

The Effect of Reciting the Word “Allah” on Pain Severity After Coronary Artery Bypass Graft Surgery: A Randomized Clinical Trial Study in Iran

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Background: One of the most expressed complains following coronary artery bypass graft (CABG) surgery is chest wall pain. Due to side effects of opioids used commonly for pain relief after heart surgeries, it is important to use low-cost and non-pharmacological methods independently or combined with palliatives to alleviate pain and consequently prevent undesirable drug adverse effects.

Objectives: This study aimed to investigate the effect of Hazrate Zahra's praises, which is one of the most known praises among Muslims in which the word “Allah” is repeated 100 times, on pain severity after CABG surgery.

Patients and Methods: This randomized clinical trial study was performed on 80 patients in Busheher Bentolhoda Hospital, Iran, in 2013. Data was collected by a researcher-made questionnaire and Visual Analogue Scale (VAS). Patients were randomly assigned into intervention (n = 40) and control (n = 40) groups. In intervention group, we asked patients to recite Hazrate Zahra's praises (AS) as one of the most known praises among Muslims in which the word “Allah” is repeated 100 times. In the control group, patients received routine procedures of hospital. Pain was assessed before and immediately after the intervention in three days after the operation in the both groups. Data was analyzed by SPSS 19 software using descriptive and analytic (Chi-square and independent and paired sample t test) statistical methods.

Results: There was a significant difference regarding pain severity after the intervention between the two groups during three days after the operation (respectively $P \leq 0.001$, $P \leq 0.001$ and $P \leq 0.003$), but no significant difference was found between the two studied groups before the intervention. Moreover, a significant difference was seen before and after recitation in the intervention group during three days after the operation (for three days $P \leq 0.001$), while in control group no significant difference was revealed before and after the intervention (respectively $P = 0.493$, $P = 0.541$ and $P = 0.119$).

Conclusions: Reciting the word “Allah” as a non-pharmacological, low-cost and non-invasive method with no side effects can be effective on pain relief after CABG surgery.

Keywords: Islam; Pain; CABG Surgery

1. Background

Coronary artery bypass graft (CABG) surgery is one of the most common surgical methods performed for thousands of patients worldwide with Coronary Artery Diseases (CADs) (1, 2). Nowadays, approximately 300000 patients undergo CABG surgery annually in the United States (3), and in Iran, approximately 60% of total open heart surgeries are CABG surgery (4). This procedure is performed to restore blood flow to the heart, and aims to enable patients to resume a normal lifestyle and to lower the risk of heart attack (4). Today, studies have indicated that CABG significantly reduced the risk of postoperative adverse outcomes (5-7). However, most patients undergoing CABG, experience different levels of pain, usually caused by many sources including sternotomy or leg incisions, tissue retraction and dissection during surgery and chest tube insertion after the surgery (8-11). Besides, the nature of CABG surgery requires admission and hospitalization of patients in Intensive Care Unit

(ICU), which due to inability of patients in this ward to report pain due to mechanical ventilation, concomitant use of sedatives, or as a consequence of loss of consciousness, pain control may be precluded frequently (12, 13). Postoperative pain in these patients affects not only patients' operative outcomes, well-being and satisfaction from medical care, but also development of tachycardia, hyperventilation, hypoxemia, insomnia, agitation, myocardial ischemia and delirium, which lead to poor wound healing and increased mortality and morbidity rates, which in turn may impact the operative outcomes (8, 13, 14). Therefore, pain control is one of the necessary and essential nursing cares in patients undergoing CABG surgery. Currently opioids are the preferred drugs of choice for pain relief after CABG surgery (14-16). Although these drugs improve patients' outcomes and reduce the incidence of postoperative chronic pain, but because of undesirable side effects such as ventilatory depression,

hemodynamic changes, drowsiness, nausea and vomiting, pruritus, urinary retention and constipation, and the differences in response to these drugs (17), it seems important to use effective non-pharmaceutical methods beside these drugs.

