

## Effect of Nursing Intervention on the Severity of Pain for Patients with Angina in Emergency Unit. A Nursing Intervention Study

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### Abstract

**Objectives:** To evaluation of nurse interventions' efficacy in reducing pain intensity among angina patients in the emergency unit is the goal.

**Methods:** In the emergency room of Al-Rifai General Hospital in Al-Nasiriya city, a quasi-experimental study design was implemented. from December 9th, 2022, through June 18th, 2023, the period in question.

A non-probability (purposive) sample of (100) patients was split into two groups: the study group, which included (50) patients who received a nursing intervention, and the control group, which included (50) patients who did not receive any nursing intervention.

with the purpose of evaluating the impact of nurse interventions on patients with anginal symptoms in the emergency unit who are experiencing the reduction of pain intensity for people with angina in the emergency unit. the researcher used the Numeric Pain Rating Scale was used to gauge the degree of the participants' pain.

While the instrument's validity was verified by a panel of 13 experts, its reliability was ascertained by using a test-and-retest methodology. ( $r=0.81$ ).

In order to determine the differences between the study and control groups, descriptive statistics (frequency, percentage, arithmetic mean, and standard deviations) and inferential statistics (Chi-square test and Independent T test) were applied to the analysis of the data.

**Results:** The research's findings demonstrated that there are substantial differences between the study group and control group with regard to pain severity, with the study group showing a decrease in pain severity when compared to the control group.

**Conclusions:** The study came to the conclusion that the emergency room nurse intervention was a suitable intervention. Compared to patients in the control group, patients were happier with prompt nurse assistance.

**Recommendations:** The research suggested to improve patient satisfaction, relieve or lessen pain intensity, and prevent complications, continue this nursing intervention by giving out booklets often to angina patients in the emergency room that provide guidelines for an optimal nurse response

**Keywords:** Severity of Pain, Nursing Intervention, Angina, Emergency Unit.

### Introduction

Angina is the most typical sign of ischemic heart disease, which is a major cause of death and disability globally<sup>(1)</sup>. It has been demonstrated that angina doubles the risk of serious cardiovascular events<sup>(2)</sup>. 4.1 million people die annually in Europe from coronary artery disease (CAD), with individuals over 65 accounting for 82% of these deaths<sup>(1)</sup>.

According to<sup>(3)</sup> acute chest pain necessitates a precise clinical assessment using a range of indicators that are also typical for other types of pain, such as location, onset type, intensity, irradiation, type, duration, recurrence, triggering, worsening, or improving factors, associated signs and symptoms, comorbidities, risk factors, and personal and family morbid history.

That increased oxygen demand brought on by exertion is followed by coronary vasodilation under normal cardiac physiologic settings<sup>(4)</sup>. however, in cases of coronary artery disease, ischemia and chest discomfort result when its function is compromised<sup>(1)</sup>.

According to<sup>(5)</sup>, the following guidelines should be followed while treating acute angina pectoris: first, identify the cause of angina pectoris, then manage risk factors, engage in suitable activity, and modify lifestyle. After that, begin taking aspirin as directed by the doctor and take nitroglycerin to relieve symptoms. When attacks occur more frequently than twice a week, calcium channel blockers should be added to

nitroglycerin. Long-acting nitrates can be added if angina cannot be managed.

According to <sup>(6)</sup>, medicinal therapy is an important part of treating angina because it can assist to lessen symptoms and fend off consequences including myocardial infarction and stroke. We are given advice on which medications should be prescribed based on stable angina guidelines. Treatment of angina involves changing one's lifestyle, particularly in the areas of food, exercise, smoking, diabetes, hypertension, and psychological problems

The ability to control pain is hampered by the subjectivity of pain intensity, which is the level of discomfort that patients perceive. Due to this challenge, instruments for measuring or quantifying pain were created, enabling for more accurate planning of analgesic therapy and pain alleviation <sup>(7)</sup>.

Assessing the happiness of patients with nursing assistance may be helpful in promoting nursing excellence by aiding in the formulation of care standards and monitoring both results and patients' perceptions of quality <sup>(8), (9)</sup>.

