

The effect of liaison nurse on patient anxiety and vital signs during cardiac care unit admission: a randomized clinical trial

El efecto de la enfermera de enlace sobre la ansiedad del paciente y los signos vitales durante Admisión a la unidad de atención cardíaca: un ensayo clínico aleatorizado

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Abstract

Admission to cardiac care unit (CCU) is a stressful event for patients. Nurse accompaniment during CCU admission may help the patient in adapting to the CCU conditions. The present study was conducted to investigate the effect of liaison nurse on patient's anxiety and vital signs during CCU admission. In this clinical trial, 70 coronary heart patients were selected from the emergency room through a purposive sampling and randomly assigned into control and intervention groups. Samples' anxiety was measured by Spielberger anxiety inventory and their vital signs were recorded. The intervention group received necessary information and then the nurse accompanied them during the CCU admission. After that, Spielberger anxiety inventory was completed and vital signs were recorded again. Control patients only received the routine care, through which they completed Spielberger anxiety inventory. Moreover, their vital signs were recorded before and after the CCU admission. Post-intervention mean anxiety score of the intervention group was significantly lower than that of the control group (51.8 ± 7.89 and 57.23 ± 6.36 , $p=0.002$). Also, the mean heart rate in the intervention group was significantly lower than that of the control group (78.2 ± 8.24 and 84.94 ± 13.8 , $p=0.016$). But, mean systolic and diastolic blood pressures and respiratory rate showed no significant differences following intervention between the groups. Results showed that the presence of liaison nurse positively influences anxiety and some vital signs of CCU patients and put patients in a more stable condition.

Keywords: Nurse, liaison, vital signs, cardiovascular patients

Resumen

La admisión a la unidad de atención cardíaca (CCU) es un evento estresante para los pacientes. El acompañamiento de la enfermera durante el ingreso a la CCU puede ayudar al paciente a adaptarse a las condiciones de la CCU. El presente estudio se realizó para investigar el efecto de la enfermera de enlace sobre la ansiedad y los signos vitales del paciente durante el ingreso a CCU. En este ensayo clínico, 70 pacientes coronarios fueron seleccionados de la sala de emergencia a través de un muestreo intencional y asignados al azar en los grupos de control e intervención. La ansiedad de las muestras se midió mediante el inventario de ansiedad de Spielberger y se registraron sus signos vitales. El grupo de intervención recibió la información necesaria y luego la enfermera los acompañó durante la admisión a la CCU. Después de eso, se completó el inventario de ansiedad de Spielberger y se registraron nuevamente los signos vitales. Los pacientes de control solo recibieron la atención de rutina, a través de la cual completaron el inventario de ansiedad de Spielberger. Además, sus signos vitales se registraron antes y después de la admisión a CCU. La puntuación media de ansiedad después de la intervención del grupo de intervención fue significativamente más baja que la del grupo control (51.8 ± 7.89 y 57.23 ± 6.36 , $p=0.002$). Además, la frecuencia cardíaca media en el grupo de intervención fue significativamente menor que la del grupo de control (78.2 ± 8.24 y 84.94 ± 13.8 , $p=0.016$). Pero, la presión arterial sistólica y diastólica media y la frecuencia respiratoria no mostraron diferencias significativas después de la intervención entre los grupos. Los resultados mostraron que la presencia de una enfermera de enlace influye positivamente en la ansiedad y en algunos signos vitales de los pacientes con CCU y pone a los pacientes en una condición más estable.

Palabras clave: Enfermera, enlace, signos vitales, pacientes cardiovasculares.

Cardiovascular diseases are regarded as the most common death causes in the world¹. Despite the medical advancements, the mortality rate of these diseases is still high. It is expected that by 2020, cardiovascular diseases will result in the death of 25 million people a year². In Iran, according to data reported in some studies, cardiovascular diseases were the first death cause^{3,4}.

Although cardiac care units (CCUs) try to provide professional and intensive care, many CCU patients undergo a stressful experience during their admission⁵. Cardiovascular patients' anxiety originates from many factors, which may cause several complications⁶. Anxiety intensifies the risk of disease recurrence. It influences heart rate, blood pressure, and coagulation time; increases cortisol and adrenaline secretion; and disrupts body metabolism^{7,8}. Hospitalization and transferring from an environment to another are among the factors generating fear and anxiety in cardiovascular patients^{9,10}.

