

## The Effect of Reciting the Word “Allah” on Vital Signs and SpO<sub>2</sub> of Patients After Coronary Artery Bypass Graft Surgery: A Randomized Clinical Trial

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**Background:** Control of hemodynamic status and vital signs of patients is a critical practice in intensive care unit (ICU) and use of a low-cost and soothing method to maintain stable physiological parameters is necessary.

**Objectives:** This study aimed to investigate the effects of reciting the word “Allah” on patients’ vital signs and blood oxygen saturation (SpO<sub>2</sub>) after coronary artery bypass graft (CABG) surgery.

**Patients and Methods:** This randomized clinical trial study was performed on 80 hospitalized patients in open heart ICU of Busheher Bentolhoda Hospital, Iran in 2013. Data was collected by a researcher-made questionnaire. 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), in which the word “Allah” is repeated 100 times, while in the control group, patients just received routine procedures of hospital. Vital signs and SpO<sub>2</sub> were assessed before and immediately after the intervention three times (24, 48 and 72 hours after surgery) in both groups. Data was analyzed by SPSS 19 software using descriptive and analytic (Chi-square and t-test) statistical methods.

**Results:** There was a significant difference between mean of respiratory, pulse and SpO<sub>2</sub> rate of patients in intervention group during three days after the operation, before and after the intervention ( $P < 0.05$ ). However there was a significant difference between mean of diastolic blood pressure and temperature ( $P < 0.05$ ), excepting in one time section; no significant difference was found in systolic blood pressure in any time sections ( $P > 0.05$ ) before and after the recitation in intervention group. Moreover, a significant difference was seen in the mean of SpO<sub>2</sub> and respiratory rate within 72 hours after operation between the two groups ( $P = 0.01$ ), but no significant difference was found between the two studied groups before the intervention.

**Conclusions:** Reciting the word “Allah” as a non-pharmacological, low-cost, noninvasive and without side effects method can be effective on physiological responses, especially respiratory and SpO<sub>2</sub> rate after CABG surgery.

Keywords: Islam; Coronary Artery Bypass Graft Surgery; Vital Signs; Blood Oxygen Saturation; Iran

### 1. Background

Among non-communicable diseases, prevalence of cardiovascular diseases (CVDs) has been rising during the past two centuries (1). According to the world health organization (WHO), CVDs account for the leading cause of death and disability in developing countries by 2020 (2). In Iran, chronic diseases are the main cause of 70% mortality that CVDs with 21% are considered as the main cause of death (3). Unfortunately, in spite of developments in prevention, diagnosis, treatment and rehabilitation of CVDs, there is still a growing trend in mortality rate resulted from these diseases, and in many patients surgery is the only choice for treatment (4, 5).

Most patients undergoing surgery, experience different levels of anxiety, but due to the important role of heart and direct dependencies with life and death, psychological and physiological reactions of patients to heart surgery are much wider (6). Moreover, the

nature of heart surgery requires admission and hospitalization of patients for one to three days in intensive care unit (ICU), which is a stressful environment for patients due to environmental factors and specific treatment conditions (medical or surgical) (4). Due to stressful conditions, sympathetic system stays in a state of constant stimulation. As a result of long-lasting nervous system stimulation, secretion of catecholamines, including adrenaline and noradrenalin would increase and subsequently cause instability in pulse, blood pressure, respiration and temperature rate (7). This instability is associated with increase in left ventricular pressure and heart rate and consequently increases need of myocardium for oxygen as well as myocardial ischemia and necrosis (8). Furthermore, hypertension after heart surgery can cause rupture or leakage from the suture line and increased postoperative bleeding or even perforation of the graft anastomosis (4). Therefore, it is

necessary and essential to adopt effective guidelines to reduce physiological responses in patients undergoing heart surgery.

Nowadays for preventing sympathetic responses and stabilizing physiological responses, medicinal and non-medicinal methods (complementary medicine) are used. The use of drugs has numerous physiological and psychological side effects and cannot be used in all patients. On the other hand, taking these drugs impose a lot of costs to patients and health systems and may be considered as a new stressor for them (9). Therefore, it is important to use an effective, low-cost, noninvasive and easy method for these patients.