In order to provide patients with care, nurses are essential. and there in all circumstances, providing families with mental and emotional assistance includes assisting the patient in identification and making sure they get the best care available. In addition to delivering technical treatment, nurses must also have the specialized expertise, beliefs, and skills necessary to offer educative, feelings, and real-world assistance <sup>(10), (11), (12)</sup>

Its purpose is to study is to evaluate severity of pain for patients with angina in emergency unit.

## Methodology

**Study Design:** A quasi-experimental design was used with the application of post-tests only approach for both groups (study and control). A non-probability purposive sample was non-randomly selected from Angina patients who were admitted at Al-Rifai General Hospital in Al-Nasiriya city. The size of sample was 100 angina patients divided into groups each one consisted of 50 patients as control group and study group. The study group was exposed face to face to a nursing intervention, the control group exposed only to routine nursing care by the hospital.

**Study Sample:** A non-probability purposive sample was non-randomly selected from Angina patients who were admitted at Al-Rifai General Hospital in Al-Nasiriya city. The size of sample was 100 angina

patients divided into groups each one consisted of 50 patients as control group and study group. The study group was exposed face to face to a nursing intervention concerning severity of pain the control group exposed only to routine nursing care by the hospital.

## The Interventional Program:

The nursing intervention was designed and constructed based on the results of need assessment for severity of pain toward nursing intervention for patients with angina in emergency unit at Al-Rifai General Hospital. The content of the program was evaluated by experts in different fields.

## Setting of the Study:

The study was conducted at Al-Rifai General Hospital (Emergency unit) in Al-Nasiriyah City, Iraq.

**Ethical Considerations:** After ethical approval gotten from College of Nursing in University of Baghdad, Ministry of Health agreed of ethical consideration of the research, each participant in the study signed an agreement to participated in the study.

**The Study Instrument:** For the purpose of evaluating the effect of nursing intervention on the severity of pain of patients with angina in emergency unit administration at Al-Rifai General Hospital in Al-Nasiriya city the questionnaire has constructed based on previous study and experience of the researcher in order to achieve the objectives of the study. The study instrument consists of three parts including the following: Part1: Socio-demographic data form consisted from (age, gender, level of education, marital status, occupation, smoking status, amount of cigarette smoking, duration of smoking, Residence, living level). Part 2: Clinical Characteristic of the Angina Patients consisted from (the past medical history, surgical history, and drug history). Part 3: Severity of Pain Scale It consists of (0-10) numbers about severity of pain for patients with angina 0-1 = No pain, 2-3 = Mild pain, 4-5 = Moderate pain, 6-7=sever pain 8,9,10 =very severe pain.

**Validity of the questionnaire:** The revision was made on the program contents based on these experts' recommendations and suggestions. The experts have agreed that the intervention able to improve the severity of pain in patients with angina.

**Reliability of the Questionnaire:** Reliability of the study instrument (questionnaire) was determined through the use of test and re-test approach on (10) patients with angina patients toward severity of pain, and interval period was two weeks to determine of internal consistency of patient's severity of pain. The result of the reliability discloses that the person correlation coefficient for severity of pain is (r=0.83) which is considered statistically acceptable.

**Data collection** Data collection was performed through the use of the questionnaire and the application of the

nursing intervention. The implementation was carried out in emergency unit at AL-Rifai General Hospital in Al-Nasiriya city for the period from 9<sup>th</sup> of December, 2022 to the 18<sup>th</sup> of June, 2023.

**Data Analysis:** Studies of the data are conducted using approach of the descriptive statistical data analysis approach, while analyses of the data are conducted using approach of the inferential statistical data analysis approach.

