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Original Article

Relevance of Preoperative Pain Education to the Cardiac Patients on Their Response to Postoperative Pain Therapy

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ABSTRACT

Postoperative pain is an acute discomfort that arises after surgery, decreases over time, and fnally vanishes as the tissue recovers. Preoperative patient education may reduce postoperative pain and elevate patients' health. **Objective:** To observe the effects of preoperative pain education on Coronary artery bypass graft surgery (CABG) patients on postoperative pain management. **Methods:** A randomized control trial was performed from April-December 2019, after seeking ethical approval. Patients of Punjab institute of cardiology, Lahore, scheduled for CABG were selected after informed consent. Those with psychiatric illness, chronic pain/opioid addiction or allergic to opioids, were excluded. The population was divided into control (received routine preoperative care) and interventional (received additional preoperative education via pain management booklet) groups, data was collected postoperatively via questionnaire and analysed on SPSS. Chi-square was used as a statistical test and p-value <0.05 was significant.**Results:** Eighty patients with 47 males and 33 females aged 50-80 years (mean=61.05±8.32) were recruited. The interventional group agreed to the significanceof instant in-hospital notifying/managing pain and 38 (95%) controls agreed to it, 39 (98%) interventional patients were willing for a stronger pain-relief medicine if not cured by the initial dose, while 12 (30%) controls were willing for it. 38 (95%) interventional patients denied the fear of addiction to painkillers, contrarily 5 (12.5%) controls negated this fear. All interventional patients rejected the concern of incurable nausea with pain-relief medicine, while 37 (92.5%) controls were threatened with this concern. Constipation associated with pain-relief medicine was refused by all interventional patients, 25 (62.5%) controls accepted it. All the differences between both groups were signifcant (p<0.001). **Conclusion:** A signiicantly improved postoperative patient compliance/outcome (pain-related) was observed in the interventional group who received preoperative pain education compared to the control.

INTRODUCTION

Cardiovascular Disease (CVD) is the chief cause of demise across the world. According to the World Health Organization (WHO), 17.5 million people died in 2012, with over 23 million estimated to die by 2030 with CVD. Surgical interventions for CVD patients continually contribute not only to saving the lives of such patients but also improving their quality of life [1]. Individuals from low- and middle-income countries (LMICs) have an 80 percent greater risk of CVD. Likewise, the risk for Coronary Artery Disease (CAD) among the South Asian population is 3 to 5 times higher compared to other ethnic groups [2]. The most common complaint among surgical patients of CVD/CAD is longstanding postoperative pain. Postoperative pain is an acute discomfort that arises after surgery, decreases over time, and fnally vanishes as the tissue recovers [3]. Inadequate pain management can lead to an imbalance of physiological homeostasis that further declines the life quality and thus raises morbidity

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or society [4]. The literature highlighted the signifcance of standardized measures to manage postoperative pain in patients with cardiac surgery [5]. Evidence-based expressed that postoperative pain whether acute or chronic is not is managed in various medical care units, in a hospital setting, it is the primary task of nurses to prevent as well as alleviate postoperative pain [6]. To maximally limit the chances of postoperative pain and other physical/ psychological complications is of utmost importance after complex elective cardiac surgeries. Preoperative patient education may reduce postoperative pain and elevate patients' health [7, 8]. The present study aims to observe the effects of preoperative pain education on CABG patients on postoperative pain management

METHODS

It was a Randomized Control Trial (RCT) at the University of Health Sciences (UHS). After taking ethical approval from the university, the study was conducted on patients diagnosed with coronary artery occlusion and particularly those who were admitted to the cardiac surgery unit of Punjab Institute of Cardiology (PIC), Lahore, for their coronary artery bypass grafting (CABG) within the next 14 days. A total of 80 such patients with 47 males and 33 females ranging between 50 to 80 years of age were recruited in the study through random sampling technique, after taking informed consent to each of them. The patients with pre-existing psychiatric illness, history of chronic pain or opioid addiction and allergic to opioids were excluded from the study. The duration of the study was 8 months from April 2019 to December 2019. The study population was randomly divided into two groups i.e. Interventional and Control, each with 40 patients. The interventional group was familiarized with standard pre-operative care along with the pain management booklet* named "Pain relief after surgery", developed by the Canadian Pain Society Management. The content validity and reliability was evaluated before use. While the control group received the routine standard pre-operative care at PIC. On the 5th day after CABG surgery, the data was collected from both the comparative groups through a tested structured questionnaire taken from published research [9]. The collected data was analysed by using SPSS version 21. Chi-Square Test was used to compare the responses of interventional group with the control group and p-value < 0.05 was considered significant. *Booklet in English and Urdu Language is attached

RESULTS

A total of 80 participants with 47 (59%) males and 33 (41%) females were included in the study. The average age in years of the study population along with the standard deviation (SD) was 61.05 ± 8.32, where the youngest participant was 50 years old and the oldest was 80 years old. The majority of the participants were aged between 55 to 65 years (Table 1). Amongst all, 78 (97%) participants were of married status. Out of all only 21 (26%) participants were illiterate while remaining were educated with varied levels (primary/secondary/tertiary) of education. Among all participants, 32 (40%) were businessmen, 18 (23%) were doing professional jobs and 30 (37%) were housewives (Table 1).

