ORIGINAL ARTICLE

The Effect of Provision of Information and Supportive Nursing Care on Blood Gas, Vital Signs, Anxiety, Stress, and Agitation Levels in COPD Patients Treated with NIV: A Randomized Controlled Trial

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Abstract

Background: Informative and supportive nursing care is essential to reduce complications and improve outcomes in people with chronic obstructive pulmonary disease (COPD) treated with noninvasive ventilation (NIV). The aim of this study was to determine the effect of provision of information and supportive nursing care on blood gas, vital signs, anxiety, stress, and agitation levels in people with COPD treated with NIV.

Materials and methods: A randomized controlled design was used between September and December 2019. Patients with COPD treated with NIV in the intensive care unit (ICU) in a state hospital were included. A total of 60 patients, composed of 30 interventions and 30 controls, were randomly included in the sample. Provision of information and supportive nursing care was applied to the patients in the intervention group.

Results: Following the intervention, the findings showed that the provision of information and supportive nursing care has a positive effect on the blood gas, vital signs, anxiety, stress, and agitation levels of patients. It was determined that the change in the averages of DASS-Anxiety, DASS-Stress, and RASS-Agitation of the intervention and control groups were statistically significant in terms of group × time (respectively, $F = 41.214$, $p = 0.003$; $F = 7.561$, $p = 0.008$; $F = 65.004$, $p = 0.000$) interaction ($p < 0.05$).

Conclusion: The provision of information and supportive nursing care is recommended to alleviate anxiety, stress, and agitation in people with COPD treated with NIV.

Keywords: Agitation, Intensive care, Noninvasive ventilation, Supportive nursing care.

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Highlights

With the provision of information and supportive nursing care, complications can be reduced and outcomes can be improved in people with COPD treated with NIV, and can be carried out to alleviate anxiety, stress, and agitation, and to improve blood gas and vital signs in people with COPD treated with NIV.

Introduction

Chronic obstructive pulmonary disease is one of the main global health problems and a major multifactorial public health problem that causes blockage in the lung airflow.[1,2] There are 600 million people with COPD in the world and 2–3 million in Turkey.[2] Chronic obstructive pulmonary disease is the third cause of death worldwide and in Turkey and is responsible for 5.5% of all deaths.[3]

People with COPD constitute 42.9% of the patients treated in the ICU with respiratory problems.[2] About, 50–66% of these patients receive NIV treatment.[4] Noninvasive ventilation is the practice of respiratory support without the need for intubation and is life-saving for patients with acute respiratory failure.[5] Noninvasive ventilation is a useful practice to reduce dependence on invasive ventilation in people with COPD, to decrease endotracheal intubation rate, to reduce mortality,[6] allow earlier extubation, and prevent reintubation in patients who fail extubation.[7]

In addition to its benefits, NIV is considered to be an important source of stress,[8] anxiety,[9] and agitation[10] for patients. The disadvantages of NIV include fear of mask and anxiety[11] and feelings of desperation, anxiety, and discomfort due to reasons such as mask pressure and perceived lack of control.[12] It is emphasized that these disadvantages may jeopardize adherence to treatment leading to treatment rejection and affect the treatment[8] due to noncompliance.

During NIV treatment, collaboration with the patient is vital for NIV success. Within the scope of this collaboration, the patient should be regularly informed about the environment and the treatment process, and special efforts should be made to give confidence to the patient.[13] It has been reported that providing

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the appropriate information to patients receiving NIV treatment may prevent the patient from experiencing fear or anxiety due to uncertainty and disappointment.[9] Education in NIV treatment is considered essential to reduce complications in patients and improve outcomes.[7] It is stated that interventions such as maintaining patient comfort, frequent reorientation, ensuring sleep-wakefulness circulation, optimizing the environment,[14] frequent contact with relatives, and therapeutic touch[14] reduce anxiety and agitation, and appropriate NIV training proves to be successful in coping with stress.[7]

A versatile practice is needed for the patient to accept NIV treatment and to ensure compliance.[14] It is emphasized in literature that attention should be paid to the symptoms and adaptation problems that may be seen in the patient during NIV treatment, and care should be provided accordingly.[15] Patients treated with NIV can be described as "difficult patients" by healthcare professionals. For nurses, NIV is a frequent and time-consuming practice.[8] Nurses who care for patients receiving NIV treatment in intensive care may be inadequate in providing information and practicing supportive care interventions while providing care due to the severe working conditions and agitation of these patients. In this study, supportive nursing care was practiced in people with COPD treated with NIV in the intensive care by providing information during their treatment.