**Results:**

**Table (1): Distribution of the Participants According to their Socio**

**Demographic data Characteristics**

Variable	Groups	Study group		Control group		P. Value	Sig.
		Freq.	%	F.	%		
Age Groups	23-30 years	0	0.0%	5	10.0%	X <sup>2</sup> =15.2 P=0.033	S
	31-38 years	4	8.0%	4	8.0%		
	39-46 years	8	16.0%	10	20.0%		
	47-54 years	8	16.0%	9	18.0%		
	55-62 years	10	20.0%	11	22.0%		
	63-70 years	9	18.0%	10	20.0%		
	71-78 years	8	16.0%	1	2.0%		
	79-86 years	3	6.0%	0	0.0%		
	Total	50	100%	50	100%		
	$\bar{x}\pm SD$	58.14±14.13		50.42±13.29			
Gender	Male	29	58	29	58	X <sup>2</sup> =0.00 P>0.999	N.S
	Female	21	42	21	42		
	Total	50	100%	50	100%		
Level of education	Does not read or write	19	38.0%	16	32.0%	X <sup>2</sup> 6.19 P=0.0518	S
	Read and write	8	16.0%	16	32.0%		
	Elementary graduate	7	14.0%	8	16.0%		
	A middle school graduated	5	10.0%	3	6.0%		
	Preparatory graduate	5	10.0%	3	6.0%		
	Institute graduate	3	6.0%	1	2.0%		
	University graduate	3	6.0%	2	4.0%		
	Postgraduate graduate	0	0.0%	1	2.0%		
Total	50	100%	50	100%			
Marital status	Married	35	70.0%	34	68.0%	X <sup>2</sup> =4.57 P=0.334	N.S
	Single	1	2.0%	5	10.0%		
	Widow	10	20.0%	8	16.0%		
	Absolute	4	8.0%	2	4.0%		

	Separate	0	0.0%	1	2.0%		
	Total	50	100%	50	100%		
<b>Occupation</b>	Government employee	8	16.0%	7	14.0%	$X^2 = 1.19$ $P = 0.879$	N.S
	Free business	9	18.0%	6	12.0%		
	Earners	14	28.0%	14	28.0%		
	Retired	4	8.0%	6	12.0%		
	Housewife	15	30.0%	17	34.0%		
	Total	50	100%	50	100%		
<b>Living standard</b>	Enough	25	50.0%	28	56.0%	$X^2 = 3.32$ $P = 0.190$	N.S
	Fairly enough	12	24.0%	16	32.0%		
	Not enough	13	26.0%	6	12.0%		
	Total	50	100%	50	100%		
<b>Smoking</b>	Yes	26	52.0%	23	46.0%	$X^2 = 0.61$ $P = 0.738$	N.S
	No	20	40.0%	21	42.0%		
	Ex-smoker	4	8.0%	6	12.0%		
	Total	50	100	50	100		
<b>The amount of smoking</b>	Less than 10	15	50.0%	13	44.83%	$X^2 = 0.158$ $P = 0.691$	N.S
	10 or More	15	50.0%	16	55.17%		
	Total	30	100%	29	100%		
<b>Duration of smoking</b>	10-19	14	46.67%	13	44.83%	$X^2 = 13.13$ $P = 0.531$	S
	20-29	9	43.33%	12	41.38%		
	30-40	7	23.33%	4	13.79%		
	Total	30	100%	29	100%		
<b>Residence</b>	Urban	29	58.0%	37	74.0%	$X^2 = 2.85$ $P = 0.091$	N.S
	Rural	21	42.0%	13	26.0%		
	Total	50	100%	50	100%		

Freq.=frequency, %=percentage, P=Value,  $\bar{x}$  =Ari arithmetic Mean and Standard Deviation (S.D.).

Table (4.1) showed that the (20.0%) percent of the study group and (22.0%) percent of the control group were within age group (55-62) years old; while, the highest percentage (58) of participants in the study and control groups were males and (42) percent of females.

Corresponding to the Level of education of the study sample, the highest percent of the study group (38) and (32) percent of the control group were within Does not read or write.

In relation to the occupation, both the study group and the control group were within the same highest percent for housewife occupational status, and they accounted for (30) percent of the study group and (34) percent of the control group respectively.

The greatest percent of both the study group and the control group were Married and they accounted for (70) percent of the study group and (68) percent of the control group respectively.

The greatest percent of both the study group and the control group were smoking and they accounted for (52) percent of the study group and (46) percent of the control group respectively.

With regard to urban or rural residence for the current study, the high percentage of urban residence for the study group was (58) percent and (74) percent of the control group.

