.7)	36 (81.8)	0.368
Not working	6 (13.3)	8 (18.2)	
Working			
Chronic physical condition	36 (80)	38 (86.4)	0.423
No	9 (20)	6 (13.6)	
Yes			
Smoking	38 (84.4)	38 (86.4)	0.518
No	7 (15.6)	6 (13.6)	
Yes			
Chronic physical condition in family members	26 (56.5)	43 (59.1)	0.167
No	20 (43.5)	25 (40.9)	
Yes			

Intervention

In the present study, a social support programme intervention was implemented for midwifery students who started studying by distance learning method during the COVID-19 pandemic. This social support programme was designed as an emotional and informational support programme. The social support was provided by the researchers who were the students' instructors. To avoid the bias due to researchers' dual roles as both instructors and intervention facilitators, we implemented a team-based check approach. Team members also divided roles for this study, and after each session the research team held debriefing meetings. The social support programme was provided through video calls. The timing of the video calls was planned according to the convenient times of the majority of the participants. The intervals between video calls were between 10 and 20 days. 8 interviews were made in total. The first meeting was held on 10.06.2020 and the last meeting was held on 30.09.2020. The lower limit for video calls was set as 1 h, but no upper limit was set. Students and two researchers

participated in the video interviews. Video calls were opened with the subjects determined by the researchers. Active participation of students was encouraged. The natural course followed in the interview, according to their spontaneous responses. The main topics of the social support program were chosen from current issues in line with the needs of the students. Current and evidence-based information about the pandemic, the trend of the pandemic, media news and access to accurate information, information about distance education and exams, the place of the midwifery profession during the pandemic period, were among these topics. In addition, students were encouraged to express and share their thoughts, feelings, problems (social, economic, family, etc.). The aim of the educators was to be perceived as a friend who lives in the same conditions, and who is more experienced in educational and professional terms, rather than being like a manager. A chat group was also set up. This allowed researchers and participants to keep in touch. In every part of the day, both the group administrators (researchers) and the participants were offered the opportunity to chat from the group, to communicate to each other, to share their current situation and feelings. At this stage, the administrators questioned the health status of the students and their families every day and evaluated the problems they experienced during the distance education process. These were questions such as 'does anyone in the family have COVID-19 infection, do they have COVID-19 symptoms, does the family have an elderly family member, do they have concerns about transmission, what precautions do they take, how is the distance learning process going, how is their learning and satisfaction.' As the method of the study was not qualitative, the responses were not included in this study. The characteristics of the interviewees were given in Table 2.

Data collection tools

The data collection tools to be used in the study were determined by scanning the literature on distance education, thoughts on distance education, and psychosocial problems related to distance education. Since this study was conducted in the early phase of the COVID-19 pandemic, a valid and reliable measurement tool for COVID-19 could not be found. Student form, Multidimensional Scale of Perceived Social Support (MSPSS), State and Trait Anxiety Inventory (STAI; S-anxiety and T-anxiety), and Attitude Scale Towards Distance Education (ASDE) were used to collect data.

The Student Form

Was prepared by the researchers with the aim of obtaining sociodemographic features. This form included questions about students' sociodemographic information such as living region, income level, family type, and social

relations with friends and family members, and their thoughts about education.

MSPSS

Was developed by Zimet et al. in 1990 [15]. The Turkish reliability and validity of the scale was studied by Eker and Arkar in 1995 [16], and this valid and reliable Turkish version of the MSPSS was used in this study. This scale is a 12-item scale measuring the support received from family, friends and a special person. The scale is scored on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). To calculate the scale score, the items in each sub-dimension are summed. The total scale score is obtained by summing the sub-dimension scores. The higher the score, the higher the perceived social support. According to the cut-off value of the scale, perceived social support is classified as low (1–2.9.9), medium (2–5) and high support (5.1–7.1). In validity study, the Cronbach's alpha values of the subscales ranged between 0.85 and 0.91 [16]. In our study, the Cronbach's alpha value for the subscales ranged between 0.87 and 0.90.

