Effect of Change Position on Discomfort among Patients after Percutaneous Coronary Intervention: A Randomized Controlled Trial

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Abstract

Background: in order to prevent the complication after Percutaneous coronary intervention, patients are limited to stay long period of bed rest and immobilization that is always accompanied by discomfort. The main aim of the study to determine the impact of change position on discomfort between the patients who undergone percutaneous coronary intervention.

Method: This study was randomized controlled trial performed on 65 patients at Al-Hussein Teaching Hospital in Al-Muthana City and Karbala Heart Center, and Imam Al-Hassan Al-Mujtaba Hospital in Karbala City, Iraq. With simple randomization assigned to either control or experimental group. Data collected with demographic information and clinical characteristics and discomfort scale to assess the level of discomfort. Data were analyzed using the Kolmogorov-Smirnov, descriptive statistics and Mann-Whitny U test.

Result: The result show that there are statistically significance differences among change position and control groups concerning discomfort (p-value < 0.05) in patients after PCI. This study indicated that the change positions have an impact in decreasing discomfort compared with control group.

Conclusion: The results of the study suggest that the change position is a safe and effective nursing intervention to reduce the level of discomfort without vascular complications.

Keywords: change position, percutaneous coronary intervention, discomfort.

الخلاصة

خلفية البحث: من اجل منع المضاعفات بعد التداخل التاجي عن طريق الجلد يفرض على المرضى فترة طويلة من الراحة في الفراش وعدم الحركة، والتي تصاحبها دائما حالة من عدم الراحة. الهدف الرئيسي للدراسة لتقييم تأثير تغيير الوضعية على عدم الراحة بين المرضى الذين خضعوا للتداخل التاجي عن طريق الجلد.

المنهجية: هذه الدراسة عبارة عن تجربة عشوائية معشاة أُجريت على ٦٥ مريضًا في مستشفى الحسين التعليمي في مدينة المثنى ومركز كربلاء للقلب، ومستشفى الإمام الحسن المجتبى في مدينة كربلاء. تم التوزيع العشوائي البسيط للمرضى إما إلى المجموعة الضابطة أو للمجموعة التجريبية. تم جمع البيانات باستخدام معلومات ديموغرافية وخصائص سريرية ومقياس عدم الراحة لتقييم مستوى عدم الراحة. تم تحليل البيانات باستخدام اختبار كولموجوروف–سميرنوف والإحصائيات الوصفية واختبار مان ويتني يو.

النتائج: أظهرت النتائج وجود فروق ذات دلالة إحصائية بين مجموعة تغيير الوضعية والمجموعة الضابطة فيما يتعلق بعدم الراحة قيمة الاحتمالية اقل من ٠.٠٥ في المرضى بعد التداخل التاجي عن طريق الجلد. اشارت هذه الدراسة الى ان تغيير الوضعية له تأثير في تقليل عدم الراحة مقارنة بالمجموعة الضابطة.

الاستنتاجات: تشير نتائج الدراسة إلى أن تغيير الوضع هو تدخل تمريضي آمن وفعال لتقليل مستوى عدم الراحة دون مضاعفات في الأوعية الدموية..

مفاتيح الكلمات: تغيير الوضعية، التدخل التاجي عن طريق الجلد، عدم الراحة.

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1. Introduction

Cardiovascular disease (CVD) is the leading cause of mortality globally. It is estimated that around 17.9 million people died from CVD in 2019, accounting for nearly 32% of all global deaths [1]

Percutaneous Coronary Intervention (PCI) is the most used invasive cardiac intervention to management patients with coronary artery disease. [2] A femoral artery catheter insertion location is frequently utilized for the procedure [3,4]

According to the Iraqi Ministry of Health the number of cardiac catheterizations in 2023 is 59998. [5] Nonetheless, transfemoral PCI may readily cause vascular problems, including bleeding, hematoma, and ecchymosis.[6]

Patients need to stay in bed to avoid vascular complications. [7] Lengthy stay in bed and immobilization may cause discomfort for patients. [8]

Discomfort refers to a subjective and unpleasant sensation experienced by the body. It is characterized by mild pain, tiredness, or an uncomfortable feeling, as well as psychological irritability, worry, or tension [9]. Nurses play an essential role in implementing discomfort management [10] Various pharmacological and non-pharmacological approach to management of discomfort. [11] changing position is a non-pharmacological approach, [12] Alterations in patients' positions after Cardiac catheterization may lead to improving comfort. [13]

position change after percutaneous coronary intervention have been conducted in many countries, but only a few of them were on relieving discomfort after hemostatic appliance applications. In Iraq there is no previous studies to determine the effectiveness of change position on discomfort among patients after percutaneous coronary intervention.