There was no significant relationship between demographic variables of the study and control groups at p value >0.05 except that in the age group, level of education and, duration of smoking (P- Value=0.001)

**Table (4.2): Distribution of Clinical Characteristics of Study Sample for both Study & Control Groups.**

Variable	Groups	Study group		Control group		$X^2$ P. Value	Sig.
		Freq.	%	F.	%		
<b>Hypertension</b>	Yes	31	62.0%	36	72.0%	$X^2 = 1.13$ $P = 0.228$	N.S
	No	19	38.0%	14	28.0%		

	Total	50	100%	50	100%		
Diabetes mellitus	Yes	36	72.0%	25	50.0%	X <sup>2</sup> =5.09 P=0.024	S
	No	14	28.0%	25	50.0%		
	Total	50	100%	50	100%		
Open heart surgery	Yes	0	0	2	4.0%	X <sup>2</sup> =2.04 P=0.153	N.S
	No	50	100%	48	96.0%		
	Total	50	100%	50	100%		
Cardiac Catheterization	Yes	14	28.0%	10	20.0%	X <sup>2</sup> =0.877 P=0.349	N.S
	No	36	72.0%	40	80.0%		
	Total	50	100%	50	100%		
Anticoagulant drug	Yes	37	74.0%	38	76.0%	X <sup>2</sup> =0.05 P=0.817	N.S
	No	13	26.0%	12	24.0%		
	Total	50	100%	50	100%		
Beta blocker	Yes	31	62.0%	29	58.0%	X <sup>2</sup> =0.167 P=0.683	N.S
	No	19	38.0%	21	42.0%		
	Total	50	100%	50	100%		
	Total	50	100%	50	100%		

Freq.=frequency, %=percentage, P=Value,  $\bar{x}$ =Ari arithmetic Mean and Standard Deviation (S.D.)

In this Table (4.2) presented that hypertension in both the study group and the control group had hypertension, they accounted for (62) percent of the study group and (72) percent of the control group respectively, whereas this table presented that Diabetes mellitus in both the study group and the control group had Diabetes mellitus, they accounted for (72) percent of the study group and (50) percent of the control group respectively.

The greatest percent of both the study group and the control group were No Open-heart surgery, Cardiac Catheterization, they accounted for (100, 72) percent of the study group and (96,80) percent of the control group respectively, whereas the greatest percent of both the study group and the control group were had Beta blocker and Anticoagulant drug they accounted for (62,74) percent of the study group and (58,76) percent of the control group respectively.

**Table (4.3): Comparative between study and control groups related to hemodynamic parameter (Systolic pressure, Diastolic pressure, pulse, respiratory, oxygen saturation).**

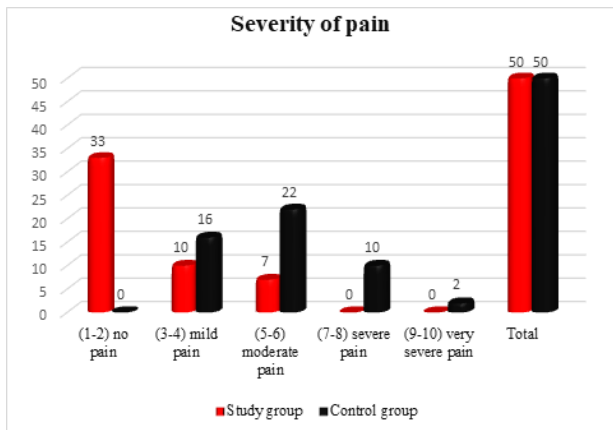
Variable	Group	N	$\bar{x}$	Std. Deviation	T- Test	P. Value	Sig.
Systolic pressure	Study group	50	122.80	8.09132	3.382	0.510	N.S
	Control group	50	128.90	9.86077			
Diastolic pressure	Study group	50	81.600	4.56696	4.206	0.004	S
	Control group	50	86.700	7.25695			
Pulse	Study group	50	77.020	12.03480	4.845	0.088	N.S
	Control group	50	89.540	13.75175			
Respiratory rate	Study group	50	18.400	8.62365	0.554	0.867	N.S
	Control group	50	17.680	3.16512			
Oxygen saturation	Study group	50	96.080	1.83881	3.789	0.072	N.S
	Control group	50	94.680	1.85648			

N =Number,  $\bar{x}$ , Ari arithmetic Mean, Std Deviation= Standard Deviation and, S= Significant, N. S=No-Significant, T test= Independent T test

In the table (3.4) shown that Diastolic pressure hemodynamic parameter significant difference P. Value < 0.05, whereas other hemodynamic parameter

Systolic pressure, pulse, respiratory and oxygen saturation no significant difference P. Value > 0.05

**Figure (4-1): Comparative between study and control group related to severity of pain.**



In the figure (4-1) shown that when compared the severity of pain between study and control group shown that a highly significant P- value < 0.001.