Aim

The aim of the study was to determine the effect of provision of information and supportive nursing care on blood gas, vital signs, anxiety, stress, and agitation levels in people with COPD treated with NIV. Accordingly, answers to the following subquestions were sought: How does the provision of information and supportive nursing care affect the blood gas, vital signs, anxiety, stress, and agitation levels of people with COPD treated with NIV? What are the differences between the intervention and control groups?

Materials and Methods

Study Design and Patients

A randomized controlled design was used between September and December 2019. The sample size was determined using G * Power 3.1 software since there was no pilot data. According to the power analysis, the number of the participants was calculated as at least 54 when a type-1 error was taken as 0.05, power as 0.95, and the effect size as moderate (0.25) for two groups designed with two repeated measures. In order to prevent possible data loss, the volume of the sample was increased by 10% and the total number of the participants was determined as 60. A total of 60 people with COPD treated with NIV in the ICU, composed of 30 interventions and 30 controls, were randomly included in the sample. Provision of information and supportive nursing care was applied to the patients in the intervention group while the control group received routine nursing care. The patients were included in the study one by one as an intervention and a control group. The control group was selected after the patients in the intervention group were transferred to the normal service to prevent interaction. The control group was randomly selected among the patients who received routine nursing care in the intensive care clinic. The inclusion criteria for participants were: (a) A diagnosis of COPD, (b) Treated with NIV, (c) Be conscious of, (d) Agreement to participate in the study, and (e) People with COPD starting NIV therapy for the first time. Patients who were intubated and, therefore, unable to speak, received sedation and who had a Glasgow Coma Scale score below 14 were excluded. There was no dropout during the study.

Data Collection and Analysis

Personal information form: The form, developed by the researchers, included questions about age, gender, educational level, marital status, smoking, information on COPD, nausea and vomiting, and information on NIV use.

Depression anxiety stress scale (DASS-21): The scale was first developed by Lovibond and Lovibond[16] with 42 items and three sub-dimensions. It was later revised to 21 items by Brown et al.[17] in 1997. The scale is 4-point Likert type and consists of 21 items and 3 subdimensions (depression, anxiety, and stress). The adaptation of the scale to Turkish and its validity and reliability studies were conducted by Yılmaz et al.[18] The subscales of the scale are Cronbach's alpha values: depression 0.81, anxiety 0.80, and stress 0.75.[18] In this study, the anxiety (Cronbach's alpha 0.85) and stress (Cronbach's alpha 0.86) subdimensions of the DASS-21 scale were used.

Richmond agitation-sedation scale (RASS): RASS scale was developed by a multidisciplinary team at Virginia Common Wealth University.[19] While zero (0) points on the scale indicate the ideal level, it reflects the increasing agitation toward the (+4) level and the decreasing sedation level to the (-5) level. Since patients receiving sedation were not included in this study, only the agitation dimension of the RASS scale was used.

Glasgow Coma Scale (GCS): It was developed in Scotland/Glasgow in 1974 to describe the consciousness level of patients. Glasgow Coma Scale is obtained by summing the points the patient gets from each section. This score ranges from three (3) to fifteen (15). If the GCS total score is 13–15, the patient is considered awake, between 8 and 12 as precoma, and below 8 as coma.[20]

