ORIGINAL ARTICLE

Nursing Intervention Including Meditation and Physiotherapeutic Treatment in Post PCI Chest Pain (Non-Ischemic)

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ABSTRACT

OBJECTIVE: To determine the effectiveness of nursing educational interventions on patients with post PCI non-ischemic chest pain.

METHODOLOGY: This experimental study was conducted from December 2017 to May 2018 on 100 post PCI patients. Patients who came with post PCI non-ischemic chest pain and on initial screening on the Numerical Rating Scale (NRS) patients scored 5 to 10 were included. Those who had post PCI ischemic chest pain with complications were excluded from the study. The Short McGill Pain Questionnaire (SMPQ) was used to assess the effectiveness of nursing educational interventions. Analysis of data was performed on SPSS version 26. Percentages were used for categorical variables, and inferential statistics were calculated using the Mann-Whitney Test. Median and range were calculated at baseline, week two, week four and week six for both experimental and non-experimental groups. A P-value of ≤ 0.05 was considered significant.

RESULTS: This study's findings showed that most participants (74%) were males and almost all (99%) were married. The P-value is significant at different intervals between the experimental and control groups at two, four and six weeks with P-values <0.001, <0.001, and <0.001, respectively.

CONCLUSION: The findings of this study revealed that nursing interventions help to reduce post PCI non-ischemic chest pain levels. This study demonstrates that after nurse-led educational interventions, there were significant differences in scores between interventional and non-interventional groups at different levels after PCI.

KEYWORDS: Percutaneous Coronary Intervention, Chest Pain, Numerical Rating Scale, Short McGill Pain Questionnaire.

INTRODUCTION

Every year, the rate of myocardial infarction has increased in more than 1.5 million Americans, and its consequences for patient's quality of life and healthcare utilisation are compromised because of ongoing angina symptoms in many patients[1]. Patients with angina symptoms have a high probability of complaining about restricted physical activity and depression and more chances of re-admission within one year after the MI[2]. PCI procedure numbers annually exceed 0.5 million for stable angina globally. The study in Clinical Outcomes Utilising Revascularization and Aggressive Drug Evaluation (COURAGE) trial revealed no significance in patients with myocardial infarction and mortality rate between stable coronary artery disease patients who go through PCI and controls[3]. Another meta-analysis represents the parallel findings[4].

Patients with obstructive coronary artery disease (CAD) who undergo percutaneous coronary intervention (PCI) typically have high procedural achievement. The current guidelines of the European Society of Cardiology on stable obstructive CAD and coronary revascularisation have a Class-1, Level A commendation based on the prognosis of patients with two or three-vessel CAD or left primary stem disease and also on the existing symptoms of preventing angina or angina-equivalent, non-responsive medical therapy[5]. There are 20-40% of patients may suffer from persistent or recurrent angina following PCI throughout short or medium-term follow-up[6]. Prominently, the post-PCI recurrent angina percentage is related to a noticeable economic burden. The expenditure on healthcare might be nearly doubled among patients who have post-PCI recurrent angina vs. those who have no symptoms[7].

The nursing interventions of coronary heart disease (CHD) post-operatively comprise psychological relief, which plays a role in decreasing tension and anxiety levels, removing sympathetic excitation; the patient's health education session: instruction on modified diet plans and increasing water intake in routine to help the excretory material from the body; routine nursing care like mouth care and self-hygiene post-operative limb position; and modification of unhealthy lifestyles[8]. There are various studies, mainly on quality of life, contraindications, and patient satisfaction with nursing post-PCI procedures. Many patients cannot deal with their psychological reasons for pain after PCI, and their routine life gets disturbed. The impact of nursing interventions on the severity of non-ischemic chest pain level can help the participants to overcome the non-ischemic chest pain. This study is innovative in exploring patients' non-ischemic chest pain after PCI.

