




# Effect of Guided Reflection on Self-Care in Patients Undergoing Coronary Artery Bypass Graft Surgery: A Randomized Controlled Trial

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## ABSTRACT

**Objective:** This study aimed to evaluate the effect of guided reflection on self-care of patients undergoing coronary artery bypass graft surgery (CABG).

**Methods:** This randomized clinical trial study was conducted on 94 eligible participants who underwent CABG with a convenience sampling technique in northern Iran. Participants were divided into guided reflection and control groups based on block randomization. In the intervention group, guided reflection steps were performed for participants. Participants selected were evaluated using a self-care questionnaire. Routine training was provided for the control group. Using a self-care questionnaire, data collection was done. Data were analyzed using descriptive and inferential statistics (i.e., independent *t*-test and chi-squared test) at a significance level of .05 by Statistical Package for the Social Sciences Statistics software.

**Results:** A comparison of the 2 groups showed no significant difference in the self-care of participants at the baseline ( $P = .24$ ), but after the intervention, the mean self-care score in the guided reflection group compared to the control group showed a significant increase ( $P < .001$ ).

**Conclusion:** It is recommended to perform the training based on the guided reflection method to improve the self-care behaviors in patients undergoing CABG. This kind of patient education, as a novel approach, significantly impacted self-care behavior improvement.


**Keywords:** Coronary artery bypass surgery, patient education, self-care

## Introduction

Cardiovascular disease is a globally growing health condition associated with mortality and disability worldwide.<sup>1</sup> Psychological and physical consequences of heart disease substantially interfere with occupation condition, interpersonal communication, and individual, family, and social responsibilities.<sup>2</sup> Coronary artery bypass grafting (CABG) is a major surgical operation to correct atheromatous blockages in a patient's coronary arteries.<sup>3</sup> Physical and psychological side effects reported by patients after CABG include postoperative pain, insomnia, changes in appetite, chest pain, respiratory problems, arrhythmias, palpitations, weight loss, and anxiety.<sup>4</sup> They face obstacles after discharge regarding daily activities and lack sufficient knowledge about medications and diet control.<sup>5</sup> Studies have shown that these complications are significantly related to self-care.<sup>6</sup> Self-care is the ability to care for oneself through awareness, self-control, and self-reliance to achieve, maintain, or promote optimal health and well-being.<sup>7</sup> In cardiovascular surgeries, self-care is introduced by effective action to alleviate the possible adverse outcomes of nutritional and medication complications after surgery. As postoperative activities and prescribed drugs are considered so important, the success of the surgery depends on the patient's self-care in these regards.<sup>8</sup> In addition, self-care guidelines include diet, sodium and fluid restriction, daily weighing, medication regimen, physical activity, smoking cessation, social activity, sexual activity, monitoring for signs and symptoms of exacerbation, and searching for and deciding on appropriate treatment measures.<sup>9</sup>

The present research was extracted from a master's thesis in nursing conducted at Shahroud University of Medical Sciences. This university approved this research under code 824 and registered in the Iranian clinical trial system with code IRCT20200907048645N1.

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Despite the importance of self-care in improving the health conditions of patients with cardiovascular disease, studies show that self-care is not desirable in these patients.<sup>10,11</sup> Appropriate self-care leads to improving the patient's general health through active participation in the care process and ultimately, reduction of treatment costs.<sup>12</sup> Poor self-care behaviors, i.e., diet and medication non-adherence, can lead to a 20%-60% increase in hospitalization.<sup>13</sup> In particular, this issue has found a special place in the high-risk group after the corona pandemic to reduce hospitalization.<sup>14</sup> Self-care-based interventions through patient participation enhance self-care performance.<sup>15,16</sup> Guided reflection is known to positively impact self-care.<sup>17</sup>