Demographic variables	n (%)
Age (years)	
<54	13 (16)
55-65	46 (58)
>65	21 (26)
Mean ±SD	61.05 ± 8.32
Gender	
Total	80 (100)
Males	47 (59)
Females	33 (41)
Marital Status	
Single	2 (3)
Married	78 (97)
Education	
Illiterate	21 (26)
Primary	16 (20)
Secondary/Higher Secondary	34 (43)
Tertiary (16 -year education)	(11)
Occupation	
Businessman	32 (40)
Professional Job	18 (23)
House -wife	30 (37)

Table 1: Demographics profileof study population

All the 40 participants of the interventional group replied positively to question 1 in which the signifcance of notifying and managing the pain on an immediate basis in a medical care unit was explained and none of them contradicted it. While from the control group 38 (95%) participants respond positively to the same question and only 2 (5%) denied it. Furthermore, the difference amongst the responses of both the studied groups was proved statistically significantwith a p-value <0.001 (Figure1).

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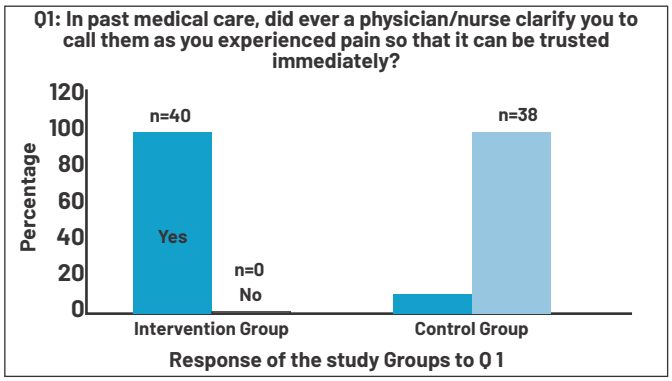

Figure 1: Comparison of Response between Interventional and Control study groups to Question 1 of Post-operative pain questionnaire.

Response to the willingness of taking a more intense dose of medicine if the pain would not have been relieved with the initial dose was addressed in question 2 was positively (agree/strongly agree) replied by 39 (98%) participants of the interventional group. Whereas only a single (2%) participant in the same study group refused (disagree/strongly disagree) to this question. However, in the control group, 12 (30%) participants agreed to take an intense dose of pain medicine in the case described in question 2 and the remaining 28 (70%) members in the control group disagreed with the same question. Moreover, the difference between the answers of both groups was statistically significant(p<0.001)(Figure 2).

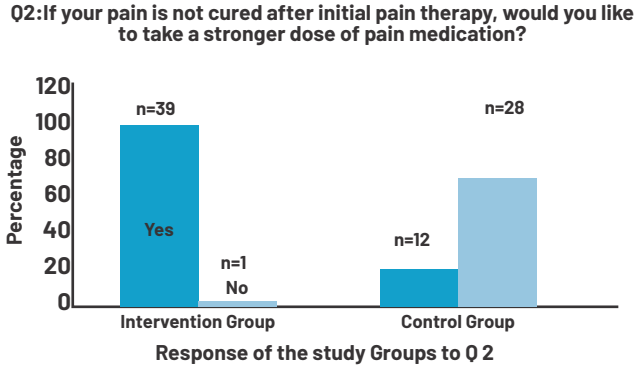

Figure 2: Comparison of Response between Interventional and Control study groups to Question 2 of Post-operative pain questionnaire.