METHODOLOGY

This experimental study was conducted at the National Institute of Cardiovascular Diseases (NICVD) Karachi from December 2017 to May 2018 on 100 post PCI patients. The purposive sampling technique was used for those patients who came after discharge for their first follow-up till six weeks after percutaneous coronary intervention with non-ischemic chest pain and patients who had moderate to severe non-ischemic chest pain on the numerical rating scale (NRS) with a score of 5 to 10 were included in the study. Patients who had any percutaneous coronary intervention (balloon angioplasty, implantation of a stent, or laser atherectomy), ischemic chest pain including ECG changes or other complications, and patients who had mild pain on a numerical rating scale (NRS) were excluded from the study. The sample size was calculated by using OpenEpi online software, using the follow-up frequency of McGill Pain Questionnaire-Pain Rating Index (MPQ-PRI) descriptors describing sensory characteristics of non-ischemic chest pain as 90% (4), 95% confidence interval, and 80% power of the test, the calculated sample size was 97[9.] The principal investigator rounds it up to 100 participants so that the cluster can equally be divided into two groups[4,] and participants for experimental and non-experimental groups were allocated by the probability simple random (balloting) method.

The nursing intervention was carried out according to the Nursing Intervention Classification (NIC), including meditation exercises, prayers (according to religious beliefs), distraction techniques like using support systems from family or friends, or music therapy. A presentation and a brochure were also provided to the experimental group, while the non-experimental group received routine care.

Ethical Consideration:
Approval was obtained from the Institutional Review Board (IRB) (Ref # IRB: 888/DUHS/Approval/2017/96) of Dow University of Health Sciences (DUHS) Karachi, an ERC approval (Ref #: ERC-08/2017) was taken from the Ethical Review Committee of the National Institute of Cardiovascular Diseases Karachi. Written informed consent was taken from all participants.

Statistical Analysis:
Analysis of data was performed on SPSS version 26. Percentages were used for categorical variables, and inferential statistics were calculated by using "Mann-Whitney Test". Median and range were calculated at baseline, week02, week04, and week06 for both experimental and non-experimental groups. A P-value of ≤ 0.05 was considered significant.

RESULTS

Table I comprised demographic characteristics of the study participants, which showed that most participants were between 36-50 years, 24(48%) in the experimental group, whereas 26(52%) in the non-experimental group were over 50 years of age. Similarly, the percentage of male and female was 33(66%) and 17(34%) respectively in experimental group, while it was 41(82%) and 9(18%) in the non-experimental group. Regarding education level, the majority of participants, 19(38%) in the experimental group, were below primary level, while most of the study participants, 21(42%) in the non-experimental group, were at matric level of education.

The findings of this study also revealed that almost all participants were married in the experimental and non-experimental groups, that is, 50(100%) and 49(98%), respectively. Most participants were 26(52%) doing a private job in the non-experimental group, and 29(58%) were government employees in the experimental group. Furthermore, the monthly income of most participants, 27(54%), was between 11000-20000 PKR in the non-experimental group, while 19(38%) of the experimental group had a monthly income < 10,000 PKR. Nearly all 89(89%) participants had an adverse drug history. A more significant number of the participants, 24(48%) among the non-experimental group, had a personal interest in T.V., News, and mobile phone usage. In comparison, 22(44%) participants in the experimental group were interested in some other activities of their interest.

The findings of **Table II** highlighted the median and range difference between the experimental and non-experimental groups at all four levels, including baseline, two weeks, four weeks, and six weeks. The Mann-Whitney test was used to compare differences between the experimental and non-experimental groups at different levels. On the NRS, It was found at baseline, 2nd weeks, 4th weeks and 6th weeks, the P-value was 0.311, <0.001, <0.001, and <0.001, respectively. This finding showed a significant difference between both groups at the 2nd, 4th, and 6th weeks.

Findings from **Table II** also highlighted that on comparison of SMPQ between the experimental and non-experimental groups, it was evident that P-value was significant on the baseline, 2nd week, 4th week, and 6th weeks, with P-value 0.002, <0.001, <0.001, and <0.001 respectively.

