Original Article

Smoking cessation: Adherence based on patients' illness perception after coronary artery bypass grafting surgery

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ABSTRACT

Background: Coronary artery bypass grafting surgery (CABG) is a common treatment for coronary artery disease. The patient's commitment to modify risk factors is necessary to achieve the desired after surgery outcomes. The current study aimed at determining illness perception of patients after CABG, its relation to smoking cessation, and detecting other predictors of smoking cessation.
Methods: The samples of the current cross sectional study were selected from a greater study that was done on patients' adherence determining for 6 months after CABG surgery. Data collection was performed using a telephone questionnaire with 3 sections: personal and social information, smoking cessation, and illness perception. Data analysis was performed via descriptive statistics, independent t test, and multiple logistic regression analysis through SPSS version 16.
Results: The findings showed that 26.6% of the patients had not stopped smoking for 6 months after CABG, and the mean score of illness perception was 83.28 ± 6.11. The relationship between adherence to smoking cessation and illness perception was not significant. Regression logistics via backward selection to detect factors related to smoking cessation adherence after CABG showed only a lack of hypertension history could predict adherence to smoking cessation (OR = 0.199, P = 0.03).
Conclusions: Based on the results, about one-third of the subjects smoked cigarettes after CABG; therefore, it is critical to plan rehabilitation programs regarding smoking cessation after this surgery.
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1. Introduction

Coronary artery disease (CAD) is one of the main reasons for referral to medical centers in developed and developing countries.[1] Coronary artery bypass grafting surgery (CABG) is a common surgery for CAD,[2] and it is performed more than 8 million times per year worldwide. The surgery is performed more than 3000 times each year at Tehran Heart Center, Iran.[3] CABG is the last resort to decreasing signs and symptoms of CAD treatment, but this approach cannot stop the process of arthrosclerosis and the reduction in the diameter of the coronary arteries.[4] If patients control high-risk behaviors like smoking; however, they will control the progress of their disease.[5]

Smoking cessation is one of the most important factors to prevent CAD.[6] Smoking can increase the rate of myocardial infarction several folds in patients with cardiovascular diseases.[7] Many studies showed that smoking after CABG could increase the risk of CAD recurrence, potentially leading to pulmonary complications, myocardial infarction, the disturbances of wound healing, hospital readmission, and even death.[8–10] Many of studies showed that smoking might predict serious post-operative complications after CABG.[11,12] CABG complications in patients who smoke occur more frequently than in the ones who do not smoke after surgery.[13] For this reason, care teams advise smoking cessation for patients who undergo CABG.[14]

Many factors influence smoking cessation after CABG, including illness perception[15] and personal and social variables.[16,17] 'Illness perception' is referred to the beliefs that patients construct about the characteristics of their illness.[18] The illness perception of patients with CAD is considered a predictor of their functional status, returning to work, and depressive symptoms.[18] Actual perception of the disease can predict patients' behavior after CABG[19] and appropriate health beliefs such as perceived seriousness of illness, and efficacy of treatment can predict better compliance.[20] Researchers indicate that patients' perception of illness influences their coping responses, wellness, and adherence

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to healthy lifestyles.[18] If patients have a deep understanding of their health status and recognize the effects of the disease, they may modify improper behaviors such as smoking and improve their compliance with cardiac rehabilitation programs.[18,21] Return to smoking after CABG may be related to poor understanding of the disease. Though it was said above, good perception of the illness may help patients improve self-care behavior. Then, the current study aimed at determining the level of adherence to smoking after CABG and detecting the most important predictors of it.

2. Methods

The current study had a cross sectional design and was a part of a large research project conducted to determine the patients' adherence to smoking after CABG. The patients who referred to an educational medical center underwent CABG surgery at least 6 months prior to data collection for the current study. Sample size was not determined for the current study because the subjects were the samples of a greater project conducted on adherence to smoking after CABG. The study assessed the level of adherence to smoking in 217 patients 6 months after their CABG. The sample size was calculated for that greater study based on Nahapetian et al. study[17] findings about adherence after CABG (0.17%) with power 90% and 95% level of significance; thus, the sample size was determined 217 patients after CABG. From 217 patients, 94 patients who had the history of smoking before the surgery were studied in this step. Data collection was conducted from the April 01 to June 31, 2013. The inclusion criteria were the absence of psychological drug use based on medical records, and a lack of any history of additional cardiac surgery. Ninety-four patients with a history of smoking before CABG were enrolled into the study after providing verbal consent. The data had to be collected through telephone interviews because the educational and medical center where data collection was conducted did not have a rehabilitation setting, and patients did not come to the center after discharge. We called all samples by phone. Patients' phone numbers were found in hospital registry system of surgical patients. By the way, the phone number of patients who had CABG surgery were found from 6 months before our gathering data time. One of the research team called 453 phone numbers, but 208 patients did not agree to participate in our study, 10 patients died, 11 patients were not orient to answer to our questions based on their family's expression. 5 of the patients did not speak in Persian and 2 of them were admitted in hospital for other health problems. Finally, 217 patient, 94 of whom had smoking history before CABG, agreed with participation in our study.