### Dissection of the Result

Data analysis of the finding show the mean age of the patients was (58.14±14.13) years for the study group and (50.42±13.29) years for the control group which ranged from (23 to 86) in years in table (4.1), in studies that conducted in their other country, according to <sup>(13)</sup> found that the mean age of angina patients was 53.54 and that 66.41.66 percent of them were between the ages of 40 and 59.

In a different study <sup>(14)</sup> found that 10 (41.66%) of patients with ischemic heart disease type B were female and male and that their mean age was (48), while 32 (57.14%) of patients with ischemic heart disease type A were. Their ages range from (21 to 80).

Findings of this study showed more male (58%) than female for the study group and the same percentage for the control group. This sample assignment covered a wide variety of emergency unit in the hospital. According to <sup>(15)</sup>, 38 (76%) of the patients with coronary artery disease in the control group and 36 (72%) of the patients with the condition in the experimental group were men. The study reported that level of education we presented in our study that, the highest percent (38%) of the study group and (32%) of the control group were illustrated table (4.1).

According to <sup>(15)</sup>, 8 (16%) and 12 (24%) members of the experimental group and control group, respectively, were illiterate. Another study by <sup>(16)</sup> showed that 32 (32.0%) of the patients with percutaneous coronary interventions who took part in the trial had completed their primary education.

Concerning occupation status, the present study shows that (28%) of patients were self-employee and (30%) of patients were house wife in the study group. while (28%) of patients were self-employee and (24%) of patients were house wife in the control group. table (4.1). In the experimental group, <sup>(15)</sup> reported that (42%) of IHD patients were self-employed and (30%) were housewives. Compared to the control group, where 24% of patients were housewives and 56% of patients were self-employed.

In relation to marital status the greatest percent of both the study group and the control group were married and they accounted for (70) percent of the study group and (68) percent of the control group respectively table (4.1). According to another study by <sup>(17)</sup>, respondents who were single in China, Ghana, and Russia were more likely to have angina than those who were married. Two thirds of ischemia patients in another study by <sup>(18)</sup> were men, and 40% of them were single men.

In relation to Living standard, both the study group and control group were within the same highest percent for enough status, and they accounted for (50%) of patients in the study group and the same percentage in the control group table (4.1). Another study by <sup>(19)</sup> found that 72% of angina patients in the study group had incomes that were just about adequate.

The highest percentage of both the study group and the control group were smoking and they accounted for (52) percent of the study group and (46) percent of the control group respectively table (4.1). Another study by <sup>(20)</sup> revealed that although smoking had a little impact on the type of ACS, over half of patients with coronary artery disease were smokers. Another study by <sup>(21)</sup> revealed that nearly one-third of the study participants with ischemic heart disease (33.3%) smoked, with the most common amount being 10–40 cigarettes per day (26.3%), in the range of 3-100 cigarettes per day.

With regard to urban or rural residence for the current study, the high percentage (58%) of urban residence for the study group was and (74%) of the control group table (4.1). According to research findings that were comparable to those of a study by <sup>(18)</sup>, the majority of ischemia patients (82%) resided in metropolitan regions.

### 5.2. Part2: Discussion of the Distribution of Clinical Characteristics of Study Sample for both Study & Control Groups.

The results of this investigation showed that both the study group and the control group had hypertension; they made up, respectively, 62% of the study group and 72% of the control group. More than

half (52%) of the study sample had hypertension, according to a study by <sup>(22)</sup> that included another investigation of 100 patients with unstable angina.

According to the study's findings, diabetes affected the majority of the study sample, accounting for 72% of the study group and 50% of the control group in both the study group and the control group. (Table 4.2). According to <sup>(15)</sup> hypertension affected 38 (76%) patients in the experimental group and 34 (68%) patients in the control group, whereas diabetes mellitus affected 74% of patients in the experimental group and 60% of patients in the control group. Ischemic heart disease (IHD) was present in 11 (22% of patients in the control group) and 19 (38%) individuals in the experimental group.