Based on numerous international investigations, complementary medicine is effective on physical and mental diseases (10). One of the important, low-cost and effective methods in complementary medicine is prayer therapy that recent studies around the world have proven its effects for treating serious diseases (11-16). Based on the literatures, prayers showed useful physical effects such as decrease in the number of breath, heart rate, blood pressure and decrease in the body temperature (17). In one study, Safavi et al. showed that saying prayers as a part of complementary medicine is a non-medical way with no side effects in prehypertensive women (18).

One of the famous prayers emphasized in Islam is recitation of the word "Allah". Based on Islam, recitation of the 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 (19). Almighty God has considered his name recitation bigger than whatever is imaginative and equals it to the prayer that shows its importance among the other worships (20). In this regard, Imam Ali (AS) says: "God puts recitation and reminding him as the source of brightness of the heart, thereby ears would be opened and eyes would be discerning and the heart would be obedient and quiet". In addition, 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" (21).

In this regard, scientific results indicated that recitation of the word "Allah" has effective impact on medical conditions (19, 22, 23). Professor Hoven in Amsterdam University, during a three-year research conducted on non-Muslims who do not speak Arabic, found out that saying the holy name of "Allah", repeating it and its resultant sound brings about vital signs stability. He declared that the first letter "A" that the word "Allah" starts with, is enunciated through the upper part of the individual's chest and thus regulates breathing and if it is repeated, leads to breathing stability and brings the feeling of internal peace. The second letter which is "L" is articulated by touching the tongue to the upper

jaw and when it is repeated, this movement leads to silence for some seconds, or part of the second and this silence gives comfort in breathing. The last letter which is "H" articulated when the air comes out from the lungs through mouth. Pronouncing this letter would help in making heart beat normally and regularly (24). Furthermore, Avazeh et al. (22) showed that reciting the word "Allah" was effective on pain and anxiety of dressing change in burn patients. In another study, Nikbakht Nasrabadi et al. (19) confirmed that reciting Zikr (rosary) was effective on anxiety level and vital signs of patients awaiting abdominal surgery.

## 2. Objectives

Believing that there is a reason behind each of Islamic recommendations and because most patients undergoing coronary artery bypass graft (CABG) surgery experience different levels of instability in physiological parameters and regarding adverse effects of pharmacologic agents used for stabilizing hemodynamic status, we decided to investigate the effects of reciting the word "Allah" on vital signs and blood oxygen saturation ( $SpO_2$ ) of patients undergoing CABG surgery.

## 3. Patients and Methods

This randomized clinical trial study was conducted on patients undergoing CABG surgery in open heart ICU of Busheher Bentolhoda Hospital, Iran in 2013. Inclusion criteria included having more than 25 years old, being Shia Muslim, being able to understand studies details, undergoing heart surgery for the first time, non-urgent heart surgery, as well as having stable hemodynamic conditions such as: systolic blood pressure more than 90 mmHg, absence of dangerous dysrhythmias and heart rate between 60 and 100 beats per minutes (4). Exclusion criteria included connection to the ventilator at the time of intervention, history of chronic pains, lack of full consciousness, intubation more than 24 hours, bleeding more than 200 mL/hour from chest tube or anything that would affect patient cooperation. Moreover, patients were excluded if any complications during the operation and anesthesia occurred.

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

Data was collected based on interview and patients' records using a researcher-made questionnaire including three parts. The first part assessed demographic characteristics (age, gender, ethnicity, marital status, education and place of residence). The second part contained information related to the disease (history of hospitalization, history of previous surgery, duration of surgery, length of stay in the cardiac ICU, history of hypertension

and duration of hypertension). The third part included details on vital signs (blood pressure, respiratory rate, pulse and temperature) as well as  $\text{SpO}_2$ . 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 and after collecting their suggestions, final checklist was prepared.