STA-I

Was developed by Spielberger in 1964 [17]. The Turkish translation and standardization of the scale was studied by Oner and Le Compte [18], and this Turkish version of the STA-I was used in this study. This scale consists of a total of 40 items, 20 items measuring state anxiety and 20 items measuring trait anxiety. The scale items are answered on a 4-point Likert scale (1 = not at all, 4 = very much). Ten items in the State Anxiety scale and seven items in the Trait Anxiety scale are reversed items. In scoring the scale, a score is obtained by summing the responses to the direct items and subtracting the sum of the responses to the reverse items. A fixed value of 50 points is then added to the state anxiety scale and 35 points to the trait anxiety scale. The total score obtained from both scales' ranges from 20 to 80. The higher the score, the greater the anxiety. The Cronbach's alpha value was considered between 0.94 and 0.96 for STA-I [18]. In our study, the Cronbach's alpha value was found as 0.84.

ASDE

Was developed by Kısla in 2016 [19] to determine the attitudes towards distance education. Higher scores indicate a positive attitude towards distance education. Since the study was conducted with Turkish participants, it was preferred to use a Turkish, valid, and reliable scale. This scale is a one-dimensional, 5-point Likert scale with a total of 35 items. The scale items are answered between '5 = strongly agree, 1 = strongly disagree.' In the scale, 16 items are reversed, and the answers are processed as reversed. The total score that can be obtained from the scale varies between 35 and 175. The higher the score

obtained from the scale, the more positive the attitude towards distance learning. The Cronbach's alpha value of the scale was 0.89 [19]. In our study, the Cronbach's alpha value was found as 0.86.

Ethical procedures

Approval was obtained from the Human Research Ethics Committee of the university where the study was conducted. Online written informed consent was obtained from each participant stating that they were volunteers. The study was conducted in accordance with the Declaration of Helsinki.

Data analysis

The Statistical Package for Social Sciences (SPSS) software was used for the statistical evaluation of the data. Percentages and averages were used in the distribution of the data. For the cases of normality distribution, an independent sample t-test was used. Numerical data that did not show normal distribution were evaluated with the Mann Whitney U test. Variables specified in frequency were analysed using the Chi-square test. One-Way ANOVA test was used to compare the means of ASDE scores between MSPSS groups. Pre-test and post-test scores of MSPSS, ASDE, S-anxiety scales were compared with Paired Sample T-test. Values $p < 0.05$ were taken as being statistically significant. Spearman correlation analysis was performed between pre-test MSPSS, ASDE and S anxiety scores. Values $p < 0.05$ were taken as being statistically significant.

Results

Pre-test (Baseline) findings

All the students were completed the pre-test ($n = 89$). The average age of the students was 22.4 ± 3.3 . Of the participants, 70.8% were 2nd grade, 30% were 3rd grade mid-wifery students. Study and control groups were similar in terms of sociodemographic characteristics (Table 2).

Table 3 The baseline MSPSS, ASDE, STAI scores of the groups

Pretest	Experimental group Mean $\pm$ SD	Control group Mean $\pm$ SD	<i>p</i>
MSPSS	59.66 $\pm$ 18.55	57.72 $\pm$ 17.87	0.617
ASDE	93.44 $\pm$ 15.87	96.75 $\pm$ 12.97	0.286
S-anxiety	43.62 $\pm$ 13.18	40.77 $\pm$ 13.5	0.316
T-anxiety	48.4 $\pm$ 9.55	47.22 $\pm$ 10.1	0.575

ASDE Attitude Scale Towards Distance Education, MSPSS Multidimensional Scale of Perceived Social Support, S-anxiety State Anxiety Inventory, T-anxiety Trait Anxiety Inventory

The MSPSS mean score of all students was 58.70 ± 42.21 . The S-anxiety and the T-anxiety averages of all students were 42.21 ± 13.33 and 47.82 ± 9.79 respectively. The average ASDE scores of all students was 95.07 ± 14.52 . There was no difference between the experimental and control groups in terms of baseline MSPSS, STAI, and ASDE averages (Table 3). Of the students 23.6% stated that the losses in clinical training can never be compensated by distance education.

Post-test results

All the students were completed the post-test ($n = 89$). In the experimental group, MSPSS and ASDE post-test scores were significantly higher than pre-test scores. There was no difference between S-anxiety post-test scores and pre-test scores in the experimental group. While ASDE and MSPSS post-test scores were similar to pre-test scores in the control group, S-anxiety post-test scores were higher than baseline. MSPSS and ASDE post-test scores in the experimental group were statistically significantly higher than the control group. The mean S-anxiety post-test score was significantly higher in the control group (Table 4).

