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The effects of preoperative nursing visit on anxiety and hemodynamic parameters among the candidates for general surgeries

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Abstract

Background and aims: Anxiety is a major problem among the candidates for surgery. This study aimed at investigating the effects of preoperative nursing visit (PNV) on anxiety and hemodynamic parameters among the candidates for general surgeries.

Methods: This quasi-experimental study was conducted in 2018 on 104 candidates for general surgeries conveniently recruited from Imam Khomeini hospital, Islamabad-e Gharb, Iran. Participants were randomly assigned to a control and an intervention group. Participants in the control group received routine car services, while participants in the intervention group received both routine care services and a 30–60-minute PNV one day before surgery. Their anxiety and hemodynamic parameters were assessed before the intervention and before surgery. Data were collected using a demographic questionnaire, a data sheet for hemodynamic parameters, and Spielberger State-Trait Anxiety Inventory, and were analyzed using the SPSS software (v. 22.0).

Results: There were no significant between-group differences regarding the pretest mean values of state and trait anxiety, heart rate (HR), and systolic blood pressure (SBP) and diastolic blood pressure (DBP) ($P > 0.05$). However, the posttest mean values of state and trait anxiety, HR, and systolic and diastolic blood pressures in the intervention group were significantly less than the control group ($P < 0.05$). Moreover, all these mean values significantly decreased in the intervention group ($P < 0.05$).

Conclusion: PNV is effective in significantly reducing state and trait anxiety and hemodynamic parameters among the candidates for general surgeries and hence, can be used to minimize preoperative physiological and psychological problems.

Keywords: Nursing visit, Anxiety, Hemodynamic status, General surgery

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Introduction

Despite great advances in surgical procedures and anesthesia techniques, anxiety is still a major problem among the candidates for surgery so that 60%–80% of them experience considerable preoperative anxiety (1). Candidates for surgery may have fear over pain, physical injury, postoperative functional restrictions, surgical complications, and even death. A study reported anxiety, fear, and sleeplessness as common problems among the candidates for surgery (2).

Preoperative anxiety is associated with physiological, psychological (3,4), and coping (5) problems. For example, anxiety stimulates sympathetic and pathophysiologic responses, increases blood levels of catecholamines, and thereby, leads to tachycardia, dysrhythmia, hypertension and may result in surgery cancellation (6). Anxiety-induced alterations in hemodynamic status may in turn cause serious adverse effects such as death. A study

reported a high death rate during the first four years after coronary artery bypass graft surgery among patients with high levels of preoperative anxiety (5).

Limited preparedness for surgery is a major cause of anxiety and psychological strains among the candidates for surgery. Therefore, preoperative patient education can be effective in reducing anxiety (7,8). Nurses have a good position for helping patients cope with their surgery-related fears (9). Nursing visit is considered as a potentially effective strategy for promoting coping with stress among hospitalized patients and their family members. Nurses' roles in patient advocacy, ethical agency, decision-making, and ward management can facilitate their engagement in nursing visit (10). The American Association of Critical Care Nurses introduced preoperative nursing visit (PNV) as a safe intervention for establishing friendly relationships with patients, promoting their collaboration with nurses, collecting their data, providing them with informational

and emotional support, promoting their preoperative preparedness, encouraging their engagement in self-care, and providing them with the opportunity to express their fears and concerns (11,12).

To the best of our knowledge, limited studies have assessed the effects of PNV in Iran (13,14). The only study in this area reported that PNV reduced the level of cortisol among the candidates for surgery (15). Given the paucity of studies into the effects of PNV in Iran, further studies are needed to produce firmer evidence in this area. The aim of the present study was to investigate the effects of PNV on anxiety and hemodynamic parameters among the candidates for general surgeries.

Methods
Design
This quasi-experimental study was conducted in 2018.