2.Methods

- **Research design**

  A randomized control trial was performed to investigate the effect of change position on discomfort among patients who underwent PCI.

- **Setting and Samples**

in Al-Hussein Teaching Hospital in Al-Muthana City and Karbala Heart Center, and Imam Al-Hassan Al-Mujtaba Hospital in Karbala City, by selecting 65 patients underwent percutaneous coronary intervention. The period of the study lasted from 4th in December 2024 to 7th in January 2025. The inclusion criteria include both sex and adult patient older than 18 years old, patients who undergone a femoral intervention, and not having experienced lower back pain prior to hospitalization. Also excluded criteria include individuals with decompensated heart failure, systolic blood pressure greater than 190 mmHg or diastolic blood pressure greater than 110 mmHg, patients with psychological disorders are not included, patients who have change in consciousness level, and individuals who will be using analgesic.

- **Instrument**

The data was collected by using the self-report questionnaire containing two sections the demographic data and clinical characteristics and discomfort scale, this scale is used to assess the level of discomfort experience. This was created based on the percutaneous transluminal coronary angioplasty discomfort scale and review of literature. The discomfort scale is divided into two subscales, the physiological discomfort questionnaire and the psychological discomfort questionnaire. It consists of 18 questions, with 10 focused on the physiological aspect of discomfort and the others 8 focused on the psychological aspect. The items are assessed on a 5-point Likert to indicate the patient's sense of discomfort, with high scores indicating higher discomfort that range from 1 represent never happened to 5 represent always happened [(9)]. The questionnaire was in English language and then translated into the Arabic language by using Brislin's back-translation model after obtaining approval from the researcher who created the tool. Another expert reviewed and compared the original and back-translated English versions, and the concerns with inconsistencies were addressed. The final Arabic version of the questionnaire was delivered to 6 experts to find out their scientific notes. The experts varied from university professors and cardiologist physicians.

Therefore, the instrument was considered valid after taking the comments and recommendations into consideration.

- **Data Collection**

Official permissions were obtained from relevant authorities before collecting the study data as started by getting the approval of the Council of the Nursing College/University of Baghdad for this study on 6/11/2024. The researcher was conducted the data collection process using the interview method and using the study questionnaires that include demographics and clinical characteristics and discomfort scales. The consent from all participant was obtained following an explanation of the study procedures and objectives and informed that their information remained confidential and used for research purposes. The samples were classified into two groups: The control group was received the standard routine care of the hospital. The change position protocol applied to patients during first hour after removal of sheath catheter in supine position with head of bead elevation (HOB) 15°, during the second hour maintained in supine position with HOB at 30°, during the third hour continued in supine position with HOB at 45°, during the fourth hour transitioned to a right lateral position with HOB at 15°, during the fifth hour shifted to a left lateral position with HOB at15°, during the six hour concluded in fowler's position. After that, the patients were permitted to ambulate out of bed (OOB), The Statistical Package of Social Sciences (SPSS) version 26 was used to analyze the data. including the Kolmogorov-Smirnov, descriptive statistics and Mann-Whitny U test.

3. Results

Table1: Demographic data and clinical characteristics

Variables	Groups	Change position		Control		Total	
Age	M±SD	55.84 ± 9.45		55.03 ± 9.28		55.42±9.48	
		F	%	F	%	F	%
Sex	Male	22	71	20	58.8	42	64.6

	Female	9	29	14	41.2	23	35.4
	Total	**31**	**100**	**34**	**100**	**65**	**100**
Level of education	Not read &write	0	0.0	0	0.0	0	0.0
	Read & write	9	29.0	13	38.2	22	33.8
	Primary school	9	29.0	11	32.4	20	30.8
	Middle school	7	22.6	8	23.5	15	23.1
	High school	3	9.7	1	2.9	4	6.2
	Bachelors graduate	3	9.7	1	2.9	4	6.2
	Higher education	0	0.0	0	0.0	0	0.0
	Total	**31**	**100**	**34**	**100**	**65**	**100**
Occupation	Unemployed	5	16.1	5	14.7	10	15.4
	Employed	10	32.3	8	23.5	18	27.7
	Retired	5	16.1	3	8.8	8	12.3
	Others	11	35.5	18	52.9	29	44.6
	Total	**31**	**100**	**34**	**100**	**65**	**100**
Marital status	Single	0	0	0	0	0	0.0
	Married	28	90.3	24	70.6	52	80.0
	Divorced	0	0	0	0	0	0.0
	Widow	3	9.7	10	29.4	13	20.0
	Total	**31**	**100**	**34**	**100**	**65**	**100**
Chronic disease	Yes	18	58.1	24	70.6	42	64.6
	No	13	41.9	10	29.4	23	35.4