According to this study's findings, the majority of angina patients (62) in the study group and (58) in the control group used beta blockers, as shown in table (4.2). The results of this study support those of <sup>(23)</sup> study, which found that 92.0% of patients with 6-week angina reported using beta blockers at any point in the year following their MI, including 89.7% at 6 weeks, 85.8% at 6 months, and 82.3% at 12 months.

The study's findings demonstrated that the majority of the study sample had (100%) patients who had not undergone open cardiac surgery (CABG) in the study group and (96%) patients who had not undergone such surgery in the control group. The study by <sup>(24)</sup> revealed that although urgent CABG surgery is advised, the procedure of these patients is delayed in many centres, and as a result of the higher mortality rates in CAD patients as a result of the prolonged waiting time for CABG.

Results of this study revealed that the majority of the study sample (72%) of study group patients and (80%) of control group patients had not undergone cardiac catheterization. According to the study's findings, which were in line with a study by <sup>(25)</sup>, exercise testing results were positive in 9% of the lower risk population's 1,194 patients who were admitted to the emergency department (ED) due to chest discomfort and negative in 91% of the other patients.

According to the research's findings, the majority of the study group and control group (74 percent of the study group and 76 percent of the control group, respectively) received anticoagulant medications table (4.2). Similar studies to this one's findings showed that antiplatelet and anticoagulant medications given to patients during acute coronary syndrome (ACS) and percutaneous coronary intervention (PCI) significantly

reduced the risk of reinfarction and reduced mortality rates. These studies were conducted by <sup>(26,27,28)</sup>.

### **5.3. Part III: Discussion of the Comparative between study and control groups related to hemodynamic parameter (Systolic blood pressure, Diastolic blood pressure, pulse, respiratory, oxygen saturation,) in The Emergency Unit**

The findings of the current study showed that, prior to being discharged from the hospital, the study group's patients' heart rates and blood pressure were lower than those of the control group.

According to <sup>(29)</sup> study tracked and contrasted the differences in blood pressure and the occurrence of problems in the two groups. In the observation group (OG), the blood pressure was noticeably better and the incidence of complications was noticeably reduced. This demonstrates that patients' blood pressure can be stabilized and their risk of problems reduced by active and efficient predictive nursing interventions.

The vital signs in the experimental group returned to normal levels after the procedure until discharge, according to <sup>(15)</sup> analysis of the significant difference between periods of measurements of (heart rate, respiratory rate, systolic blood pressure, and diastolic blood pressure). This is about (i.e., the mean difference). The vital signs in the control group deteriorated to abnormal levels after the procedure until discharge because there was a significant difference between the periods of measurements of heart rate, systolic blood pressure, and diastolic blood pressure in the control group at p-value (0.05).

### **5.4. Part4: Discussion of the Comparative between Experiment and Monitoring groups depend on severity of pain (figure 4.1)**

On the basis of the clinical presentation and fresh clinical observations made throughout the hospital stay, the risk of serious consequences in patients with acute chest discomfort can be evaluated. Making logical decisions about the proper amount of medical care for individuals with acute chest discomfort is aided by these risk estimations <sup>(30,31)</sup>.

The research's findings demonstrated that there are substantial differences among the study group and control group with regard to pain severity, with the study group seeing a reduction in pain severity compared to the control group.

When compared to before the intervention, the study group's usual degree of pain intensity has dramatically increased after the procedure was

performed. According to study by<sup>(32)</sup> that evaluated the study group's pain intensity prior to and following the study. This study found a substantial difference between the study group's pre- and post-intervention measurements.

In other study conducted<sup>(33)</sup> reported that (88.5%) of Iraqi hospitalized patients dissatisfied with quality of nursing care provided them.

Patient satisfaction is an essential outcome measure in the identification and treatment of sudden pain in the chest in an emergency room<sup>(34,35)</sup>

### Conclusion:

The intervention was very effective in reducing or relieving severity of pain for patients with angina pectoris in emergency unit.

### Recommendations:

Apply more attention on continues education programs related to angina specially with recently researches and guidelines to keep updating with the new approaches related to nursing care for angina.

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Pharmaceutical Research | Apr - Jun 2020 | Vol 12  
| Issue 2271-2280

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