Findings regarding the correlational analysis between anxiety scores, social support perception scores and attitude scores towards distance education were given in Table 5. Baseline scores were used in this analysis to examine the natural association between variables before the experiment. This approach was preferred to avoid the

Table 4 Comparison of MSPSS, ASDE, S-anxiety scores between and within the groups

Post-test Between groups	Experimental group Mean ± SD	Control group Mean ± SD	<i>p</i>
MSPSS	65.17 ± 11	60.4 ± 9.78	0.034
S-anxiety	46.97 ± 6.66	53.09 ± 10.38	0.001
ASDE	110.8 ± 15.27	100.22 ± 8.47	<0.001
	Experimental group	Control group	

Pretest –Posttest Within groups	Mean difference	%95 CI	<i>p</i>	Mean difference	%95 CI	<i>p</i>
MSPSS	3.88	1.13–6.6	0.007	2.7	–1–6.4	
S-anxiety	3.35	–1.2–7.9	0.145	12.31	8.3–16.1	0.152
ASDE	17.35	11.1–23.6	<0.001	3.47	–0.57–7.5	<0.001

ASDE Attitude Scale Towards Distance Education, MSPSS Multidimensional Scale of Perceived Social Support, S-anxiety State Anxiety Inventory

Table 5 Correlations between attitude scores towards distance education, social support perception scores and anxiety scores

	MSPSS		S-anxiety		ASDE	
	r^2	p	r^2	p	r^2	p
MSPSS			−0.615	< 0.001	0.2	0.04
S-anxiety					−0.33	0.02
ASDE						

$r^2 < 0.3$ was considered a very weak effect, $0.3 < r^2 < 0.5$ was considered a low effect, $0.5 < r^2 < 0.7$ was considered a moderate effect, and $r^2 > 0.7$ was considered a strong effect

ASDE Attitude Scale Towards Distance Education, MSPSS Multidimensional Scale of Perceived Social Support, S-anxiety State Anxiety Inventory, T-anxiety Trait Anxiety Inventory

potential confounding effects of the intervention which could artificially influence the strength or direction of correlations observed in post-intervention data.

There was a strong, negative correlation between MSPSS scores and S-anxiety scores. In addition, S-anxiety averages were statistically significantly different between the MSPSS groups ($p < 0.001$). S-anxiety averages increased from the high MSPSS group (36.84 ± 9.8) to the middle MSPSS group (41.26 ± 11.2) and to the low MSPSS group (62.66 ± 10.31). The increase in S-anxiety averages from students with high MSPSS scores to students with low MSPSS scores [25.82 95% CI (17.5–34), $p < 0.001$], and from students with moderate MSPSS scores to students with low MSPSS scores were statistically significant [21.4 95% CI (13.11–29.7), $p < 0.001$]. S-anxiety averages were similar between the students with high MSPSS scores and the students with moderate MSPSS scores ($p = 0.161$). According to this, the distance social support and continuous communication program had a positive impact on midwifery students' anxiety.

There was a weak positive correlation between MSPSS scores and ASDE scores. In students with low, moderate, and high MSPSS scores, ASDE scores were 86.75 ± 11.94 , 94 ± 16.67 and 98.61 ± 11.86 respectively ($p = 0.038$). The increase in ASDE scores, from students with low MSPSS scores to students with high MSPSS scores was statistically significant [−11.86%95 CI (−23 to −0.72), $p = 0.034$]. According to this, the distance social support and continuous communication program improved the attitudes towards distance education.

Finally, there was a weak, negative correlation between S-anxiety scores and ASDE scores.

Discussion

In this study, it has been observed that our remote support intervention has positive effects on students' perception of social support and attitudes towards distance-education. It is also effective in preventing the increase in anxiety scores of midwifery students in pandemic. It was observed that the support intervention has positive effects on the students' mental health and education.