Guided reflection is helping people discover knowledge from experience by using reflection skills. It can improve continuous functioning and better management of complex health conditions and patient recovery.<sup>17,18</sup> The techniques used in the guided reflection method were designed based on Kolb's learning cycle, Gibbs cycle, and structural reflection pattern.<sup>19</sup> Guided reflection improves self-care management and medication adherence to adequate illness perception.<sup>17</sup> In fact, guided reflection is advantageous over other participatory methods as it increases patients' self-care based on the learning theories.<sup>20</sup> Considering the critical role of self-care in symptoms management and decreased hospitalization, based on our knowledge, no study has been conducted based on guided reflection in cardiovascular patients. This study was performed to determine the effectiveness of directed self-care reflection in patients undergoing CABG. So, the present study was carried out based on the hypothesis that the guided reflection intervention effectively promotes the self-care of patients undergoing CABG.

## Methods

### Study Design and Setting

This parallel randomized clinical trial (under the registration code IRCT20200907048645N1) was conducted on all patients undergoing a CABG referred to Fatemeh Zahra Teaching and Medical Complex in Sari.

### Sample and Sampling Method

All of the participants were assessed using a convenient sampling technique. Inclusion criteria were age between 30 and 75 years, first experience of CABG, full consciousness (Glasgow coma scale = 15), not taking neuroleptics medication, ability to communicate verbally, and not afflicted with psychiatric disorders. Exclusion criteria included death or transfer of the patient to other medical centers.

The sample size was calculated based on the previous study using the mean and SD of the self-care variable.<sup>21</sup> Considering the power equal to 80% and 95% CI, the sample size was calculated as 94 (with 47 participants in each group). This study randomly assigned participants to intervention and control groups using quadruple blocks. The random allocation sequence with the list of blocks was calculated by a statistical consultant using the Statistical Package for Social Sciences version 24.0 software (IBM Corp.; Armonk, NY, USA).

At the end of the study, 46 people in the control group and 45 people in the intervention group were analyzed. Participants were assessed in pretest and posttest self-care questionnaires. In the present study, out of 47 participants in the control group, 1 participant was excluded from the study due to a loss to follow-up (attrition rate: 2.13%). Also, 2 participants were excluded from the study in the intervention group due to not continuing the intervention (attrition rate: 4.26%) (Figure 1).