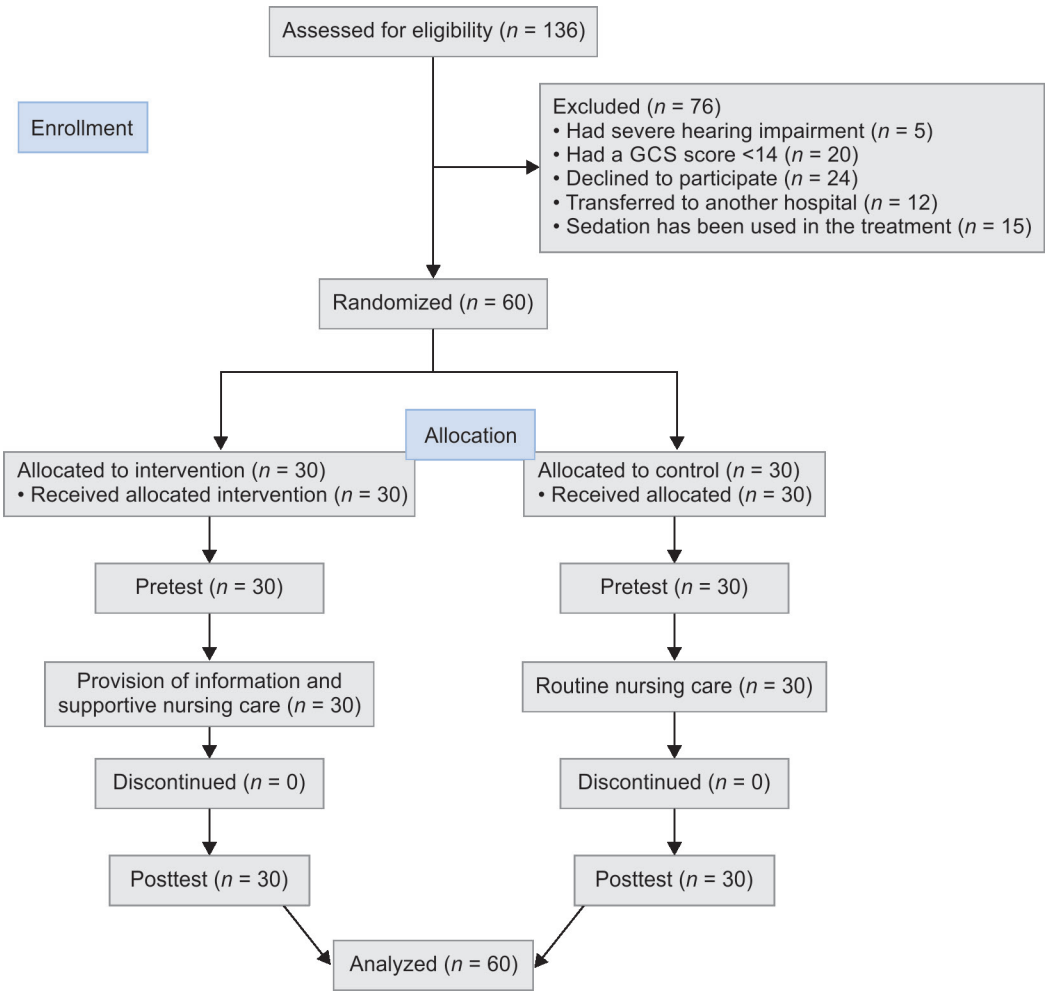
Definitions

Patients in the intervention group were provided with information in addition to routine nursing care and supportive care interventions were made. An information leaflet consisting of textual material about NIV treatment was developed. The leaflet was piloted with a small patient group, and no modifications to content were required as a result of this. The information leaflet was explained to the patients in the intervention group face-to-face by the researchers, and the information was repeated according to the patient's needs. Supportive nursing care was also practiced in the patients in the intervention group by the researchers.

As a pretest measure, blood gases were taken from the patients in the intervention and control groups, their vital signs were measured, their state of consciousness was evaluated, and DASS-21 (anxiety and stress subdimension) and RASS (agitation dimension) were practiced by face-to-face interviews with the patients. As the last test, the same measurements were made 5 days after the first measurement and before the patients were transferred to the normal service. The CONSORT 2010 flowchart of the study is presented in Flowchart 1.