In this study, for measuring vital signs and  $\text{SpO}_2$  we used watches (Citizen Brand) and monitoring (Data Scope passport<sub>2</sub>) existed in open heart ICU of Bushehr Bentolhoda Hospital. To assess the reliability of these instruments, we used equivalent form of reliability. At first, vital signs of 10 patients were assessed by researcher and his fellow who was in the same level of experience and qualifications, and then correlation was calculated which revealed no difference.

This study was approved by the ethics committee of Ahvaz University of Medical Sciences. After obtaining an introduction letter from this committee and representing it to Bushehr University of Medical Sciences and Hospital Managers, researcher in the night before the operation (at 7:30 PM) referred to the open heart ICU and selected patients who fulfilled the 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. After surgery in the end of afternoon shift, at first we collected patients' information and then vital signs and  $\text{SpO}_2$  rate of both groups were assessed in three times (24, 48 and 72 hours after surgery). Then, in the intervention group we asked patients to recite Hazrate Zahra's praises (AS), in which the word "Allah" is repeated 100 times (34 times Allah Akbar, 33 times Alhamdulillah and 33 times Subhan Allah) for 10 to 15 minutes depending on the conditions alongside routine procedures of hospital. However, in the control group, patients just received routine procedures of hospital. Immediately after recitation, vital signs and  $\text{SpO}_2$  rate of both groups were assessed again in three mentioned times and results were compared.

Data was analyzed by SPSS 19 software using descriptive statistical tests (mean, standard deviation, numbers and percent) for demographic and clinical characteristics, Chi-square test for comparing qualitative data between the two groups and t-test for comparing quantitative data between two groups.

### 3.1. Ethical Considerations

This study was conducted after obtaining confirmation of Ahvaz Jundishapur Ethics Committee (ajums.

res.13920253) and informed consent from all subjects participating in the study.

## 4. Results

The mean of patients' age in the intervention and control groups were  $56.6 \pm 7.73$  and  $57.22 \pm 8.48$  years, respectively; t-test showed no significant difference between the two groups ( $P = 0.49$ ). Findings indicated that the mean duration of operation (per hour) and the mean duration of stay in the cardiac ICU (per day) were  $4.39 \pm 0.712$  hour and  $2.32 \pm 0.615$  day in intervention group, and  $4.49 \pm 0.66$  hour and  $2.6 \pm 0.74$  day in control group, respectively; t-test showed no significant difference between the two groups ( $P = 0.53$  and  $P = 0.07$ , respectively). Other demographic and clinical characteristics of patients are shown in Table 1. Based on Chi-square test, there was no significant difference between the two groups.

Based on paired t-test, there was a significant difference in pulse, respiration, temperature and  $\text{SpO}_2$  rate in the first 24 hours after operation, before and after recitation in intervention group, but for other variables (systolic and diastolic blood pressure), there was no significant difference. At 48 hours after operation, there was a significant difference in above-mentioned variables before and after the intervention. However, about systolic blood pressure and temperature, the difference was not statistically significant. At 72 hours after the operation, there was a significant difference in all variables before and after the intervention except systolic blood pressure (Table 2).

Based on independent t-test, there was no significant difference for  $\text{SpO}_2$  and vital signs between the intervention and control groups before and in 24 and 48 hours after the operation ( $P > 0.05$ ), while a notable difference observed in respiration and  $\text{SpO}_2$  rate between intervention and control groups 72 hours after the operation ( $P = 0.01$ ) (Table 3).

## 5. Discussion

Our results showed reciting the word "Allah" as an effective way for stabilizing patients' physiological responses after CABG surgery which is consistent with many researches indicated miraculous effects of prayers in relieving heart diseases and cardiac care programs (25-27). According to the results, the mean of respiration and pulse, as well as  $\text{SpO}_2$  in intervention group at 24, 48 and 72 hours after the operation, before and after reciting had significant difference. In addition, the mean temperature and diastolic blood pressure had significant differences except in one time. However, we did not observe a significant difference in systolic blood pressure in none of the time points.