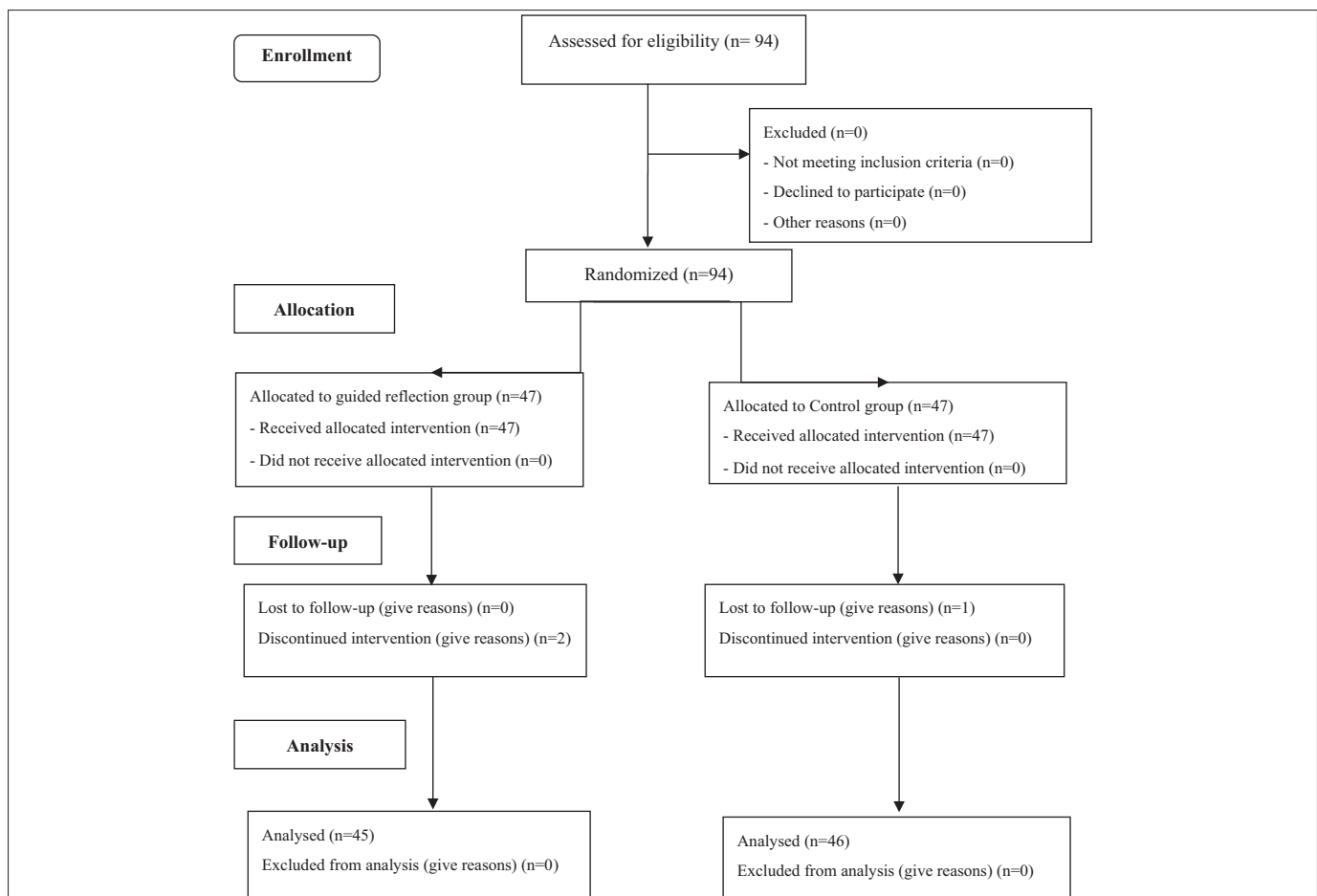


Figure 1. Flow diagram of the study.

### Data Collection Tools

Participants were evaluated using a demographic profile form and a self-care questionnaire. Questionnaires were collected by a trained nurse who did not know the allocation of participants.

The demographic profile was used to obtain data about the participants' age, gender, place of residence, marital, occupation, and educational status. Khodaminasab et al's<sup>22</sup> self-care questionnaire includes 15 questions measuring self-care. Each item is scored between 0 = never and 4 = always. A higher score indicates higher self-care; the minimum and maximum scores obtained from this scale are between 0 and 60, respectively. Experts confirmed the validity of the questionnaire that the content validity ratio and the content validity index were reported to be equal to 0.94 and 0.87, respectively. In Khodaminasab et al's<sup>22</sup> study, the Kaiser–Meyer–Olkin statistic was 0.81, which indicates sampling adequacy. In addition, results of exploratory factor analysis showed that the scale consists of 5 factors (diet, physical activity, treatment adherence, stress management, and smoking), and the reliability of this scale was examined by internal consistency with Cronbach's alpha coefficient in a pilot study ( $\alpha = 0.72$ ). The Cronbach's alpha for the current study was 0.82. The questionnaires were completed before and 2 weeks after the end of the intervention.

### Intervention

One day before the surgery, after providing the necessary explanations regarding the study's objectives and obtaining written consent, intervention sessions based on the guided reflection steps were held at the cardiac clinic or doctor's office. The overall aim of the guided reflection is to enhance the levels of self-care behaviors to promote well-being. The next session was held in the doctor's office during the first visit after discharge from the hospital for 1 hour. In this session, the content of guided reflection was provided to participants. In addition, after the training, the participant was given feedback to ensure the content was understood correctly. The guided reflection had 6 steps: (I) describe the concerns; (II) express emotions; (III) evaluation; (IV) analysis; (V) solution, and (VI) draw a roadmap. The content of the training sessions is provided in Table 1.