Social support is generally thought of as a multidimensional concept that functions in a wide range of areas,

from giving information and advice to emotional support [20]. In general, it is known that high-quality positive social support can increase resilience to stress, help protect against trauma-induced psychopathology [21]. In distance education, learners and trainers cannot share the same physical environment, and thus the interpersonal interaction is limited [2]. The positional and communicative distance can cause a feeling of isolation in students. Lack of motivation and social support can lead to a feeling of isolation and not belonging in the school [22]. Ugurlu and Kaplan emphasizes that students' inadequate interactions with teachers and other students may cause students to feel lonely [23]. The potential of social isolation, and disconnection from people, also known as “losing the human touch” in distance education, may reduce some students' interest and attention to education programs [5–7]. As a result, a negative attitude towards distance education may develop in students. In this study, we demonstrated a positive correlation between perception of social support and attitude towards distance education. A more positive attitude towards distance education was observed in students with a high perception of social support. Also, the experimental group showed significant improvements from pre- to post-test, no such changes were observed in the control group. This highlights the effectiveness of the support program in producing measurable benefits. Therefore, support services, which are important in face-to-face education [2], are even more important in distance education. Considering the uncertainty regarding the COVID-19 outbreak and possible future similar disasters, support services are critical for quality and sustainable distance education. Furthermore, the measures taken against the pandemic can make students' lives more difficult than ever. Therefore, the protective effect of social support against trauma-induced psychopathology may be needed more than ever [22].

Socialization can be achieved by providing access to role models, peer support groups, and counselling of educators [24]. Both the fact that distance education has become a valuable option, and the uncertainty of the current pandemic necessitate measures that will increase the perception of quality in distance education in the short and long term. Students should be surrounded by a social network as wide as possible, and they must be protected

from the feeling of isolation. It was observed that the perception of social support in students who were given the communication and support program was higher than the basal and control groups. In addition, these students had a more positive attitude towards distance education compared to the baseline and control group. Although the perception of social support increased after four months in the control group, the amount of this increase was not statistically significant, and the post-test social support perception score averages were significantly lower than the experimental group. As a result, maintaining communication with students can prevent the social isolation disadvantage of distance education. This can provide a more positive attitude towards distance education among students.

Distance education brings extra responsibilities to students. It can be challenging to meet the increase in responsibility for students with a low perception of support. Therefore, interaction with students should not be limited to the mandatory education program but should also include social and mental support. This support can prevent students from feeling isolated and show that their education and profession are valued [25]. With uninterrupted remote communication and support, students' perceptions of social support can be increased under current conditions. With increasing social support, a more positive perception towards distance education, and thus academic success can be achieved.

Widespread outbreaks of infectious diseases such as COVID-19 are associated with signs of psychological distress and mental illness [9]. Many myths and fake news spreading rapidly on social media can also cause fear, anxiety, and confusion among people [26]. Economic distress is one of the biggest complications of this outbreak and it can cause anxiety. In a study conducted with students in China, the frequencies of mild, moderate, and severe anxiety were 21.3%, 2.7%, and 0.9%, respectively [27]. Living away from their family, living in rural areas, economic stress, the effects of the pandemic on daily life, and academic disruptions have been associated with the anxiety symptoms of students. In a quantitative study conducted in Turkey, COVID-19 positivity in close relatives, presence of high-risk individuals for COVID-19 in the family, fear of contamination, and academic concerns were reported among the sources of anxiety of students [28]. Moreover, the transition to distance education itself has been reported as a source of anxiety. All these reasons, individually or in combination, can cause anxiety and stress on students [29, 30]. Furthermore, anxiety and stress have a negative effect on the learning abilities and mental health of the students [31]. In our study, a significant negative correlation was found between midwifery students' state anxiety and perceptions of distance education quality. As the state anxiety levels increased, a

more negative attitude towards distance education was observed in students. Therefore, it should not be forgotten that students may be anxious during this period. Periodic mental health screening and/or psychological support will have positive effects on individuals in the distance-education system.

The state anxiety level did not change at the end of the four months in students who were provided with social support program. Also, in the control group, there was an increase in anxiety compared to baseline at the end of four months. However, this finding may reflect other strong effects of the current pandemic. Although state anxiety did not significantly decrease in the experimental group, the absence of an increase during prolonged pandemic stressors is noteworthy. This stabilization may indicate that the support program acted as a protective buffer against further deterioration in students' mental health.