The questionnaire used in the current study consisted of 3 sections. The first section was designed to provide personal and social information. The second section consisted of questions to determine adherence to smoking cessation after CABG. Based on this tool, if patients smoked even one cigarette a day after CABG, they were categorized as being non-adherent.[17] The third section was about illness perception based on Weinman et al.'s tool,[22] which had 26 items of illness perception, each based on a 5-option Likert scale." *My illness is a serious condition*"," *My illness will improve in time*"," *My illness will last for a long time*" and "*My treatment will be effective in curing my illness*" are the examples of this questionnaire items. If a patient achieved scores above the mean score of the questionnaire, his/her illness perception was categorized as desirable. Psychometric study was not conducted on the Persian version of the tool. Two experts in the Persian and English languages translated and retranslated all items of the questionnaire, and it was, then, sent to 12 experts in cardiac nursing to obtain their views to calculate the content validity index (CVI) and content validity ratio (CVR). The scores of the CVI and CVR for all items were 78% and 100%, respectively except one item

"*heart problem will last short time*" that its score was lower than 70%. The Kappa coefficient value for smoking adherence tool was 1, and the correlation between answers of 15 participants in a pilot study after testing and retesting was 0.96 for the illness perception questionnaire.

Data analysis was done via descriptive statistics, Chi2 and independent t tests, and multiple logistic regressions by SPSS version 16. P value <0.05 was considered significant, and all variables with P values <0.2 were enrolled in the regression model. Odds ratios and 95% confidence interval (CI), as well as the exact P values were reported.

3. Results

The profile of the participants is shown in Table 1. Other findings showed that 26.6% of the participants started smoking 6 months after CABG. They were about one-third of the study subjects. In addition, about half of the subjects were more than 58 years old (57.93 ± 9.47), and the mean score of illness perception was 83.28 ± 6.11. This finding showed that nearly all of the samples had good perception about their illness; however, about one-third of them continued their smoking behavior after the surgery.

The other findings showed that there was no significant relationship between the adherence to smoking cessation and illness perception, but the mean score of illness perception in the samples who had adherence to smoking cessation was higher than that of the samples who did not have such adherence. All variables that their relationship to smoke adherence were in $p < 0.2$ significant level (sex, hypertension history, monthly income, living in rural or urban area), were entered in regression logistic model. Regression logistics via backward selection to detect factors related to smoking cessation adherence after CABG showed only a lack of hypertension history could predict adherence to smoking cessation (OR = 0.199, P = 0.03) (Table 2); therefore, lack of hypertension history can predict patients' adherence to smoking cessation.

4. Discussion

Based on the results of this study about one- third of patients were smokers before admitted for CABG and about one- third of them continued smoking after CABG. The subjects of the current study were patients that participated in a big research project that investigated one-year adherence to smoking cessation after the surgery. The current study recruited the patients who had smoking history before CABG. In Iranian culture, frequency of smoking pattern is higher in males than females; thus, consistent with this culture, in the current study the smoking frequency was higher in males than females. This finding is similar to findings of a study done in 22 areas in Europe, which frequency of smoking in men was greater.[23] A study, which was done to examine the readiness of coronary heart disease patients for smoking cessation across Europe, showed that about one-fourth of patients had no intention of quitting.[24] Other findings indicated that the majority of subjects lived with their families, which was regular because their mean age was 57.93 ± 9.47 years and living with family and being married at this age is common in Iranian population. The results of the current study showed that about one-third of the subjects continued to smoke at least 6 months after the surgery. Furthermore, almost all the subjects had the desired perception about their health status. The data showed that the appropriate perception of health status was not enough to convince patients to modify their lifestyles after CABG. Even when patients knew that their health status was less than excellent, they continued to engage in high-risk behaviors. The findings of a study, which was done on physicians' perception of cardiovascular risk factors and adherence to prevention, showed only half of them used of this

Table 1

Distribution of subjects according to demographic factors.