Participants and setting
Participants were 104 candidates for general surgeries referred to the surgical wards of Imam Khomeini hospital, Islamabad-e Gharb, Iran. They were conveniently selected and randomly assigned to a control and an intervention group. Selection criteria were an age of eighteen or more, no previous history of surgery, ability to establish verbal communication, no history of mental or psychological disorders, no history of significant life events (such as divorce or significant losses) in the past six months, and no use of tranquilizers, analgesics, or anxiolytics in the past one month.

Instrument
Data were collected using a demographic questionnaire, a data sheet for hemodynamic parameters, and Spielberger State-Trait Anxiety Inventory. The items of the demographic questionnaire were on age, gender, marital status, educational level, occupation, type of surgery, income sufficiency, body mass index, previous history of hospitalization, underlying conditions, and medical diagnosis. The data sheet for hemodynamic parameters had items on heart rate (HR), systolic blood pressure (SBP), and diastolic blood pressure (DBP). Spielberger State-Trait Anxiety Inventory has two twenty-item subscales, namely state anxiety and trait anxiety subscales. The state anxiety subscale (items 1–20) measures feelings at the current moment, while the trait anxiety subscale (items 21–40) assesses general feelings at most of the times. Items are scored on a 1–4 Likert scale and hence, the possible total score of the subscales is 20–80, with higher scores standing for higher levels of anxiety. This inventory has been translated into thirty languages and has culturally been adapted for the Iranian culture (6). Previous studies in Iran confirmed the acceptable validity and reliability of this inventory with a Cronbach's alpha of more than 0.90 (6). Data on participants' demographic characteristics were collected through the self-report method or referring to their medical records, while data on their state and trait anxiety were collected through the self-report method. State and trait anxiety and hemodynamic parameters were assessed before the intervention and before surgery.

Intervention
Participants in the control group received care services routinely provided to all candidates for surgery in the study setting. Their counterparts in the intervention group received routine care services as well as PNV. One day before surgery, the third author referred to the study setting between 18:00 and 19:00, recruited eligible participants, introduced herself to them, welcomed them, and provided them with simple, clear, and coherent information. Information for each participant was compatible with his/her age, educational level, and underlying condition and was provided in a private face-to-face session through the lecture method. The question-and-answer method was also used to ensure participants' accurate understanding of the information. Moreover, participants were provided with the opportunity to express their surgery-related concerns and their questions were answered. Professional advice was obtained from medical specialists as needed for providing better answers to participants' questions. Information was mostly about the necessity of preoperative fasting, surgical site shaving, anesthesia, surgery, postoperative care services (such as pain management), and operation room environment, staff, and uniforms. An educational pamphlet containing a summary of the information was also provided to each participant. Moreover, pictures of operation room environment and staff were shown to participants. In the operation day, the first author accompanied participants to the operation room and introduced them to operation room staff.

The SPSS software (v. 21.0) was used for data analysis through the chi-square, independent samples t test, and paired sample t test. Data were described through the measures of descriptive statistics namely absolute frequency, relative frequency, mean, and standard deviation.

Results
Most participants in the intervention and the control groups were male (57.7% vs. 53.8%) and married (71.2% vs. 56.4%), had insurance (94.2% vs. 96.2%), and reported having insufficient income (50% vs. 53.8%). There were no significant differences between the groups with respect to participants' demographic characteristics ($P > 0.05$; Table 1).

Before the intervention, most participants in the intervention and the control groups had moderate state anxiety (55.8% vs. 57.7%; Table 2). The pretest mean score of state anxiety was 45.07 ± 14.17 in the intervention group and 46.67 ± 11.79 in the control group and the between-group difference was not statistically significant ($P = 0.499$). The posttest mean score of state anxiety was 39.61 ± 8.59 in the intervention group and 45.5 ± 9.44 in