The content of the information leaflet consisted of topics that facilitated patient compliance to treatment, such as the introduction of equipment used in NIV treatment, the intended use of NIV and its effects on the patient, what patients generally experience during treatment, compliance problems in NIV, how the procedure will be performed, each procedure the nurse will do and for what purpose, the duration of the treatment, what the patient can and

Flowchart 1: CONSORT 2010 patient flow diagram



cannot do during the treatment, and what kind of process will proceed if everything goes well. Researchers provided supporting nursing care including assessment of patients' needs, education, and emotional support. As supportive care, patients were allowed to express their feelings and thoughts about NIV treatment, an accepting and empathetic approach was shown to the patients, therapeutic touch technique was used, it was explained how the patients could reach the nurse when needed, the environment was arranged, each procedure performed was explained with its objectives, strategies that will make it easier for the patients to cope during the treatment were determined and they were encouraged to do so (for example, some patients wanted to read a book and some patients wanted to sleep), the patients were encouraged to ask questions comfortably, it was stated that the treatment could be interrupted for a while when they felt bad due to the mask, and it was ensured that the patients met with their relatives during the visiting hours.

Data Analysis

The Statistical Package for Social Sciences (SPSS) 20.0 package program was used in the analysis of the data. For the comparison of the intervention and control groups, Student's *t* test was used for data with normal distribution and Mann–Whitney *U* test was used for data with non-normal distribution. Chi-square and Fisher's exact tests were used for group comparisons of nominal variables. "Analysis of Variance in Repeated Measures" was used to make a group (intervention/control), time (pretest/posttest), and group × time interaction comparison between the intervention and control groups before and after the training. In the analysis of all tests, *p*-value <0.05 was considered statistically significant.

Results

It was ascertained that there was no significant difference between the descriptive characteristics of the patients in the intervention and control groups ($p > 0.05$). There was no difference between the two groups concerning pretests ($p > 0.05$), and the groups were homogeneous.

Participants' Characteristics

It was determined that 63.3% of the patients in the intervention group were male, 90% were primary school graduates, 70% had a history of previous ICU treatment, and most of them had no nausea–vomiting (80%) and no physical restriction (53.3%) (Table 1). The average age of the patients in this group was 66.37 ± 6.11,

Table 1: Baseline descriptive characteristics and comparisons of patients in the intervention and control groups

	Intervention group (n: 30)		*Control group (n: 30)*		
Characteristics	*n*	*%*	*n*	*%*	*p-value**
Gender					
Female	11	36.7	14	46.7	0.432
Male	19	63.3	16	53.3	
Marital status					
Married	29	96.7	26	86.7	0.353
Single	1	3.3	4	13.3	
Education status					
Primary school	27	90	25	83.3	0.706
Secondary/High school	3	10	5	16.7	
Smokers					
Uses	17	56.7	14	46.7	0.438
Not using	13	43.3	16	53.3	
Other chronic disease					
Yes	23	76.7	22	73.3	0.766
No	7	23.3	8	26.7	
Previous ICU hospitalization					
Yes	21	70	22	73.3	0.774
No	9	30	8	26.7	
Nausea / Vomiting					
Yes	6	20	2	6.7	0.254
No	24	80	28	93.3	
Physical restraint					
Yes	14	46.7	9	30	0.184
No	16	53.3	21	70	
Constipation					
No	19	63.3	20	66.7	0.787
Yes	11	36.7	10	33.3	

*Ki Kare test/ Fisher's exact test; ICU, intensive care unit

Table 2: Descriptive characteristics and comparisons of patients in the intervention and control groups

Characteristics	*Intervention group (n:30)*	*Control group (n:30)*	*Test statistic**	*p-value*
Age ($\overline{x} \pm$ SS)	66.37 ± 6.11	65.87 ± 8.10	$t = 0.270$	0.788
	Median (min–max)			
COPD year	4.5 (0–20)	5 (0–20)	$U = 422.5$	0.682
NIV to use (hours)	12 (6–20)	12.5 (8–23)	$U = 308.5$	0.028
Can get NIV (hours)	8 (4–20)	8 (3–23)	$U = 422.5$	0.680
Pain score	0 (0–3)	0 (0–3)	$U = 431.0$	0.738
Sleep (hours)	6 (4–18)	8 (4–17)	$U = 420.5$	0.658
GCS	15 (13–15)	15 (13–15)	$U = 439.5$	0.843

**t*-test / Mann–Whitney *U* test; COPD, chronic obstructive pulmonary disease; GCS, Glasgow Coma Scale; NIV, noninvasive ventilation

the median value of the year of COPD diagnosis was 5 (min: 0, max: 20), there was no pain, and the median value of GCS was 15 (min: 13, max: 15) (Table 2).