Most patients are worried due to lack of information about CCU and admission to an unknown environment. They frequently ask about their status and are anxious. Considering that anxiety may exacerbate the disease, it is necessary to provide comprehensive information such that the patients will be prepared and adapted to the new condition as much as possible^{7, 11}. Explaining unfamiliar environment and providing information about the disease may reduce patient anxiety^{12,13}. In this regard, nurse's accompaniment in critical conditions would be of great assistance. Liaison nurses facilitate patients' admission, care, treatment, and discharge. They inform the patient and the family about the situation, care, and treatment plan. Moreover, they consult with other nurses regarding patients' hospitalization, treatment, and discharge. Liaison nurse duties include checking the patient's clinical status, education and emotional support of the patient and family, patient's transfer planning, continued communication with the staff and patients, checking units' status and facilities, and staff education and support. ICU liaison nurse has shown a critical role in transferring the patient from ICU to general wards. The role of liaison nurse in patients undergoing surgery and psychiatric patients has also been studied^{9,10,13,14}.

Patient's education is one of the major tasks of liaison nurse. Face-to-face education can help patients to better adapt to the new situation. It also enables patients to ask questions and express their concerns, while enabling the nurse to receive patients' feedback and ensure their understanding¹³.

Liaison nurse attendance at CCU admission, giving information, familiarizing the patient with the unit, and accompanying the patient along the process may help in patients' adaptation through lessening stress and anxiety. Since it appears that the role of liaison is not well recognized in Iran, the present study was conducted to shed

light on the effect of liaison nurse on patient anxiety in the process of CCU admission.

Design and setting:

This research is a randomized clinical trial conducted in the emergency ward and CCU of Amirkabir Hospital Arak, Iran. Amirkabir Hospital is an educational hospital affiliated to Arak University of Medical Sciences.

Sampling:

70 coronary heart patients were selected through purposive sampling and were assigned to two control and intervention groups using the block randomization. Inclusion criteria included diagnosis of myocardial infarction or angina pectoris by a cardiologist, willingness to participate in the study, age between 30-60 years old, speaking in Persian, lack of prior experience on CCU, have a stable status, no arrhythmias, and no severe chest pain. Exclusion criteria were patient' reluctance to continue the study, having arrhythmias and severe chest pain during the study, and patient' death.

Instrument:

Data were collected using the Spielberger state-trait anxiety inventory (STAI). It consists of 40 items, with items 1-20 being about state anxiety and 21-40 about trait anxiety. Questions are scored by a multiple-choice Likert scale (never, sometimes, often, and always). For scoring, each statement is initially scored from 1 to 4 points. Higher score shows higher anxiety. In the present research, state anxiety subscale was used. Spielberger et al (1989) reported the internal consistency (Cronbach alpha) of state subscale as 0.92¹⁵. In Iran, the Cronbach alpha in a study performed by Taghavi et al (2013) was also 0.92¹⁶.

Data Collection:

The researcher identified the eligible patients at the emergency ward. The research objective was explained and informed consent was obtained. The researcher completed a demographic questionnaire, vital sign records (blood pressure, heart rate, and respiratory rate), and STAI for all patients. Patients' vital signs were recorded using a digital device. All instruments were provided by SAADAT™ and calibrated by the exclusive agent of the manufacturing company. Intervention group patients received information about their disease, CCU admission, environment, and devices and equipment of CCU by the researcher, who was a liaison nurse. Then, the patients were accompanied by the researcher to CCU and familiarized to CCU environment, devices, equipment, alarms, nursing station, and CCU staff. After CCU admission and stability of the patient, STAI was completed and vital signs were recorded again. Control group patients only received routine care, and STAI was completed and vital signs were recorded again after CCU admission and stability.

Statistical analysis:

Descriptive statistics (mean, standard deviation, frequency, and percentage) were used to describe the data. Infer-

ential statistics such as independent t-test, paired t-test, Chi-square, and Fisher's exact test was also used to analyze the data.

Ethical considerations:

The present research was approved by the ethics committee of Arak University of Medical Sciences (IR.ARAKMU.REC.1395.150, July 18, 2016) and registered in Iran Registry of Clinical Trials (IRCT2016090525031N4).