In one study conducted by Nikbakht Nasrabadi et al. (19) on 70 Muslim patients awaiting abdominal surgery

**Table 1.** Demographic and Clinical Characteristics of Samples in Intervention and Control Groups

Demographic Group	Intervention <sup>a</sup>	Control <sup>a</sup>	P Value
<b>Gender</b>			0.459
Female	10 (25)	13 (23.5)	
Male	30 (75)	27 (67.5)	
<b>Education</b>			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)	
<b>Marital status</b>			0.31
Single	1 (2.5)	0 (0)	
Married	39 (97.5)	40 (100)	
<b>Ethnicity</b>			0.965
Fars	20 (50)	21 (52.5)	
Arab	11 (27.5)	10 (25)	
Other	9 (22.5)	9 (22.5)	
<b>Location</b>			1.000
City	34 (85)	34 (85)	
Village	6 (15)	6 (15)	
<b>History of hospitalization</b>			0.6
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)	
<b>History of surgery</b>			0.7
No history	23 (57.5)	20 (50)	
One time	8 (20)	10 (25)	
Two times and more	9 (22.5)	10 (25)	
<b>History of hypertension</b>			0.65
Yes	24 (60)	20 (50)	
No	16 (40)	20 (50)	
<b>Hypertension duration, mo</b>			0.65
1-35	8 (20)	5 (12.5)	
≥ 36	12 (30)	13 (23.5)	
Zero	20 (50)	17 (42.5)	

<sup>a</sup> Values are presented as NO. (%).

**Table 2.** Comparison of Vital Signs and SpO<sub>2</sub> in Intervention Group Before and After Intervention

Variables	Before Intervention <sup>a</sup>	After Intervention <sup>a</sup>	P Value
<b>First Day</b>			
Systolic blood pressure, mmHg	115.55 (17.32)	113.77 (16.07)	0.197
Diastolic blood pressure, mmHg	66.05 (13.16)	65.17 (12.23)	0.403
Pulse, beats/min	83.92 (13.97)	80.65 (12.87)	0.000001
Respiration, breaths/min	22.67 (5.14)	21.52 (4.87)	0.000001
Temperature, °C	36.97 (0.41)	21.52 (0.41)	0.015
SpO <sub>2</sub> , %	94.5 (1.8)	97.3 (1.8)	0.000001
<b>Second Day</b>			
Systolic blood pressure, mmHg	114.75 (17.96)	113.95 (17.21)	0.238

Diastolic blood pressure, mmHg	70.32 (13.63)	69.25 (12.64)	0.05
Pulse, beats/min	87.1 (11.62)	85.22 (11.17)	0.000001
Respiration, breaths/min	23.42 (3.72)	22.97 (3.81)	0.002
Temperature, °C	36.99 (0.36)	36.96 (0.37)	0.117
SpO <sub>2</sub> , %	96.9 (2.1)	97.6 (1.7)	0.01
<b>Third Day</b>			
Systolic blood pressure, mmHg	114 (16.55)	112.92 (16.9)	0.11
Diastolic blood pressure, mmHg	67.75 (8.78)	66.17 (8.43)	0.008
Pulse, beats/min	87.07 (9.56)	85.92 (9.99)	0.000001
Respiration, breaths/min	22.75 (3.2)	22.1 (3.07)	0.001
Temperature, °C	36.87 (0.40)	36.81 (0.51)	0.01
SpO <sub>2</sub> , %	96.6 (2.3)	98.1 (1.6)	0.000001

<sup>a</sup> Values are presented as mean (SD).