The first author, an expert intensive care nurse, executed a guided reflection intervention in the present study. The guided reflection intervention was done during face-to-face interviews with participants.

The current intervention was performed according to the previous study.<sup>23</sup> The content of guided reflection was personalized and included the background of CABG, its consequences, and the patient's needs.

For the next 4 weeks, the researcher contacted the participants by phone and asked them questions related to self-care based on the guided reflection steps (describing the concern, expressing emotions, evaluating, analyzing, solving, and drawing a roadmap). Telephone follow-ups of 35-45 minutes once a week continued until the end of the intervention. Participants in both intervention and control groups

received routine training in the medical center. Routine training included medication, diet, physical activity, and surgical wound care written on paper (pamphlet).

The TIDieR checklist, utilized for reporting and repeatability, served as the foundation for all of the intervention information presented in the current study.<sup>24</sup>

### Blinding

As the present research was an intervention-based study, it was impossible to blind the participants. However, the data collector and the data analyzer were blinded.

### Data Analysis

To evaluate the normal distribution of the studied variables, Kolmogorov–Smirnov analysis was used, and all of them were normal. To summarize the quantitative data, mean and SD and, for qualitative data, absolute and relative frequency were used. Independent sample *t*-tests and repeated-measures analysis of variance (ANOVA) tests were used to compare the mean scores of each individual before and after the intervention in the 2 groups and also to evaluate the groups' main effect and interaction effect. The statistical analysis was performed using SPSS, version 26.

### Ethical considerations

The Ethics Council in Biomedical Research of Shahrood University of Medical Sciences (Approval no: IR.SHMU.REC.1399.101, Date: September 6, 2020). approved the present study. Authors confirm all participants' identifiers have been removed or disguised so the participants described are not identifiable and cannot be identified through the details of the story. Informed consent was obtained verbally and in writing from all participants.

### Results

The results of the present study showed that the intervention and control groups were homogeneous in terms of gender ( $P = .06$ ), marriage ( $P = .48$ ), residence ( $P = .61$ ), and employment ( $P = .11$ ) variables. The age of the participants in the intervention group was ( $M = 56.21$ ,  $SD = 11.22$ ) and in the control group was ( $M = 60.55$ ,  $SD = 12.01$ ). The groups did not show a significant difference in gender, marital status, occupation, and residence status at the level of .05 (Table 2).

The results showed that the mean and SD of self-care in the intervention and control groups were not significantly different at the baseline ( $P = .24$ ). After the intervention, there was a significant increase in self-care in the intervention group ( $P < .001$ ). Also, after the intervention, there was a significant difference between the 2 groups, so the mean self-care score in the intervention group was higher than the control group ( $P = .001$ ). In addition, the results of the independent sample *t*-test showed that the mean difference in self-care scores significantly improved in the intervention group. In other words, a higher improvement in self-care scores was observed in the intervention group compared to the control group ( $P = .001$ ) (Table 3).

**Table 1.** Description of Sessions

Topics	Content of Sessions
1 Describe the concerns	Description of the concerns by the patient.
2 Expressing emotions	Describing how to deal with the disease problem in patient's language.
3 Evaluation	Guiding the patient to positive or negative judgments about his/her performance in relation to the disease.
4 Analysis	Causes explained, the consequences analyzed, and what happened evaluated. Why? How? What led to it?
5 Solution	Emphasis on the information provided and empowerment and awareness in self-care.
6 Drawing a road map	Improving knowledge, attitudes, and abilities and guiding the patient to prioritize and evaluate.