Results

There was no significant difference between mean age of control (52.25) and intervention groups (54.54) ($p=0.114$). Furthermore, data analysis showed no significant difference between intervention and control groups in terms of gender, education, job, diagnosis, symptoms, other diseases, and drug use (Table 1).

Results showed that post-intervention mean state anxiety score was significantly lower for the intervention group ($p=0.002$). Moreover, following the intervention the mean state anxiety score was significantly decreased for the intervention group ($p=0.001$); but in control group, no difference was seen ($p=0.66$).

There was no statistically significant difference in mean systolic blood pressure post-intervention between the two groups ($p=0.536$). Although following the intervention a significant decrease was seen in mean systolic blood pressure in the intervention group ($p=0.0001$), the decrease for the control group was not statistically significant ($p=0.058$).

The mean diastolic blood pressure was significantly reduced in both groups after the intervention ($p=0.0001$ for both groups) whereas the post-intervention mean diastolic blood pressure was not significantly different between the two groups.

The mean heart rate was significantly decreased at both intervention and control groups after the intervention ($p=0.0001$ for both groups). Moreover, post-intervention mean heart rate was significantly lower in the intervention group ($p=0.016$).

The mean respiratory rate was significantly decreased in both groups following the intervention ($p=0.0001$ for the intervention group and $p=0.006$ for the control group) while the post-intervention mean respiratory rate showed no significant difference between the groups ($p=0.226$).

Table 2 presents patients anxiety and vital signs in control and intervention groups.

Table 1. Characteristics of samples in control and intervention groups

Group		Intervention		Control		p
Variable		%	Frequency	%	Frequency	
Gender	Female	54.7	16	48.6	17	0.811*
	Male	54.3	19	51.4	18	
	Total	100	35	100	35	
Education level	Illiterate	31.4	11	37.1	13	0.117**
	Elementary degree	5.7	2	0	0	
	Guidance school degree	22.9	8	11.4	4	
	High school degree	0	0	14.3	5	
	Associate degree	11.4	4	14.3	5	
	Bachelor	28.6	10	22.9	8	
Total	100	35	100	35		
Job	Freelancer	25.7	9	28.6	10	0.069**
	Housewife	37.1	13	34.3	12	
	Farmer	8.6	3	11.4	4	
	Employee	8.6	3	22.9	8	
	Driver	2.9	1	0	0	
	Retired	17.1	6	0	0	
	Unemployment	0	0	2.9	1	
Total	100	35	100	35		
Diagnosis	Unstable angina	57.1	20	57.1	20	
	myocardial infraction	40	14	42.9	15	
	Myocardial infarction without ST elevation	2.9	1	0	0	
Symptoms	Chest pain	37.1	13	48.6	17	0.089*
	Chest pain and dyspnea	31.5	11	34.3	12	
	Chest pain and weakness	2.9	1	0	0	
	Sweating, nausea, and chest pain	11.4	4	0	0	
	Nausea, chest pain	8.6	3	0	0	
	Sweating, chest pain, and dyspnea	8.6	3	8.6	3	
	Sweating and chest pain	0	0	2.9	1	
Nausea, sweating, chest pain, and dyspnea	0	0	5.7	2		
Medication use	Yes	48.6	17	34.3	12	0.225**
	No	51.4	18	56.7	23	

* Fisher's exact test, ** Chi-square

Table 2. Patients' anxiety and vital signs before and after intervention in control and intervention groups

Variable	Group	Pre-intervention	Post intervention	P *
		Standard deviation \pm mean	Standard deviation \pm mean	
State anxiety	Intervention	54.60 \pm 21.8	51.8 \pm 7.89	0.001
	Control	57.88 \pm 6.60	57.23 \pm 6.38	0.66
	P **	0.140	0.002	
Systolic blood pressure	Intervention	133.43 \pm 21.82	128.28 \pm 91.32	0.0001
	Control	136 \pm 26.25	131.71 \pm 26.28	0.058
	P **	0.657	0.536	
Diastolic blood pressure	Intervention	86 \pm 13.32	82.28 \pm 12.38	0.0001
	Control	86.57 \pm 16.25	82.28 \pm 14.76	0.0001
	P **	0.837	1.0	
Heart rate	Intervention	82.48 \pm 8.72	78.2 \pm 8.24	0.0001
	Control	86.77 \pm 14.22	84.94 \pm 13.8	0.0001
	P **	0.133	0.016	
Respiratory rate	Intervention	14.62 \pm 1.57	14 \pm 1.37	0.0001
	Control	14.74 \pm 1.70	14.42 \pm 1.55	0.006
	P **	0.772	0.226	

* Paired t-test, ** Independent t-test

This clinical trial focused on studying the effect of liaison nurse on patients' anxiety and vital signs in the process of admission to CCU.