One of important, low-cost and effective methods with an important role in prevention and treatment of cardiovascular diseases is prayer therapy (18-21). One of the famous prayers emphasized in Islam is recitation of the word "Allah". Based on Islam recommendations, recitation of God name especially "Allah" plays an important role in approaching humans' mind to God and flourishing humans' talent. From the perspective of Islam, recitation of this name soothes the hearts, heals pains, polishes breasts and enhances mental health (22). In this regard, prophet (PBUH) of Islam says: "you are supposed to recite God, because God is healing and avoid the mention of people because leads to pain and disease" (23). In addition, scientific results indicate that recitation of word "Allah" has an effective impact on medical conditions such as pain, anxiety, stress and vital signs (22, 24, 25). In one Randomized Clinical Trial (RCT) study, Avazeh et al. showed that reciting the word "Allah" was effective on pain and anxiety of dressing change in patients with burn (24). In another study, Nikbakht Nasrabadi et al. confirmed that reciting Islamic Zikr (rosary) was effective to decrease anxiety and stabilize vital signs of patients before abdominal surgery (22).

2. Objectives

Believing that there is a reason for each of Islamic recommendations and pain relief after surgery is an essential human right (25), also regarding side effects of opioids used for pain relief after CABG surgery, we decided to use religious beliefs of patients and investigate the effect of Hazrate Zahra's praises (one of the most known praises among Muslims in which the word "Allah" is repeated 100 times) on pain after CABG surgery.

3. Patients and Methods

3.1. Study Design

This RCT study (code No. IRCT2013080314251N1) was conducted on patients undergoing CABG surgery in open heart ICU of Busheher Bentolhoda Hospital, Iran, in 2013. Inclusion criteria included age of 25-65 years, being Shia Muslim, being able to understand studies details, undergoing heart surgery for the first time, using saphenous vein for transplantation, lack of any history of chronic pains and history of chronic opium addiction and having elective heart surgery. Exclusion criteria were connection to the ventilator at the time of intervention, connection to cardiopulmonary bypass pump more than four hours during the operation, bleeding more than 200 mL per hour from chest tube, intubation more than 24 hours, repair procedures or valve replacement along with CABG,

severe speech, visual or hearing impairments or lack of full consciousness after the operation, or anything that would hinder the patients' cooperation. In case of any complications during the operation and anesthesia, patient was excluded from the study.

3.2. Sample Size

To estimate the sample size, a pilot study was conducted on 10 patients (included for the main sample). Based on its results and using the sample size formula of RCT study with confidence level of 90%, the number of needed samples was calculated as 38.6 patients. We considered 40 subjects in each group to obtain more confident results.

3.3. Data Collection

Data was collected based on interview and patients' records using a researcher-made questionnaire and visual analogue scale (VAS). The first part of the researcher-made questionnaire assessed demographic characteristics (age, gender, ethnicity, marital status, education and residency), and the second part contained information regarding the disease (history of hospitalization, history of previous surgery, duration of surgery and length of stay in cardiac ICU). To determine the scientific validity of this questionnaire, content validity was used. For this purpose, after studying books and other resources related to this subject, a checklist was prepared and then presented to 10 faculty members of nursing school of Ahvaz Jundishapur University of Medical Sciences, Iran. The final checklist was prepared after collecting their suggestions. For measuring pain severity, we used VAS graded from 0 to 10. Zero and ten were considered as lack of pain and the maximum severity of pain, respectively. Based on this scale, 0-3 scores were considered as mild pain, 3-6 scores as moderate pain and 6-10 scores as severe pain. This scale was used to measure pain of patients after CABG surgery in different studies and its reliability and validity were approved in previous studies (26, 27).

3.4. Interventions

An approval was obtained from the ethics committee of Ahvaz University of Medical Sciences (code No. ajums.res.13920253). Researcher referred to open heart ICU the night before the operation (between 7:00 PM and 8:00 PM) and selected patients based on abovementioned inclusion criteria. After obtaining an informed consent from all participants and providing verbal explanation about the research and assurance of confidentiality and anonymity, patients were randomly allocated to intervention ($n = 40$) and control ($n = 40$) groups using envelopes containing numbers from a table of random numbers. Then adequate training on how to assess pain using the scale was provided to patients in the both groups. Besides, in the intervention group, patients learned how to recite the word "Allah" with simple and understandable sentences.