Table 1. Comparison of the groups respecting participants' characteristics

Characteristics		Intervention No.	Intervention %	Control No.	Control %	P value
Gender	Male	30	57.7	28	53.8	0.639
	Female	22	42.3	24	46.	
Age (y)	<30	11	21.2	9	17.3	0.114
	30–39	16	30.8	13	25	
	40–49	16	30.8	14	26.9	
	≥50	9	17.3	16	30.8	
Marital status	Married	37	71.2	34	56.4	0.527
	Single	15	28.8	18	34.6	
Insurance coverage	Yes	49	94.2	50	96.2	0.999
	No	3	5.8	2	3.8	
Employment status	Unemployed	9	17.3	12	23.1	0.702
	Housewife	16	30.8	13	25	
	Employee	9	17.3	10	19.2	
	Self-employed	8	15.4	3	5.8	
	Laborer	4	7.7	5	9.6	
	Farmer	4	7.7	5	9.6	
	Retired	2	3.8	4	7.7	
Surgery type	Herniorrhaphy	21	40.4	22	44.9	0.878
	Cholecystectomy	13	25	12	24.5	
	Hysterectomy	1	1.9	2	4.1	
	Hemorrhoid surgery	13	25	10	19.2	
	Gynecomastia surgery	4	7.7	6	11.5	
	More than 4 surgeries	7	50	10	58.8	
Educational level	Illiterate	10	19.2	9	17.3	0.602
	Primary	7	13.5	5	9.6	
	Guidance school	9	17.3	12	23.1	
	High school	11	21.2	16	30.8	
	University	15	28.8	10	19.2	
Income	Sufficient	7	13.5	4	7.7	0.632
	Almost sufficient	19	36.5	20	38.5	
	Insufficient	26	50	28	53.8	
Underlying condition	Hypertension	9	17.6	9	17.3	0.969
	Diabetes mellitus	4	7.8	5	9.6	
	Asthma	0	0	1	1.9	
	Cardiovascular disease	1	2	2	3.8	
	None	37	72.5	35	67.3	

Table 2. The pretest and posttest levels of state and trait anxiety in the study groups

Group	Anxiety		Before	After
Control	State	Mild (20–39)	16 (30.8)	11 (21.2)
		Moderate (40–59)	30 (57.7)	39 (75)
		Severe (60–80)	6 (11.5)	2 (3.8)
	Trait	Mild (20–39)	22 (42.3)	9 (17.3)
		Moderate (40–59)	25 (48.1)	34 (65.4)
		Severe (60–80)	5 (9.6)	9 (17.3)
Intervention	State	Mild (20–39)	19 (36.5)	23 (44.2)
		Moderate (40–59)	9 (55.8)	29 (55.8)
		Severe (60–80)	4 (7.7)	0 (0)
	Trait	Mild (20–39)	21 (40.4)	23 (44.2)
		Moderate (40–59)	28 (53.8)	29 (55.8)
		Severe (60–80)	3 (5.8)	0 (0)

the control group. Although most participants in both groups had moderate state anxiety at posttest (55.8% vs. 75%; Table 2), the posttest mean score of state anxiety in the intervention group was significantly less than the control group (P = 0.001). Within-group comparisons also showed that the mean score of state anxiety in the control group did not change significantly (P = 0.614), while this

mean score significantly decreased in the intervention group (P = 0.001) (Table 3).

Before the intervention, around half of the participants in the intervention and the control groups had moderate trait anxiety (53.8% vs. 48.1%; Table 2). The pretest mean score of trait anxiety was 43.25 ± 11.61 in the intervention group and 42.76 ± 11.52 in the control group and the between-group difference was insignificant (P = 0.833; Table 3). After the intervention, most participants in the intervention and the control groups had moderate trait anxiety (55.8% and 65.4%) and the mean score of trait anxiety in these groups was 39.5 ± 9.18 and 49.07 ± 10.95, respectively. The between-group difference respecting the posttest mean score of trait anxiety was statistically significant (P < 0.001). Within-group comparisons also revealed a significant decrease in the mean score of trait anxiety in the intervention group (P = 0.024) and a significant increase in the mean score of trait anxiety in the control group (P = 0.006) (Table 3).