**Table 2.** Comparison of Demographic Characteristics of Study Participants

Variable	Groups	Control (N = 46)	Intervention (N = 45)	P
Gender	Male	33 (71.7)	24 (53.3)	.06
	Female	13 (28.3)	21 (46.7)	
Marital status	Single	4 (8.7)	2 (4.4)	.48
	Married	39 (84.8)	41 (91.2)	
	Widow	3 (6.5)	2 (4.4)	
Occupation	Employed	9 (19.6)	3 (6.7)	.11
	Self-employed	10 (21.7)	7 (15.6)	
	Retired	16 (34.8)	12 (26.7)	
	Worker	2 (4.3)	3 (6.7)	
	Housewife	9 (19.6)	19 (42.1)	
	Disabled	0 (0.0)	1 (2.2)	
Residence	Urban	37 (80.4)	38 (84.4)	.61
	Rural	9 (19.6)	7 (15.6)	
		Mean ± SD	Mean ± SD	
Age (years)		56.32 (12.13)	60.84 (11.32)	.07

**Table 3** Comparison of Mean, SD, and Mean Difference of Self-Care Before and After Intervention Between 2 Groups

Groups	Pretest Mean (SD)	Posttest Mean (SD)	Mean Difference Mean (SD)
Intervention	34.57 (9.0)	42.57 (6.7)	8.00 (4.97)
Control	32.44 (8.6)	33.40 (8.3)	0.34 (0.84)
Independent sample <i>t</i> -test	<i>t</i> = 1.18 <i>P</i> = .024	<i>t</i> = 5.68 <i>P</i> = .001	<i>t</i> = -7.65 <i>P</i> = .001

Furthermore, based on the results presented in Table 4, findings from the repeated-measure ANOVA showed that time was effective in the changes of self-care mean scores ( $P < .001$ ), and the interaction between time and treatment was significant ( $P < .001$ ). In other words, there is a significant difference between intervention and control groups in terms of mean scores of self-care.

## Discussion

This study aimed to determine the effect of guided reflection on the self-care of patients undergoing CABG. The following findings are related to the hypotheses and are discussed. In the present study, in the intervention group, guided reflection improved self-care compared to the control group. In other words, guided reflection self-care training improved participants' disease and health 4 weeks after surgery.

Based on the results, the mean scores of self-care in participants of intervention and control groups were ( $M = 34.57$ ,  $SD = 9.0$ ) and ( $M = 32.44$ ,  $SD = 8.6$ ), respectively (out of 60). In line with the current findings, the study's results by Khodaminasab et al<sup>22</sup> showed that the self-care of individuals undergoing coronary angioplasty was moderate using the same self-care scale. Other previous studies revealed that

**Table 4.** Comparison of Outcome Means in 2 Periods of Time Separately and Simultaneously in Intervention and Control Groups

Groups	Pretest Mean (SD)	Posttest Mean (SD)	P
Intervention	34.57 (9.0)	42.57 (6.7)	<i>t</i> = 11.40
Control	32.44 (8.6)	33.40 (8.3)	<i>P</i> < .001
Repeated-measures result	Mean square	F	
Time	2554.52	312.33	<.001
Group	1591.53	194.59	<.001
Time × group	1591.53	194.59	<.001

the levels of self-care were at moderate levels among patients undergoing CABG.<sup>6,25</sup>