The possibility of the students themselves or their close relatives being infected may cause anxiety in students and affect their education [30]. Some chronic diseases have been reported to pose a risk for a severe COVID-19 infection, and this information was frequently mentioned in the media [29]. In our study, distance education attitudes were found to be more positive in students with chronic diseases in their family members. It should be remembered that news, myths, and information that students may encounter frequently can be a source of concern. Making sure they share their concerns is important within the framework of social support, since uncertainty about a possible threat, impairs the ability to avoid or mitigate its negative impact, which causes anxiety [32].

The pandemic has caused the termination of clinical training of midwifery students in this period [33]. In this study, one-third of the students stated that practical education could not be compensated by distance education, while almost half stated that it could be partially compensated. The end of this outbreak is not yet clear, and we know that there is a possibility of the pandemic getting out of control [34]. Additionally, world trends such as an increasing and aging population, globalization, urbanization, as well as climate change point to the possibility of new viral pandemics [34, 35]. These conditions may cause serious professional and educational anxiety for midwifery students. It is a global problem that the whole world must create a solution by working hand in hand.

In addition to the observed outcomes, student feedback revealed that the support programme was well received in general. Rather than being perceived as an additional burden, participants found the programme helpful for providing practical guidance and emotional support during the difficult period of the pandemic. These findings suggest that the programme was not only feasible but also valued by the students.

From a practical standpoint, the results suggest that academic programs could benefit from integrating structured online support models into curricula. Such programs may be scaled by leveraging existing e-learning infrastructures, training faculty facilitators, and embedding regular feedback mechanisms. Universities may consider adopting hybrid formats that combine psychosocial support with academic mentoring, thereby strengthening resilience among healthcare students.

Strengths & limitations of the study

The randomised controlled experimental design of the study is one of its strengths. However, it has limitations. A key limitation of this study is its single-center scope, which restricts generalizability. Nevertheless, the results provide a valuable springboard for multi-site studies that could test the feasibility and scalability of such interventions across diverse academic settings. Another limitation is the fact that the support programme was provided via online platforms. Also, since not all the students participated, it may be impacted the selection bias. No qualitative findings were achieved to get a deeper understanding of this topic.

Conclusion

Distance education during the pandemic brought challenges such as social isolation and anxiety, underscoring the need for continuous social and psychological support to maintain student engagement and educational outcomes. Our findings suggest that even modest support initiatives can yield meaningful benefits, particularly for healthcare students who will assume critical professional responsibilities. Future efforts should focus on developing scalable, evidence-based remote support models that can be readily implemented across diverse contexts. By embedding such programs into academic curricula, institutions can strengthen student well-being and educational continuity, even in times of crisis. This study is limited by its single-center design, scheduling constraints for group participation, and the absence of a dedicated digital platform to ensure program continuity; thus, further multi-site research is warranted.

Abbreviations

COVID-19	Coronavirus Disease – 19
MSPSS	Multidimensional Scale of Perceived Social Support
STAI	State and Trait Anxiety Inventory
ASDE	Attitude Scale Towards Distance Education

Acknowledgements

Not applicable.

Authors' contributions

RGK: Planned the study methodology, collected data, analysis, wrote the draft, approved the final manuscript. EB: Collected data, wrote the draft, approved the final manuscript.

Funding

This research did not receive any funding.

Data availability

Data is available upon a reasonable request from the authors.

Declarations

Ethics approval and consent to participate

Approval was obtained from the Human Research Ethics Committee of the Işinye University (Approval number: 2020-48; Approval date:04.06.2020). Online written informed consent was obtained from each participant stating that they were volunteers.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 21 October 2024 / Accepted: 22 October 2025