Mean state anxiety score in the intervention group was significantly reduced following the intervention, but it was not true for the control group as it was significantly lower in intervention group comparing control group. Varaei et al. (2013) examined the effect of angiography introducing tour on anxiety and satisfaction level of patients candidate for coronary artery angiography. They showed that mean anxiety score was significantly reduced in intervention group following the tour. In addition, patients' mean satisfaction score at discharge showed a significant difference in the intervention group, suggesting that intervention group patients were more satisfied¹⁷. Jodaki et al. (2014) studied the effect of liaison nurse services on patients' anxiety in the process of transition from cardiac surgery ICU to the general ward. They concluded that the services significantly decreased patients' anxiety in the intervention group¹⁸. Herd and Reiben (2014), in a research on the role of surgery liaison nurse in developing communication with the patient and the family, found that satisfaction was increased in the patients and the family, and also among the personnel (including doctor and nurse)¹⁹. In contrast, Chaboyer et al (2007), analyzing the effect of liaison nurse on ICU patient's anxiety before transferring to the general ward, concluded that liaison nurse had no significant effect on patient's and family's pre-transfer anxiety⁹. The effect of individual training, which is a part of the present research intervention, has been regarded in various patients. Tel and Tel (2006), in a research on the effect of individual training on transfer anxiety of patients suffering from myocardial infarction and their families, deduced that the anxiety score of intervention group on the 2nd day of CCU hospitalization and CCU discharge

day was significantly declined while in the control group, anxiety level was significantly increased²⁰.

Post-intervention systolic blood pressure significantly reduced in the intervention group. Although it was also decreased in the control group, the decrease was not statistically significant ($p < 0.058$). Systolic blood pressure was not significantly different between the two groups. Zakeri Moghadam et al. (2014), studying the effect of liaison nurse on patients' vital signs in the process of transition from cardiac surgery ICU to the general ward, inferred that systolic blood pressure was significantly decreased in the intervention group; while, it was not true for the control group²¹. Tabanejad et al. (2016) studied the effect of liaison nurse on patients' outcome after ICU discharge and observed no statistically significant difference between systolic blood pressure in the intervention and control groups²².

Diastolic blood pressure was significantly reduced at both intervention and control groups but had no statistically significant difference between the two groups. Zakeri Moghadam et al. (2014) also reported that diastolic blood pressure was significantly reduced in both intervention and control groups but intervention and control groups showed no significant difference²¹.

Our results demonstrated that post-intervention mean heart rate was significantly reduced in both groups compared to pre-intervention; however, the decrease was more in the intervention group and was significantly lower in the intervention group compared to the control group. Zakeri Moghadam et al. (2014) stated that mean heart rate was reduced in the intervention group compared to the pre-intervention group; whereas, it was not true for the control group, as the post-intervention mean heart rate was significantly lower in the interven-

tion group²¹. In contrast, Tabnejad et al. (2016) reported no significant difference between heart rate of intervention and control groups²².

Post-intervention mean respiratory rate significantly decreased for both groups comparing pre-intervention but it was not significantly different between the two groups. Zakeri Moghadam et al. (2014) concluded that the mean respiratory rate in intervention group significantly decreased following the intervention but it was not seen in the control group. Also, both the intervention and control groups were significantly different following the intervention²¹. Furthermore, according to Tabanejad et al. (2016), regarding the effect of liaison nurse on patients' outcome after ICU discharge, the respiratory rate showed no statistically significant difference in the control group and intervention group²².

Conclusions

Anxiety in patients suffering from heart diseases may deteriorate their condition. Being in an unknown condition, facing a new context, and experiencing an unfamiliar CCU environment in the process of hospitalization are some anxiety sources for these patients. Presence of the liaison nurse, who provides the required information and introduces patients to the new environment, may effectively reduce patients' anxiety and improve their prognosis. The present study demonstrated that the presence of liaison nurse may reduce anxiety level in patients. Incorporating the liaison nurse in hospitals, especially ICUs, may effectively improve patients' adaptation and outcome.

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