Table I: Demographic characteristics of study participants (n=100)

Variable	Categories	Non- experimental group Frequency %	Experimental group Frequency %
Age	20-35 years	3 (6%)	2 (4%)
	36-50years	24(48%)	22 (44%)
	>50years	23 (46%)	26 (52%)
Sex	Male	41 (82%)	33 (66%)
	Female	9 (18%)	17 (34%)
Educational level	Below primary	19 (38%)	19 (38%)
	Matric	21 (42%)	17 (34%)
	Others	10(20%)	14 (28%)
Marital status	Single	1 (2%)	0 (0%)
	Married	49 (98%)	50 (100%)
Profession	Pvt Job	26 (52%)	21 (42%)
	Govt/others	24 (48%)	29 (58%)
Monthly income	<10,000	11 (22%)	19 (38%)
	10,000-20,000	27 (54%)	18 (36%)
	>30,000	12 (24%)	13 (26%)
Disease history	Yes	11 (2%)	6 (12%)
	No	39 (78%)	44 (88%)
Drug history	Yes	5 (10%)	6 (12%)
	No	45 (90%)	44 (88%)
Personal interest	T.V., News & mobile	24 (48%)	17 (34%)
	Family & friends	13 (26%)	11 (22%)
	Others	13 (26%)	22 (44%)

Table II:Assessment of NRS and SMPQ scales between both groups at different time points

Scales	Time	Experimental Group	Non-Experimental Group	
		Median (range)	Median (range)	P-value
NRS	Baseline	5 (8)	5 (6)	0.311
	Week 2	2 (4)	5 (5)	<0.001*
	Week 4	0.0 (1)	3 (5)	<0.001*
	week 6	0.0 (0.0)	1(4)	<0.001*
SMPQ	Baseline	5(16)	4 (6)	0.002*
	Week 2	2 (6)	3 (5)	<0.001*
	Week 4	0.0 (2)	2(4)	<0.001*
	week 6	0.0 (0)	1(3)	<0.001*

Significance level *= p < 0.05

DISCUSSION

The findings of this study revealed that approximately half of the participants (51.28%) suffered from non-ischemic chest pain followed by PCI. Nearly similar results were found in the study conducted in Taiwan **(2016)**[10]. At the same time, these findings contradicted the study conducted in **Canada 2012**[9], where non-ischemic chest pain was considerably higher (74%) among participants after PCI.

This study highlighted that most of the participants in the experimental and non-experimental groups were male. These findings were supported by the studies conducted in China **2021**[11], Hong Kong **2006**[12], and China 2021[13]. These findings were opposed by the study conducted in China **2019**[14], China **2021**[15] where both genders were equally affected by coronary artery diseases (CAD). In addition, a study conducted in Australia in **2010**[16] showed a higher frequency among female participants.

This study revealed that almost all participants (99%) admitted with Coronary Artery Diseases were married. These findings were found to be similar in a study conducted in **China**[11], Hong Kong in **2006**[12], South Korea **(2017)**[17], and Norway **(2016)**[18]. This result was not supported by the study conducted in China in **2021**[11], where participants living single had a higher frequency than married participants.

Furthermore, the result of this study highlighted that almost half of the participants who had CAD were over 50. These outcomes were supported by the study conducted in China **(2021)**[19]. Moreover, nearly half of the participants in this study had an educational level of primary or less. This evidence contradicted the study conducted in China in **2021**[11], where most participants' academic level was Matric or above.

This study's findings showed a significant reduction in pain levels at different stages after nursing educational intervention, with a P-value <0.001 between the experimental and non-experimental groups. These findings were supported by the studies conducted in China **2021**[20] and China **2021**[11], where complications were reduced significantly among interventional participants with the help of nursing interventions. The study supported these findings, where the health-related quality of life improved among post-PCI patients after nursing interventions[11]. Furthermore, another study conducted in China (**2021**) revealed an insignificant difference in the two groups after nursing interventions.

CONCLUSION

The findings of this study revealed that nursing interventions help to reduce post PCI non-ischemic chest pain levels. This study demonstrates that after nurse-led educational interventions, there were significant differences in scores between interventional and non-interventional groups at different levels after PCI.

AUTHOR CONTRIBUTION
Naz S: Conception of Study Design, Manuscript Drafting, Collection and data Compilation
Shah H: Final approval of the version
Khuwaja A: Final review of the manuscript
Ali A: Manuscript drafting, Literature Review, Methodology
Rasheed A: Drafting and Data Analysis

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