It was determined that 53.3% of the patients in the control group were males, 83.3% were primary school graduates, 73.3% had a history of previous ICU treatment, and most of them had no nausea–vomiting (93.3%) and no physical restriction (70%) (Table 1). The average age of the patients in this group was 65.87 ± 8.10, the median value of the year of COPD diagnosis was 4.5 (min: 0, max: 20), there was no pain, and the median value of GCS was 15 (min: 13, max: 15) (Table 2).

It was revealed that the change in the averages of partial pressure of carbon dioxide in arterial blood (PCO_2 mm Hg) in the intervention and control groups was statistically significant in terms

Table 3: Evaluation of the difference between intervention and control groups' arterial blood gas laboratory results pre-test and post-test mean scores

	Group	*Intervention (n:30)*	*Control (n:30)*	*Evaluation*		
	Measuring time	$\overline{x} \pm SS$	$\overline{x} \pm SS$		*F*	*p**
pH	Pretest	7.24 ± 0.12[a]	7.26 ± 0.12[b]	Group	1.336	0.253
	Posttest	7.30 ± 0.08	7.19 ± 0.32	Time	0.001	0.970
				Group × Time	3.243	0.077
PCO_2 (mm Hg)	Pretest	81.97 ± 11.35[a]	82.32 ± 16.41[b]	Group	8.328	**0.006**
	Posttest	65.59 ± 12.58	84.97 ± 15.68	Time	23.573	**0.000**
				Group × Time	45.293	**0.000**
SO_2 (%)	Pretest	80.35 ± 7.76[a]	82.07 ± 11.55[b]	Group	1.394	0.243
	Posttest	88.08 ± 6.20	80.61 ± 12.79	Time	8.165	**0.006**
				Group × Time	17.511	**0.000**
HCO_3 (mmol/L)	Pretest	22.31 ± 6.34[a]	27.11 ± 7.11[b]	Group	5.775	**0.020**
	Posttest	23.54 ± 6.14	27.01 ± 7.81	Time	1.328	0.254
				Group × Time	1.839	0.180

Bold numbers indicate $p < 0.05$; *Repeated measures analysis of variance; [a,b]Groups with different letters in the same row are not significantly different ($p > 0.05$); HCO_3, bicarbonate; pH, power of hydrogen; PCO_2, partial pressure of carbon dioxide in arterial blood; SO_2, oxygen saturation in arterial blood

Table 4: Evaluation of the difference between intervention and control groups' vital signs pre-test and post-test mean scores

	Group	*Intervention (n:30)*	*Control (n:30)*	*Evaluation*		
	Measuring time	$\overline{x} \pm SS$	$\overline{x} \pm SS$		*F*	*p**
SBP	Pretest	137.73 ± 32.97[a]	135.93 ± 27.93[b]	Group	0.041	0.840
	Posttest	121.77 ± 23.61	126.13 ± 31.42	Time	10.119	**0.002**
				Group × Time	0.580	0.450
DBP	Pretest	77.50 ± 21.06[a]	77.00 ± 22.17[b]	Group	0.023	0.880
	Posttest	68.27 ± 16.08	70.13 ± 21.53	Time	8.673	**0.002**
				Group × Time	0.187	0.667
Heart rate	Pretest	120.27 ± 26.86[a]	118.77 ± 22.80[b]	Group	1.010	0.319
	Posttest	100.27 ± 23.13	113.57 ± 35.10	Time	10.124	**0.002**
				Group × Time	3.492	0.067
Respiratory	Pretest	34.20 ± 9.12[a]	31.67 ± 9.98[b]	Group	0.503	0.481
	Posttest	25.40 ± 7.18	30.73 ± 10.80	Time	12.116	**0.001**
				Group × Time	7.914	**0.007**
Temperature	Pretest	36.51 ± 0.60[a]	36.50 ± 0.70[b]	Group	0.052	0.820
	Posttest	36.44 ± 0.43	36.40 ± 0.54	Time	1.495	0.226
				Group × Time	0.060	0.808