	Total	**31**	**100**	**34**	**100**	**65**	**100**
Previous PCI	Yes	7	22.6	10	29.4	17	26.2
	No	24	77.4	24	70.6	48	73.8
	Total	**31**	**100**	**34**	**100**	**65**	**100**

F= Number of frequencies, % = Percentage, M = Mean, SD = Standard Deviation

Regarding the demographic and clinical characteristics data in table1 the descriptive statistics demonstrated that the mean participant age in the present study was 55.42 years with a SD of **±** 9.48 years, the most participants of the study were male (64.6%) compared with a female **(**35.4%). Concerning the level of education demonstrated that the percentage of the participants who read and write was (33.8%) which represent the highest in number, while participants who completed primary school (30.8%), the Middle school (23.1%), and the high school and bachelors graduate with (6.2%). Moreover, regarding occupation the result showed the unemployed percentage was (15.4%), followed by (27.7%) were employees, while the retirees was (12.3%), and others occupations represent (44.6%). Regarding marital status the majority of the participants (80%) were married, while (20%) were widowers. Most of the study samples (64.6%) suffered from chronic disease, while (35.4%) did not have chronic disease. Finally, according to previous history of PCI, the result revealed that the most of participants (73.8%) have no history of previous PCI, and (26.2%) with previous history of PCI.

Table 2: Comparing the change position and control group in pre and post-test regarding discomfort

Discomfort	Groups	N	**Mean rank**	**Mann-Whitney**	**Sig**
Pre-test	Change position	31	37.31	393.5000	0.079
	Control	34	29.07		
	Total	65			

Post-test	Change position	31	16.00	0.000	0.000
	Control	34	48.50		
	Total	65			

Table2 the results of the Mann-Whitney test show in the pre-test there is non-significant difference between the change position, and control group regarding discomfort, the change position with the control group (p-value=0.079 >0.05). In the post-test there is a significant difference in comparing the change position with the control group that represents (p-value=0.000 < 0.005). This indicating that the change position has a significant impact on minimize discomfort after percutaneous coronary intervention.

4.**Discussion**

The aim of the study to determine the impact of change position on discomfort between the patients who undergone percutaneous coronary intervention. Due to the still position to prevent vascular complications in the catheterization site after a coronary intervention, patients experience discomfort which is associated with lumbar pain, leg numbness, and surgical site pain[(14)].

This study results showed that the change position has a significant impact on prevent the severity of discomfort after percutaneous coronary intervention, the score of discomfort in the experimental group was less than in the control group, with statistically significance (p <0.05) this is due to alteration patient's position. This result the same finding found in the study was performed by [(14,15)]. which concluded that the Position change was an effective intervention for decreasing lumbar pain and discomfort of Korean patients after invasive coronary intervention.

Additionally, the study findings performed by Yun and Min found that the positional change is an effectiveness reduce discomfort without causing vascular complication [(16)]. Moreover, the results of the study conducted by Tayade et al. concluded that the

impact of change position was effective in reducing discomfort [17].

5. Conflict of interest

There is no conflict of interest.

6. Limitations of the study

The study was conducted in few centers and the sample size was small so that cannot generalize the results.

7. Conclusion

The results of the study suggest that the change position is a safe and effective nursing intervention to reduce the level of discomfort without vascular complications**Recommendation**

Based on the findings of the study showed that the change position is a complementary therapy and present crucial to implementing nursing care at hospitals. Also, future studies with big sample size are recommended.

8. Author contributor

Conceptualization, Software, Formal analysis, Investigation, Resources, Data Curation, Writing - Original Draft, Writing - Review & Editing, Visualization, Project administration, and Funding acquisition (Dheyaa Rahij Fdhala). Methodology, Validation, and Supervision (Associate. Prof, Sadeq Al-Fayyadh).

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