For minimizing the effects of medical treatment on the

findings of the research, patients were scheduled to receive similar features regarding medical treatment. For this purpose, all patients received treatment according to standard postoperative care protocol developed by cardiovascular surgeons and nurses of the recruitment center. Based on this protocol, all patients received oxygen delivered by nasal cannula and were monitored for vital signs and SpO₂. Furthermore, patients received analgesics including morphine and/or pethidine with NSAIDs or NSAIDs alone, at certain intervals according to the medication dosage instruction and when it was needed. Analgesics (via intramuscular injection) and NSAIDs (oral or rectal) were given at 10:00 AM by an ICU nurse, who was one of the researchers, because after at least four hours from the receipt of these drugs their half-life is reduced and it did not interfere with the study (28).

During three days after the operation, data was collected between 3:00 PM and 4:00 PM when the traffic in ICU was not intense and patients were not receiving invasive or noninvasive procedures. All patients were scheduled to rest in bed during the abovementioned times in ICU. For this purpose, at 2:45 PM, the researcher helped patients to lie down in bed at an angle of 30-40 degrees. After that, an ICU nurse (outside of their shifts) who was unaware of the intervention and control groups assessed pain of the both groups. Then in the intervention group, we asked patients to recite Hazrate Zahra's praises (AS) as one of the most known praises among Muslims in which the word "Allah" is repeated 100 times, for 10 to 15 minutes depending on the conditions. The praise includes recitation of 34 times Allahu Akbar meaning "God is greater" or "God is [the] greatest", 33 times Alhamdulillah meaning "all praise and thanks to God" and 33 times Subhan Allah meaning "glorious is God". In the control group, data was collected at the same intervals of the intervention group, but without making them reciting any especial word. During the intervention, the researcher was in ICU and controlled the environment to reduce stimuli for the control group. Also in this period, patients in the both group remained in rest. After the intervention, pain severity was assessed and recorded again immediately in the both groups by previous nurse, who was not aware of the groups assignment.

3.5. Statistical Analysis

Data was analyzed by SPSS 19 software. Descriptive statistical tests mean, standard deviation, frequency and percentage) were used for demographic and clinical characteristics. The independent sample t test was used to compare quantitative variables in the both groups and the paired samples t test was used to compare the two groups before and after the intervention. Although, Chi-square test was used to compare qualitative data between the two groups.

4. Results

The mean of patients' age in intervention and control

groups were 56.6 ± 7.73 and 57.22 ± 8.48 years, respectively. There was no significant difference between the two groups regarding age using independent sample t test ($P = 0.49$). Findings indicated that the mean duration of operation (per hour) and the mean duration of stay in cardiac ICU (per day) were 4.39 ± 0.712 and 2.32 ± 0.615 in intervention group and 4.49 ± 0.66 and 2.6 ± 0.74 in control group, respectively. There was no significant difference between the two groups in this regard using independent sample t test ($P = 0.53$ and $P = 0.07$, respectively). Other demographic and clinical characteristics of patients are shown in Table 1. As it is obvious, there was no significant difference regarding demographic and clinical characteristics between the two groups.