Bold numbers indicate $p < 0.05$; *Repeated measures analysis of variance; [a,b]Groups with different letters in the same row are not significantly different ($p > 0.05$); DBP, diastolic blood pressure; SBP, systolic blood pressure

of the group ($F = 8.328$, $p = 0.006$), time ($F = 23.573$, $p = 0.000$), and group × time ($F = 45.293$, $p = 0.000$) interaction ($p < 0.05$). It was determined that the change in the averages of oxygen saturation in arterial blood (SO_2%) of the intervention and control groups was statistically significant in terms of time ($F = 8.165$, $p = 0.006$) and group × time ($F = 17.511$, $p = 0.000$) interaction ($p < 0.05$), but not significant in terms of group ($F = 1.394$, $p = 0.243$; $p > 0.05$) interaction. It was shown that the change in the averages of bicarbonate (HCO_3 mmol/L) of the intervention and control groups was statistically significant in terms of group ($F = 5.775$, $p = 0.020$) interaction ($p < 0.05$) (Table 3).

It was determined that the change in the averages of systolic blood pressure (SBP), diastolic blood pressure (DBP), and heart rate of the intervention and control groups was statistically significant in terms of time ($F = 10.119$, $p = 0.002$; $F = 8.673$, $p = 0.002$; $F = 10.124$, $p = 0.002$, respectively) interaction ($p < 0.05$), but not significant in terms of group and group × time interaction ($p > 0.05$). It was shown that the change in the respiratory averages of the intervention and control groups was statistically significant in terms of time ($F = 12.116$, $p = 0.001$) and group × time ($F = 7.914$, $p = 0.007$) interaction ($p < 0.05$), but not significant in terms of group ($F = 0.503$, $p = 0.481$; $p > 0.05$) interaction (Table 4).

It was determined that the change in the DASS-Anxiety averages of the intervention and control groups was statistically significant in terms of group ($F = 9.657$, $p = 0.003$), time ($F = 22.489$, $p = 0.000$), and group × time ($F = 41.214$, $p = 0.003$) interaction ($p < 0.05$). It was determined that the change in DASS-Stress averages of the intervention and control groups was statistically significant in terms of time ($F = 13.111$, $p = 0.001$) and group × time ($F = 7.561$, $p = 0.008$) interaction ($p < 0.05$), but not significant in terms of the group ($F = 0.869$, $p = 0.355$; $p > 0.05$) interaction. It was determined that the change in the RASS-Agitation averages of the intervention and control groups was statistically significant in terms of group ($F = 16.731$, $p = 0.000$), time ($F = 21.192$, $p = 0.000$), and group × time ($F = 65.004$, $p = 0.000$) interaction ($p < 0.05$) (Table 5).

Table 5: Evaluation of the difference between intervention and control groups' DASS-Anxiety, DASS-Stress, and RASS-Agitation pre-test and post-test mean scores

	Group	*Intervention (n:30)*	*Control (n:30)*	*Evaluation*		
	Measuring time	$\overline{x} \pm SS$	$\overline{x} \pm SS$		*F*	*p**
DASS-Anxiety	Pretest	15.17 ± 4.32^a	14.73 ± 4.09^b	Group	9.657	**0.003**
	Posttest	9.40 ± 3.41	15.60 ± 4.54	Time	22.489	**0.000**
				Group × Time	41.214	**0.003**
DASS-Stress	Pretest	9.20 ± 5.76^a	6.47 ± 5.02^b	Group	0.869	0.355
	Posttest	5.30 ± 3.71	5.93 ± 5.15	Time	13.111	**0.001**
				Group × Time	7.561	**0.008**
RASS-Agitation	Pretest	1.80 ± 1.06^a	1.66 ± 0.66^b	Group	16.731	**0.000**
	Posttest	0.53 ± 0.73	1.93 ± 0.58	Time	21.192	**0.000**
				Group × Time	65.004	**0.000**

Bold numbers indicates $p < 0.05$; *Repeated measures analysis of variance; [a,b]Groups with different letters in the same row are not significantly different ($p > 0.05$); DASS, Depression anxiety stress scale; RASS, Richmond agitation-sedation scale

Discussion

In the study, it was determined that there were significant changes in blood gas levels other than pH of the patients in the intervention and control groups after the intervention, in terms of group, time, and group–time interaction. When the groups were evaluated within themselves, it was observed that there was an improvement in the blood gas values other than pH of the patients in the intervention group. The desired primary effect of NIV is to maintain adequate blood gas levels in arterial blood.[21] Studies have reported an improvement in blood gas values of patients receiving NIV treatment.[22] In this study, although both groups received NIV treatment, the lack of improvement in the blood gas values of the control group suggested that NIV treatment alone was not sufficient, and hence, the improvement in the intervention group was associated with the effect of the practiced intervention.