Characteristics		Frequency	Percent
Age (year)	44≥	7	7.4
	64–44	65	69.1
	≥65	22	23.4
	Mean ± SD	57.93 ± 9.47	
sex	Male	89	94.7
	Female	5	5.3
Marital Status	Single	7	7.4
	Married	87	92.6
Educational level	Illiterate	25	26.6
	Following Diploma	50	53.2
	Diploma and Above	19	20.2
Family's History of Heart Disease	Yes	48	51.1
	No	46	48.9
Hypertension History	Yes	23	24.5
	No	71	75.5
Other Context Disease history	Yes	33	35.1
	No	61	64.9
Time of Operation	6 month≤	5	5.3
	6 month>	89	94.7
	Mean ± SD	9.62 ± 2.08	
Living Conditions	Alone	4	4.3
	With Others (Spouse and Children and Another Person)	90	95.7
Job	Jobless	36	38.3
	Employer	58	61.7
Residence Area	City	32	34
	Village	62	66

Table 2

Logistic Regression Analysis of Factors Associated with Adherence in Smoking Domain.

Predictors factors related to smoking cessation adherence	Beta	Standard error	df	Sig.	Expected (B)	0.95% Confidence. Interval for EXP(B)	
						Lower limited	Upper limited
Hypertension history	−1.616	0.782	1	0.039	0.199	0.043	0.921

guideline in their day working, although all of them said using this guideline was useful to prevent cardiovascular disease.[25] The findings of our study about patients' desire perception about their disease are not similar to results of the study done on Croatia's population perception about cardiovascular disease risk factors and prevention.[26] Certainly, the small sample size could have influenced the findings about the relationship between these factors, but even one patient who continues to engage in high-risk behavior after CABG can affect health system delivery.[27] It is noteworthy that data collection of the current study was done through telephone interviews. This style may have influenced the findings, and it may be that the number of patients who did not quit smoking was actually higher than revealed in the study findings. It seems that designing programs to explain the importance of discontinuing high-risk behaviors after CABG can be useful.

Educational programs should be conducted immediately after the surgery, while patients remain in the hospital change patients' views about the role of lifestyle on their health status. Patrick's findings about the perception of illness and cardiovascular disease risk factors in patients with diabetes showed that despite the fact that patients had the desired illness perception, nearly two-thirds of them still continued smoking.[28] Also, findings of a study by French showed that illness perceptions did not significantly predict attendance at cardiac rehabilitation.[29] But, another study showed that illness perception was an independent predictor for adherence to smoking.[20] Smoking is a bad habit and breaking it needs perseverance; furthermore, maybe changing this habit is difficult for such patients after CABG. Educational programs suggested smoking cessation after CABG may not be applicable for patients

with addiction to cigarettes. It seems that other interventions like participation of such patients in timely rehabilitation programs are needed to have them break their undesired habits.

The current study was conducted in a hospital that did not have a rehabilitation setting; thus, patients did not return to the hospital after discharge. Many of them may continue their high-risk behaviors; hence, there was no control system or rehabilitation program. This point was similar to the findings of Nahapetyan et al., which showed that patients continued their previous behaviors because they were not provided with a rehabilitation setting after CABG.[17]

Regression model demonstrated that the only predictor of adherence to smoking cessation was the lack of a history of hypertension. Perhaps patients with a history of hypertension think that even with smoking cessation, their health status will not recover. Designing an educational program for such patients, while they are still in the hospital and being followed up with them as part of a rehabilitation program after discharge, can help them quit their high-risk behaviors.

5. Conclusions

It seemed logical that as about 94% of the current study subjects had the desired illness perception, they would quit smoking cigarettes after the surgery, but the current study findings did not confirm it. Even though they participated in patients' educational programs on smoking, about one-third of the subjects continued this high-risk behavior after the surgery. It might be beneficial to follow up the patients after discharge for a period of time. Then, it is necessary to plan rehabilitation programs specifically for the

post-CABG period. By planning follow-up and rehabilitation programs, nurses can help such patients to improve their adherence to smoking cessation. Finally, it is noticeable that the whole patients who we called were 453, but 208 of them did not respond; thus, we do not know if the characteristics, including sociodemographic, of non-respondents are equal to those of respondents or not. This point has effects on generalizability of our findings.

Conflict of interest

The authors declared that they had no competing interests.

Acknowledgement

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