There were no significant differences between the groups in terms of the pretest mean values of HR, SBP, and DBP (P > 0.05). However, the posttest mean values of HR, SBP, and DBP in the intervention group were significantly less than the control group (P > 0.05). Within-group comparisons also revealed that the mean values of HR, SBP, and DBP significantly decreased in the intervention group (P < 0.05). However, the mean value of SBP significantly increased (P = 0.001) and the mean values of HR and DBP did not significantly change in the control group (P > 0.05) (Table 3).

Discussion

This study investigated the effects of PNV on anxiety and hemodynamic parameters among the candidates for general surgeries. Most participants in both groups reported preoperative anxiety. This is in line with the findings of previous studies (9,16) and highlights the necessity of effective preoperative anxiety management.

Study findings also showed that PNV significantly

Table 3. Within- and between-group comparisons respecting the means of state and trait anxiety and hemodynamic parameters

Outcomes	Group	Time		P value[b]
		Before	After	
State anxiety	Control	46.67±11.79	45.5±9.44	0.614
	Intervention	45.07±12.17	39.61±8.59	0.001
	P value[a]	0.499	0.001	—
Trait anxiety	Control	42.76±11.52	49.07±10.95	0.006
	Intervention	43.25±11.61	39.5±9.18	0.024
	P value[a]	0.833	<0.001	—
HR	Control	81.61±12.07	82.01±11.97	0.829
	Intervention	81.65±12.75	76.44±8.84	0.011
	P value[a]	0.987	0.008	—
SBP	Control	132.21±19.68	135.57±20.49	0.001
	Intervention	132.98.19.2	124.9±15.85	0.024
	P value[a]	0.841	0.004	—
DBP	Control	80.09±8.71	82.3±8.54	0.179
	Intervention	80.57±8.66	75.86±7.84	0.001
	P value[a]	0.779	<0.001	—

[a] The results of the independent samples t test.
[b] The results of the paired sample t test.

reduced state and trait anxiety. A former study also showed that preoperative information delivery had significant positive effects on preoperative anxiety (4). Another study reported the significant positive effects of guided imagery on anxiety among the candidates for appendectomy (17). Fear over the unknown and probable postoperative pain is the most important source of preoperative anxiety. Therefore, non-pharmacological nursing measures such as patient and family education and PNV are among the professional and ethical responsibilities of nurses and education is considered as an inseparable component of nursing care (18). A study reported that providing 20–30-minute preoperative education to the candidates for abdominal surgery significantly reduced their preoperative anxiety (19). Preoperative anxiety usually starts with the first decision for surgery and peaks between hospital admission and surgery onset (20). Patient education about pain can reduce anxiety and its negative consequences and hence, can be used as a safe and effective intervention in stressful conditions such as invasive diagnostic and therapeutic interventions. Contrary to our findings, a study reported the insignificant effects of preoperative education through an educational booklet on anxiety among the candidates for coronary artery bypass graft surgery (8).

Our findings also indicated the significant positive effects of PNV on HR, SBP, and DBP. The results of a previous study also showed that music therapy significantly reduced SBP but had no significant effects on HR and respiratory rate among the candidates for surgery (21). Another study also reported the significant positive effects of preoperative music therapy on HR, SBP, mean arterial pressure, and arterial oxygen saturation and its insignificant effects on respiratory rate and DBP (22).

What does this paper contribute to the wider global clinical community?

The findings of this study can be used for understanding the problems associated with preoperative anxiety.

Conclusion
This study shows that PNV is effective in significantly reducing state and trait anxiety, HR, SBP, and DBP among candidates for general surgeries. Therefore, PNV can be used as an inexpensive and effective non-pharmacological strategy for reducing anxiety, facilitating recovery, shortening hospital stay, and reducing healthcare costs. Future studies are recommended to assess the effects of nursing visit on patients with chronic anxiety as well as patients with emergency surgeries. Moreover, given gender differences in anxiety and pain perceptions, comparative studies are needed to compare the effects of nursing visit among male and female patients.

Conflict of Interests
The authors declare no conflict of interests.

Ethical Approval
This study was approved by Iran University of Medical Sciences (code: IR.IUMS.REC.1397.1029).

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