Regarding consideration of becoming an addict to painkillers in question 3 of the questionnaire, the majority of 38 (95%) participants of the interventional group disagreed with this belief and only 2 (5%) in this group agreed to this concept. On the other hand in the control group, 35 (87.5%) participants were with this belief and only 5 (12.5%) participants disagreed with this faith. Here again, the statistical difference between the opinion of both the groups was proved statistically sound with p<0.001 (Table 2). One of the most common threats associated with the use of pain-relief medicine that these might cause incurable nausea in question 4 was negatively answered by all the participants of the interventional group. Though contrarily talking about the control group 37 (92.5%) participants surprisingly agreed to this threat whereas only 3 (7.5%) were in disagreement with this fear. Though statistically, the difference of opinions among both the studied groups was very signifcant p<0.001 (Table 2). Another negative belief that this pain-relive medicine would cause constipation (as its side-effect) that could not be reversed was expressed in question 5 of the questionnaire was disagreed by all the participants of the interventional group. Comparatively majority of 25 (62.5%) participants agreed to this conviction and only 16 (40%) were in disagreement with this belief. The statistical difference among the responses of both the comparative groups was found very significantp<0.001 (Table 2).

Items	4-point Likert scale response*	Interventional Group N=40	Control Group N=40	Chi-Square Test	
		n (%)	n (%)	χ^2 value	*p-value*
Q 3: Do you consider that you become an addict to this pain-relief medicine?	**A**	17 (42.5)	1 (2.5)	55.26	<0.001*
	B	21 (52.5)	4 (10)		
	C	2 (5)	31 (77.5)		
	D	0	4 (10)		
Q 4: Do you think that nausea caused by this pain -relief medicine cannot be relieved?	**A**	21 (52.5)	2 (5)	68.896	<0.001*
	B	19 (47.5)	1 (2.5)		
	C	0	23 (57.5)		
	D	0	14 (35)		
Q 5: Do you think that constipation caused by this pain-relive medicine cannot be cured?	**A**	15 (37.5)	1 (2.5)	76.250	<0.001*
	B	25 (62.5)	15 (37.5)		
	C	0	24 (60)		
	D	0	1 (2.5)		
***A**=Strongly Disagree, **B**=Disagree, **C**=Agree, **D**=Strongly Agree **p*<0.1 considered statistically significant					

Table 2: Response of study population about post-operative pain therapy questionnaire

DISCUSSION

Studies have revealed the relevance of pre-operative patient education to attain more successful patient outcomes after major surgical interventions like coronary artery bypass surgery and knee joint arthroplasty [10-12]. Similarly, the present study showed a signifcantly improved response to postoperative pain management in the interventional group (who have received preoperative pain education) compared to the control group. Another similar randomized control trial on the patients of spinal column surgery was conducted at Shahid Fatemi hospital, Ardebil, Iran in the year 2019 also found a signifcant difference between the interventional and the control groups related to 24 hours postoperative pain severity [13].

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A systematic review containing 14 RCTs on patients who underwent cardiac surgical procedures from 1995 to 2015 was carried out by Ramesh et al, to study the impact of preoperative patient education on postoperative outcomes. This review also supports the findins of the present study that the anxiety levels can be minimized amongst such patients with the use of analgesia-related education to them preoperatively [14-15]. Ann Kristin et al in 2017 used pain-related education to the patients at the time of their discharge from the hospital and observed no significantcontrasts between the interventional and the control group, highlighting the insignifcant effect of postoperative pain-related education to the patients admitted for the surgical intervention [5]. However, the literature supports the beneficialimpact of pre-operative patient education on their postoperative salvage (improve pain management and patient satisfaction) after elective surgical procedures [16-18]. Though a study also showed that preoperative patient education could not always lead to a decrease in the stay time of patients in the hospital after spinal surgery [12]. In 2018, another study by Ertürk et al explicitly showed parallel findins to our results. The study was conducted on patients of open-heart surgery from Ankara city of Turkey. It concluded that preoperative patient education at the individual level was highly impactful not only to control patients' postoperative pain, but it also reduces the patients' anxiety and prepares them mentally as well as physically [1]. A review article to observe the effects of preoperative educational sittings on the medical, emotional and economic fallouts after spinal surgery explored that such preoperative sittings not only improve pain and functionality but also found very signifcant to reduce depression and fearful negative thinking in patients. Additionally the study also stated that those sittings remained very helpful in enhancing post-surgical physical activity in patients with spinal surgery [19]. Likewise, an RCT conducted on adult (>18 years) patients scheduled for abdominal visceral surgery in the Department of General Visceral and Transplantation Surgery at the University of Heidelberg, Germany stated that undoubtedly with preoperative patient education (seminar), the postoperative outcomes such as complications (Pneumonia, Deep Vein Thrombosis), pain, mood and patient satisfaction were improved in patients who underwent major visceral surgery [20].

CONCLUSION

Contrary to the control, the interventional group was more willing to communicate as they felt pain and agreed to take a stronger dose of pain-relief medicine if they were still in pain after the initial dose. Similarly they disagree that pain- relief medicine could cause addiction or cause incurable nausea and constipation. Moreover, the difference between the responses of both the comparative groups was statistically significant<0.05.

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