**Table 3.** Comparison of Vital Signs and SpO<sub>2</sub> in Intervention and Control Groups Before and After Intervention

Variables	Intervention Group <sup>a</sup>	Control Group <sup>a</sup>	P Value
<b>First Day</b>			
Systolic blood pressure, mmHg	117.47 (17.27)	120 (20.47)	0.55
Diastolic blood pressure, mmHg	69.1 (11.81)	71.67 (15.98)	0.41
Pulse, beats/min	83.4 (12.52)	83.92 (14.28)	0.86
Respiration, breaths/min	22.1 (5)	23.8 (6.11)	0.17
Temperature, °C	36.89 (0.47)	36.81 (0.52)	0.47
SpO <sub>2</sub> , %	97.3 (1.8)	96.2 (2)	0.72
<b>Second Day</b>			
Systolic blood pressure, mmHg	115.17 (15.43)	114.32 (18.53)	0.88
Diastolic blood pressure, mmHg	69.37 (9.41)	69.02 (10.14)	0.87
Pulse, beats/min	84.15 (16.43)	85.17 (10.76)	0.74
Respiration, breaths/min	23.57 (5.16)	25.17 (5.25)	0.17
Temperature, °C	36.91 (0.55)	36.84 (0.45)	0.51
SpO <sub>2</sub> , %	97.6 (1.7)	96.5 (1.6)	0.44
<b>Third Day</b>			
Systolic blood pressure, mmHg	112.92 (16.9)	114.82 (19.48)	0.64
Diastolic blood pressure, mmHg	66.17 (8.43)	67.9 (11.15)	0.43
Pulse, beats/min	85.92 (9.99)	86.62 (10.97)	0.76
Respiration, breaths/min	22.1 (3.07)	24.07 (3.69)	0.01
Temperature, °C	36.84 (0.51)	36.91 (0.37)	0.25
SpO <sub>2</sub> , %	98.1 (1.6)	96.2 (2)	0.01

<sup>a</sup> Values are presented as mean (SD).

to compare the effect of Benson's relaxation technique and Zikr (rosary) on anxiety level, both methods were effective in reducing anxiety. According to the results, in the Zikr (rosary) group, there was a significant difference between mean of systolic blood pressure, diastolic blood pressure and pulse rate before and after the intervention ( $P > 0.05$ ); except for systolic blood pressure, the rest of vital signs were consistent with our results. Furthermore, their results showed a significant difference in the

mean of systolic blood pressure between the two group ( $P < 0.05$ ), while in this study significant differences observed just in respiratory and SpO<sub>2</sub> rate at 72 hours after operation between the two groups (19). In another study conducted by Safavi et al. to assess the effects of prayer on blood pressure of women in Isfahan, results showed significant difference between the mean of systolic and diastolic blood pressures before and after the intervention ( $P < 0.05$ ) (18). However, Bernardi et

al. showed that Rosary prayer decreased the number of breaths (about six breathes in a minute), intervals of breath taking, systolic and diastolic blood pressure and improved autonomic cardiovascular rates (28). Differences between our results and three mentioned studies regarding vital signs, especially systolic blood pressure, may be due to some differences such as kind of prayer, surgery, culture, religious and spiritual believes.

The results of this research present valuable and useful information for the use of non-medicational methods such as prayer in the field of medical sciences. Therefore, it is recommended to nurses and physicians pay attention to religious beliefs of patients and its essential role alongside their medical treatments in success of treatment process and use recitation of word "Allah" as a simple, low-cost, natural, noninvasive and without side effect method, independently or associated with other treatments to stabilize physiological responses, especially respiratory and  $\text{SpO}_2$  rate after CABG surgery. To develop these findings and get more information on this topic, it is suggested to conduct more researches by other recitations to compare the results. One of the main limitations of this study is that control group did not receive any verbal placebo treatment, so the observed effects might be due to physical and environmental factors other than the specific effects of the phrase 'Allah'. Furthermore, because this study was conducted only in one hospital, generalization of results to different circumstances may not be possible. Also, our patients were only "Shia-Muslims", so these results could be generalized only to this population.

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## Authors' Contributions

Morteza Nasiri devised the concept for the study, developed the study design, collected data, run the study intervention, was involved in the conception of the study, and performed the analyses and final preparation of the manuscript. Sadigheh Fayazi supervised data collection and analysis, contributed to the study design and intervention. Hadis Khodadadi Karimvand assisted in data gathering and was involved in study coordination and manuscript revision.

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