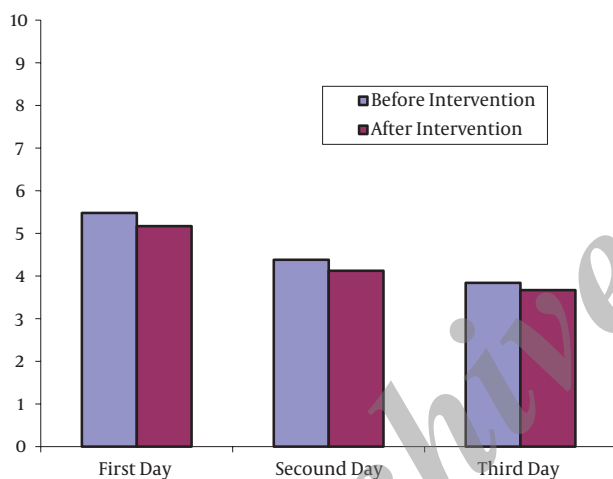
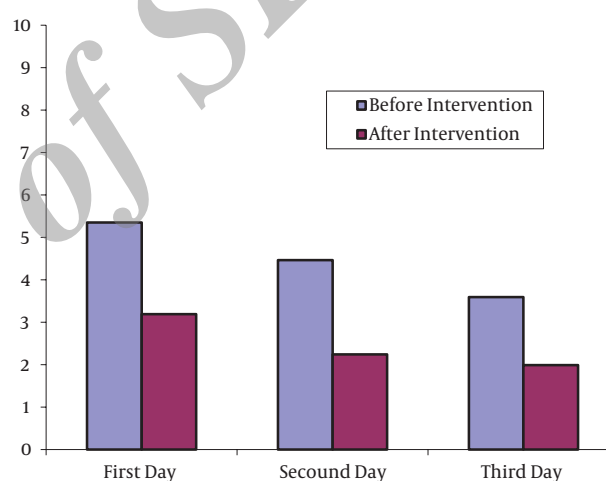
Table 1. Demographic and Clinical Characteristic of Samples in Intervention and Control Groups^a

Demographic Characteristic	Intervention	Control	P Value
Gender			0.459
Female	10 (25)	13 (23.5)	
Male	30 (75)	27 (67.5)	
Education			0.69
Illiterate	20 (50)	18 (45)	
Less than diploma	13 (23.5)	12 (30)	
Diploma	5 (12.5)	5 (12.5)	
Collegiate	2 (5)	5 (12.5)	
Marital status			0.31
Single	1 (2.5)	0	
Married	39 (97.5)	40 (100)	
Ethnicity			0.965
Fars	20 (50)	21 (52.5)	
Arab	11 (27.5)	10 (25)	
Others	9 (22.5)	9 (22.5)	
Residency			1.000
Urban	34 (85)	34 (85)	
Rural	6 (15)	6 (15)	
History of hospitalization			0.62
No history	9 (22.5)	9 (22.5)	
One time	11 (27.5)	9 (22.5)	
Two times	10 (25)	10 (25)	
Three times	6 (15)	8 (20)	
Four times and more	4 (10)	4 (10)	
History of surgery			0.76
No history	23 (57.5)	20 (50)	
One time	8 (20)	10 (25)	
Two times and more	9 (22.5)	10 (25)	

^a Data are presented as No. (%).

Table 2. Comparison of Pain Severity Between the Intervention and Control Groups During Three Days After the Operation ^a

Time, D	Control Group	Intervention Group	P Value
I			
Before intervention	5.48 ± 1.17	5.35 ± 2.28	0.53
After intervention	5.17 ± 2.67	3.19 ± 1.91	≤ 0.001
II			
Before intervention	4.38 ± 2.51	4.46 ± 2.66	0.063
After intervention	4.12 ± 3.24	2.24 ± 1.95	≤ 0.001
III			
Before intervention	3.84 ± 2.61	3.59 ± 1.87	0.079
After intervention	3.67 ± 2.25	1.99 ± 1.38	≤ 0.003

^a All of the values are present as Mean ± SD**Figure 1.** Comparison of Pain Severity in Control Group Before and After the Intervention During Three Days After the Operation**Figure 2.** Comparison of Pain Severity in the Intervention Group Before and After Reciting the Word "Allah" During Three Days After the Operation

Comparison of pain severity between the intervention and control groups during three days after the operation is presented in Table 2. Based on this table, the difference between the means of pain severity of the two studied groups after the intervention at three days was statistically significant (for three days $P \leq 0.001$, $P \leq 0.001$ and $P \leq 0.003$, respectively), but there was no significant difference between the two groups before the intervention. Comparison of the means of pain severity before and after the intervention in control and intervention groups was shown in Figure 1 and 2, respectively. After the recitation, decrease in the mean of pain severity in the intervention group was statistically significant at three days (for three days $P \leq 0.001$), while no difference was found in control group before and after the intervention ($P = 0.493$, $P = 0.541$ and $P = 0.119$, respectively).