This study revealed that, after the intervention, there were significant changes in the life signs of the patients in the intervention and control groups, except for fever, in terms of time and group–time interaction. Previous studies showed that emotional changes such as stress[23,24] and anxiety[25] can negatively affect physiological parameters, including vital signs.[26] Therefore, it is thought that improvement in vital signs may have occurred as a response of the autonomic nervous system due to the decrease in stress and anxiety in the intervention group after the intervention.

In this study, it was determined that there were significant changes in the anxiety, stress, and agitation scores of the patients in the intervention and control groups after the intervention in terms of group, time, and group–time interaction. A significant decrease was observed in the anxiety, stress, and agitation levels of the patients in the intervention group. Similarly, it is stated in the literature that interventions such as maintaining patient comfort in intensive care, frequent reorientation, provision of sleep–wake cycle, optimization of the environment, frequent contact with relatives, and therapeutic touching[14] reduce anxiety and agitation, that appropriate NIV training provides successful coping with stress[7] and is important in reducing the anxiety of the patient.[27] Fisher et al.[28] emphasize that it is important to develop a relationship of trust with the patient, to relax and calm the patient, and to educate the patient about the expected benefits in order to facilitate NIV treatment. McGovern et al.[13] state that it is possible to manage agitation with a calm, clear, collaborative, trusting, and interactive approach, and regularly inform the patient about his environment, treatment, and progress. Iosifyan et al.[9] report that informing the patient receiving NIV treatment may prevent the patient from experiencing fear or anxiety due to uncertainty and disappointment. In the studies conducted in India, it was determined that NIV is a safe method of weaning from the ventilator.[29,30] Hess[31] states that patients who experience fear due to the mask used for NIV treatment should be given explanatory information to cope with fear and treatment should be initiated without enhancing the patient's fear. Another study emphasized that nurses should provide education to patients in order to prevent fear, stress, and other psychological problems that may develop during NIV.[32] In accordance with the literature, it was thought that the information and supportive nursing care provided to patients in the intervention group served as a tool that would allow patients to cope with the negative emotions experienced due to NIV.

Limitations

Conducting the research with intensive care patients in only one center is a limitation. After the study, interventions applied to the intervention group were also anticipated to be applied to the patients in the control group, but the practice could not be performed due to reasons such as the patients passing from the ICU to the normal service and being discharged. The prepared information leaflet was given to these patients. In addition, the inability to make follow-up measurements can be considered among the limitations of the study.

Current Knowledge

Informative and supportive nursing care is essential to reduce complications and improve outcomes in people with COPD treated with NIV. A versatile practice is needed for the patient to accept NIV treatment and to ensure compliance. It is emphasized in the literature that attention should be paid to the symptoms and adaptation problems that may be seen in the patient during NIV treatment and care should be provided accordingly.

Conclusion

As a result of the study, it was seen that providing information and supportive nursing care reduced anxiety, stress, and agitation, and positively affected vital signs and blood gas values in people with COPD treated with NIV. Accordingly, nurses are advised to include providing information and supportive nursing care practices in

their initiatives when caring for people with COPD treated with NIV. In addition, it may be recommended to perform similar practices in ICU by including follow-up measurements with other patient groups and to evaluate the effect for a long term.

Ethics Statement

This study has been approved (B.30.2.ODM.0.20.08/390) by an Ethics Committee. In order to carry out the study, an application permit (17186359-604.02) was obtained from the Provincial Health Directorate and the relevant hospital. In addition, written consent forms were obtained from all the patients.

Authors' Contributions

YC, TYB, and İAA contributed to literature search. YC, TYB, and İAA performed data collection. YC, TYB, and İAA contributed to study design. YC, TYB, and İAA performed analysis of data. YC and TYB contributed to manuscript preparation. YC, TYB, and İAA contributed to review of manuscript. All authors read and approved the final article.

The study was performed at Bafra State Hospital in Samsun, Turkey.

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