Published online: 17 November 2025

References

1. UNESCO. (2020). School closures caused by Coronavirus (Covid-19). Available from: <https://en.unesco.org/covid19/educationresponse>.
2. Gunduz M, Karaman S. Open education faculty and distance education students' dropout reasons: the case of a Turkish state university. *Open Praxis*. 2020;12(1):7. <https://doi.org/10.5944/openpraxis.12.1.970>.
3. Can E. Coronavirüs (Covid-19) pandemisi ve pedagojik yansımaları: Türkiye'de açık ve Uzaktan eğitim uygulamaları [Coronavirus (Covid-19) pandemic and its pedagogical implications: open and distance education applications in Turkey]. *Açıköğretim Uygulamaları Ve Araştırmaları Dergisi*. 2020;6(2):11–53. <https://dergipark.org.tr/tr/pub/auad/761354>.
4. Chang G-C, Yano S. (2020). How are countries addressing the COVID-19 challenges in education? A snapshot of policy measures | World Education Blog. Available from: <https://gemreportunesco.wordpress.com/2020/03/24/how-a-re-countries-addressing-the-covid-19-challenges-in-education-a-snapshot-of-policy-measures/>.
5. Garrison DR. (2016). E-learning in the 21st century: A community of inquiry framework for research and practice, third edition. In *E-Learning in the 21st Century: A Community of Inquiry Framework for Research and Practice*, Third Edition. Taylor and Francis. <https://doi.org/10.4324/9781315667263>.
6. Martin F, Bolliger DU. Engagement matters: student perceptions on the importance of engagement strategies in the online learning environment. *Online Learn J*. 2018;22(1):205–22. <https://doi.org/10.24059/olj.v22i1.1092>.
7. Stone JR, Chapple HS, Haddad A, et al. Discussion in graduate online bioethics programs. *Int J Ethics Educ*. 2017;2(1):17–36. <https://doi.org/10.1007/s40889-016-0022-y>.
8. Chandra S, Sharma B. Near, Far, wherever you are: chemistry via distance in the South seas. *Am J Distance Educ*. 2018;32(2):80–95. <https://doi.org/10.1080/08923647.2018.1440106>.
9. World Health Organization. (2025). Mental health. Available from: <https://www.who.int/teams/mental-health-and-substance-use/promotion-prevention/maternal-mental-health>. Accessed: 15.02.2025.
10. Bernal-Morales B, Rodríguez-Landa JF, Pulido-Criollo F. (2015). Impact of Anxiety and Depression Symptoms on Scholar Performance in High School and University Students. In *A Fresh Look at Anxiety Disorders*. InTech. <https://doi.org/10.5772/60711>.
11. Zhang Y, Zhang N, Liu H, Kan Y, Zou Y. The impact of distance education on nursing students course performance in a sino-foreign cooperative program during the onset of COVID-19: a quasi-experimental study. *BMC Nurs*. 2023;13(221):16.
12. Özkan I, Taylan S, İlaslan E. The experiences of nursing students towards distance education during the COVID-19 pandemic. *Int E-J Educational Stud*. 2021;5(10):106–17.
13. Acar Bektaş H, Çıtak G, Alparslan Ö. The effects of distance education on midwifery students before clinical practice in the pandemic. *BAUN Health Sci J*. 2024;13(2):381–9.