5. Discussion

Postoperative pain control after heart surgery is one of the greatest concerns for both physicians and patients. Postoperative pain affects existential aspects of patients after surgery (9). Despite side effects of opioids discussed in many studies, today most investigations have focused on these drugs for pain management after heart surgeries and few have paid attention to non-pharmacological methods. Therefore, this highlights the need for more qualitative researches exploring specific effects of non-pharmacological methods for postoperative pain management. In the present study, we tried to examine the effect of Hazrate Zahra's praises as one of the most known praises among Muslims in which the word "Allah" is repeated 100 times on pain relief after heart surgery. According to our results, the mean of pain severity after the

intervention had a significant difference between the two studied groups at three days after the operation, which is consistent with other studies indicating amazing effects of prayer and praise in well-being of patients undergoing CABG, including the Byrd study at San Francisco General Hospital (19), the Kansas City Mid-America Heart Institute study (20) and the multi-site Harvard study (18). Despite the fact, our result was not in line with other investigations showing no significant effects of prayer and praise on cardiovascular diseases (29-31).

Unfortunately, most studies regarding our subject assessed the effects of reciting the word "Allah" on other medical conditions such as anxiety (24), stress (25) and vital signs (32), and we just found one article investigating the effects of this recitation on pain to compare our results. Avazeh et al. assessed the effect of reciting the word "Allah" on pain of dressing change in patients with burn and found a significant difference between control (4.1 ± 7.85) and intervention (3.2 ± 5.21) groups ($P = 0.002$) (24), which is consistent with our results. However, P-value in our study had a slight notable difference with the abovementioned study, which might be due to some differences such as culture, religious and spiritual beliefs. Besides, the differences could be related to time of intervention or procedure type. In the present study, intervention was performed during three days after CABG surgery, but in their study, intervention was conducted 15 minutes after completion of dressing change in patients with burn. In another study, Professor Hovenin Amsterdam University, during a three-year research conducted on non-Muslims who do not speak Arabic, indicated that saying the holy word of "Allah", repeating it and its resultant sound stabilize vital signs and consequently lead to pain relief (32).

The results of this novel research present useful information for the use of non-pharmacological methods such as prayer and praise as nursing interventions after surgery to reduce the pain of patients undergoing CABG surgery. Therefore, it is recommended to pay more attention to religious beliefs of patients and its essential role in the management of pain after heart surgeries and use recitation of word "Allah" alongside routine analgesics with no cost and side effects. "Allah" is common and known among Muslims as a low-cost, natural and non-invasive treatment alone or together with palliatives to alleviate pain, reduce required dosage of analgesics and consequently prevents undesirable drug adverse effects after CABG surgery.

Some limitations were present in this study. Firstly, in this study the control group did not receive any verbal placebo treatment, so the observed analgesic effects might be due to physical and environmental factors other than the specific effects of the phrase 'Allah'. Secondly, because this study was conducted only in one hospital, generalization of results to different sets of circumstances may not be possible. Thirdly, our patients were only "Shia-Muslims", so these results could be generalized

only to this population. Finally, we could not find any evidence assessing the effects of reciting the word "Allah" on pain relieving of patients after heart surgeries to compare the results. Therefore, it is suggested to perform further researches especially by other recitations to confirm our findings and get more information on this topic.

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Authors' Contributions

Morteza Nasiri and Sadigheh Fayazi contributed to the study concept and design, data collection, critical revision and approval of the manuscript. Marjan Naseri and Sara Adarvishi contributed to data collection and Musab Ghaderi contributed to statistical analysis and data interpretation.

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