Consistent with the findings of the present study, the results of the study of Fearon–Lynch et al<sup>20</sup> showed that guided reflection had a significant effect on self-care and awareness among patients with diabetes. Also, the results of Sethares et al<sup>17</sup> study revealed that guided reflection intervention had a significant effect on self-care maintenance and management enhancement among patients with heart failure. The present study is consistent with the self-care theory for chronic illness. One of the assumptions of this theory is that self-care occurs in a dynamic setting, and the patient needs decision-making and reflection skills to make the right choice and perform the desired self-care activities. Moreover, reflection is an essential component of this theory, and the depth of reflection action affects self-care outcomes. Active engagement in reflection is critical at every stage of self-care.<sup>26</sup> In any given experience, after recognizing the symptoms, individuals may come up with different interpretations of the event to assess the situation, draw conclusions about what is happening, and develop an action plan for dealing with current or future situations. In this context, reflection is conceptualized, and the reflection cycle is applied by Gibbs<sup>23</sup> to guide the patient's thinking in making decisions during self-care. The content of the present study is based on special self-care for patients undergoing CABG. Health education models also can be used to explain this finding.<sup>27</sup> According to the BASNEF model (Beliefs, Attitudes, Subjective Norms, and Enabling Factors), people may not have a positive attitude toward a particular health behavior despite having enough knowledge. This means that if a person has obstacles in performing a health behavior function, he will not do so despite a positive attitude and high knowledge.<sup>28</sup> The cycle is designed to ask questions in the guided reflection method. The patient first learns about the behavior and action to be performed, then talks about it, and suggests personal solutions, and, if necessary, the nurse suggests solutions to the barrier (enabling factors). Providing patient management solutions and discussing them increases the patient's sense of control and self-efficacy. In addition, patients and health-care providers get familiar with problems and obstacles of self-care behavior and solutions offered. In addition, a similar process was used in telephone follow-ups, which increased self-care.<sup>29</sup> It should be kept in mind that patients' self-regulation in their behavior may be related to their cognitive background, such as metacognition,<sup>30</sup> which can be confirmed by experimental research.<sup>31</sup> So it is recommended to consider the participants' cognitive background in future studies.

Other effective interventions have been performed to promote self-care in patients with cardiovascular disease. For example, the study by Tawalbeh et al<sup>21</sup> showed that cardiac education had improved self-care behaviors and knowledge about heart failure. Also, the results of previous research by Al-Sutari et al<sup>32</sup> showed that administrating the educational program significantly improves self-care maintenance, self-care management, and health outcomes in individuals with heart failure. In addition, other kinds of interventions include peer support,<sup>33</sup> cognitive-behavioral interventions,<sup>31</sup> illness perception correction-based educational program,<sup>34</sup> health promotion model-based educational program,<sup>27</sup> and temporal self-regulation theory-based program.<sup>35</sup>

The results obtained from the present study showed that the use of guided reflection may have a positive effect on self-care in patients undergoing CABG. It means that this educational method can be used to improve patients' health after surgery. This method was cost effective, had no side effects, and could be used in future research. Since this study was conducted in a medical center in the north of Iran, the generalizability of the results has been limited to other contexts.

Different psychological characteristics, differences in patients' interpersonal interactions, motivation, and personal differences in the studied units can affect self-care capacity and medication adherence. The control of these conditions was beyond the researcher's ability. It is suggested that the present intervention be carried out in different cultures or even in patients with other chronic diseases in whom self-care is very important.

## Conclusion

The results obtained from the present study showed that guided reflection has a potentially positive effect on self-care improvement in patients undergoing CABG. It means that this educational method can be used to improve patients' health after surgery. This method was cost-effective, had no side effects, and could be used in future research.

**Ethics Committee Approval:** Ethical committee approval was received from the Ethics Committee of Shahrood University of Medical Sciences (Approval no: IR.SHMU.REC.1399.101, Date: September 6, 2020).

**Informed Consent:** Written and verbal informed consent was obtained from the participants who agreed to take part in the study.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept – E.M., M.A., H.E.; Design – M.A., A.M.H.G., S.S.T., H.E.; Supervision – A.M.H.G., H.E.; Resources – A.M.H.G., S.M.; Materials – E.M., M.A., A.M.H.G., S.M.; Data Collection and/or Processing – E.M., M.A., A.M.H.G., S.M.; Analysis and/or Interpretation – S.S.T.; Literature Search – E.M., M.A., A.M.H.G., S.M.; Writing Manuscript – E.M., M.A., A.M.H.G., S.M., H.E.; Critical Review – M.A., A.M.H.G., S.M., H.E.

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