14. Kong X, Kong F, Zheng K, Tang M, Chen Y, Zhou J, et al. Effect of psychological-behavioral intervention on the depression and anxiety of COVID-19 patients. *Front Psychiatry*. 2020;11:586355. <https://doi.org/10.3389/fpsy.2020.586355>.
15. Zimet GD, Powell SS, Farley GK, Werkman S, Berkoff KA. Psychometric characteristics of the multidimensional scale of perceived social support. *J Pers Assess*. 1990;55(3-4):610-7. <https://doi.org/10.1080/00223891.1990.9674095>.
16. Eker D, Arkar H. Çok Boyutlu Algılanan Sosyal Destek Ölçeği'Nin faktör yapısı, geçerlik ve güvenirliği [Factorial Structure, Validity, and reliability of the multidimensional scale of perceived social Support]. *Türk Psikol Derg*. 1995;10(34):17-25.
17. Spielberger CD, Gorsuch RL. (1966). The development of the State-Trait Anxiety Inventory. In C.D. Spielberger & R.L. Gorsuch, Mediating processes in verbal conditioning. Final report to the National Institutes of Health, US Public Health Service on Grants MH-7229, MH-7446, and HD-947.
18. Oner N, Le Compte A. Durumluk ve Sürekli Kaygı Envanteri El Kitabı [State and trait anxiety inventory Handbook]. İstanbul: Bogazici University; 1983.
19. Kısıl T. Ege Eğitim Dergisi. 2016;17(1):258. <https://doi.org/10.12984/eed.01675>. Uzaktan Eğitime Yönelik Tutum Ölçeği Geliştirme Çalışması [Attitude Scale Development Study Towards Distance Education].
20. Drageset J. (2021). Social Support. In: Haugan G, Eriksson M, editors. *Health Promotion in Health Care – Vital Theories and Research*. Cham (CH): Springer; 2021. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK585650/> Accessed: 15.02.2025.
21. Calhoun CD, Stone KJ, Cobb AR, Patterson MW, Danielson CK, Bendežú JJ. The role of social support in coping with psychological trauma: an integrated biopsychosocial model for posttraumatic stress recovery. *Psychiatr Q*. 2022;93(4):949-70. <https://doi.org/10.1007/s11126-022-10003-w>.
22. Genc KE, Toprak E, Öztürk A, Büyükköse GT, Kilinc H, Menderis İA. Support services in open and distance education. *An Integrated Model of Open Universities*. 2018.
23. Ugurlu CT, Kaplan İ. Teachers' views regarding loneliness in professional life: A mixed methods study. *Gazi Eğitim Bilimleri Dergisi*. 2021;7(1):1-19. Ugurlu CT, Kaplan İ. Teachers' views regarding loneliness in professional life: A mixed methods study. *Gazi Eğitim Bilimleri Dergisi*. 2021;7(1):1-19. Ugurlu CT, Kaplan İ. Teachers' views regarding loneliness in professional life: A mixed methods study. *Gazi Eğitim Bilimleri Dergisi*. 2021;7(1):1-19. <https://dergipark.org.tr/pub/gebd/issue/60851/720593>.
24. Gewin V. Five tips for moving teaching online as COVID-19 takes hold. *Nature*. 2020. <https://doi.org/10.1038/d41586-020-00896-7>.
25. Roy D, Tripathy S, Kar SK, et al. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian J Psychiatry*. 2020;51:102083. <https://doi.org/10.1016/j.ajp.2020.102083>.
26. Martin A, Markhvida M, Hallegatte S, et al. Socio-economic impacts of COVID-19 on household consumption and poverty. *Econ Disasters Clim Change*. 2020;4(3):453-79. <https://doi.org/10.1007/s41885-020-00070-3>.
27. Cao W, Fang Z, Hou G, et al. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res*. 2020;287:112934. <https://doi.org/10.1016/j.psychres.2020.112934>.
28. Kurtuncu M, Kurt A. Problems of nursing students in distance education in the COVID-19 pandemic period. *Avrasya Sosyal Ve Ekonomi Araştırmaları Dergisi*. 2020;7(5):66-77.
29. Sahu P. Closure of universities due to coronavirus disease 2019 (COVID-19): impact on education and mental health of students and academic staff. *Cureus*. 2020;12(4). <https://doi.org/10.7759/cureus.7541>.
30. Al-Rabiaah A, Temsah MH, Al-Eyadhy, et al. Middle East respiratory Syndrome-Corona virus (MERS-CoV) associated stress among medical students at a university teaching hospital in Saudi Arabia. *J Infect Public Health*. 2020;13(5):687-91. <https://doi.org/10.1016/j.jiph.2020.01.005>.
31. Rose S. Medical student education in the time of COVID-19. *JAMA - J Am Med Association*. 2020;323(21):2131-2. <https://doi.org/10.1001/jama.2020.5227>.
32. Luyben A, Fleming V, Vermeulen J. Midwifery education in COVID-19- time: challenges and opportunities. *Midwifery*. 2020;89:102776. <https://doi.org/10.1016/j.midw.2020.102776>.
33. Hodgson C. (2020). WHO's chief scientist offers bleak assessment of challenges ahead | Financial Times. <https://www.ft.com/content/69c75de6-9c6b-4bca-b110-2a55296b0875>.
34. Meyer KL. Confronting the pandemic superthreat of climate change and urbanization. *Orbis*. 2019;63(4):565-81. <https://doi.org/10.1016/j.orbis.2019.08.006>.
35. Whiting K. (2020). Coronavirus isn't an outlier, it's part of our interconnected viral age. Available from: <https://www.weforum.org/agenda/2020/03/coronavirus-global-epidemics-health-pandemic-covid-19/>.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.