

The Effect of Individual and Group Education Done by Nurses on Smoking Dependency and Smoking Cessation Motivation in Patients with Coronary Artery Disease

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Original Article

Abstract

Background: This study was carried out to reveal the effect of individual and group education done by a nurse on smoking dependency and smoking cessation motivation in patients with coronary artery disease (CAD).

Methods: The present randomized controlled trial study was conducted in Iran. A total of 255 patients were randomly divided into three groups: 1) individual education, 2) group education, and 3) control. Data were collected using the Fagerstrom Test of Nicotine Dependence (FTND) and Smoking Cessation Motivation Questionnaire (Q-MAT) one time before the intervention and two times after intervention (1st and 3rd months).

Findings: The mean scores of motivation for smoking cessation and smoking dependency in patients in the individual and group education were significantly better than the control group after the intervention (1st and 3rd months) ($P < 0.05$). Although there was no significant difference in the mean scores of smoking cessation motivation and smoking dependency in patients in the individual education and group education groups after education, the status of the patients in the group education was slightly better.

Conclusion: Education by nurses might have a significant impact on smoking cessation motivation and smoking dependency in patients with CAD. Further studies are recommended.

Keyword: Nurses; Health education; Heart diseases; Smoking cessation

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Introduction

According to the report of World Health Organization (WHO), the cause of 81% of deaths was chronic contagious diseases in Iran in 2017,¹ among which cardiovascular diseases (CVDs) can be mentioned. The most common type of heart disease is coronary artery disease (CAD). Based on a report in 2009, the prevalence of coronary heart disease (CHD) has been stated to be around 22% in Iran.² This disease has been significantly increasing in developing and less developed countries in recent years.³ Like everywhere in the world, CAD is the leading cause of death in Iranian population.⁴

Smoking is one of the main risk factors for CAD development.⁵⁻⁷ According to the WHO, more than 1.1 billion people worldwide are smoking, which causes more than seven million deaths a year.⁸ Although this rate has declined in the world, the evidence shows that the number of smokers in African countries and the Eastern Mediterranean region is increasing.⁹ The results of a study in 2016 showed that approximately about 24% of Iranian adults in some areas smoked cigarettes.¹⁰ Based on the report of WHO relating to tobacco, Iran is among the top eight countries in the world that have taken the most actions to reduce smoking.¹ In a report provided by the Iranian Ministry of Health to the WHO, actions which have been taken to reduce smoking are pointed out. These actions are an increase in cigarette taxes, extensive display advertising to reduce smoking, prohibition of cigarette advertising in the media, and anti-tobacco campaigning.¹

Considering the significant negative effects of smoking on individuals' health and economy, it is necessary to take the essential actions to improve their behavior relating to smoking. For smoking cessation in smokers, main interventions include: 1) using medication such as nicotine in form of gum, patch, lozenge, nasal spray or inhaler, bupropion hydrochloride, and varenicline tartrate to decrease nicotine reinforcement and withdrawal from nicotine and 2) behavioral counseling to increase motivation and support attempts to cessation.^{11,12} One of the effective methods is nurses' education and behavioral counseling. In 2002, Bolman et al. studied the effect of a short-time bedside consultation by nurses on smoking cessation in patients with heart diseases. The results of the study showed

that this type of consultation had a significant impact on smoking cessation in this group of patients.¹³ The results of another study in the Netherlands showed that face-to-face counseling education, done by a nurse, had a significant impact on smoking-related behaviors among cardiac patients in a short period.¹⁴ Studies in Iran on nurses' role in smoking cessation is very limited. In one study, Varaei et al. examined nicotine replacement therapy (NRT) versus nursing face-to-face counseling on smoking cessation in 60 patients who were candidates for cardiac surgery. The results of their study revealed that face-to-face counseling by nurses was more effective compared to NRT in smoking cessation.¹⁵

Patient education can be done individually or in a group by a nurse to improve health-promoting behaviors. The results of these two approaches can be different in health-promoting behaviors associated with smoking. To the best of our knowledge, there is no study evaluating the effects of these two approaches, especially in a sample of patients with CAD. Therefore, the present study was carried out with two aims: A) to evaluate the effects of individual and group education done by a nurse on smoking dependency and smoking cessation motivation in patients with CAD and B) to compare individual and group education on smoking dependency and smoking cessation motivation in patients with CAD.

Methods

The present experimental study was a randomized controlled trial that was conducted in Iran in 2017. The study was carried out in Bu-Ali Sina Hospital, Qazvin, Iran. The hospital is a teaching hospital with two internal female and male cardiology wards and two female and male coronary care units (CCU). The permission for the study was obtained from the Research and Technology Department of Qazvin University of Medical Sciences. The necessary coordination for conducting the study was done with the hospital administrator and the head nurses of each ward.

Samples, sampling, and randomization: The required sample was considered to be 85 in each group, based on the sample size formula with 95% confidence factor and 80% strength.

$$n = \frac{(z_{1-\alpha/2} + z_{1-\beta})^2 * [p_1(1-p_1) + p_2(1-p_2)]}{(p_1-p_2)^2}$$

Patients over 20 years of age, having CAD diagnosed by a specialist physician, being a smoker, having no psychiatric disorder (based on patient records), and with the possibility to make a phone call were included in the study. The exclusion criteria were participation in cigarette smoking education sessions in other centers, having NRT, a physician's disapproval due to the patient's clinical status, being deaf, or having hearing loss. Considering the inclusion criteria, the patients were randomly divided into three groups that included two intervention groups and one control group. The researcher then used three types of colored cards (85 cards for each group) in order to select the samples randomly. Each card represented the type of group. After putting the cards in an unclear box, the participants were asked to pick one card. After picking the card and determining the group, the card was discarded. This was done by one of the cardiac nurses who were not aware of the study and continued until the last card was selected.

Educational intervention

Individual education: The intervention included two sessions of smoking cessation education done by a nurse who was trained in smoking cessation in the second day of hospitalization (all educational sessions were performed by the same nurse). The nurse had ten years of experience in caring for cardiac patients. She was trained by three nursing faculty members and one psychologist for smoking cessation. The education was carried out in a special room in the hospital. The training time was 20 minutes per session. In this group, the instruction was given using laptops, verbal teaching, and a short clip about the detriments of cigarette smoking. Educational content included an introduction, statistics of smokers, detriments of cigarette smoking, the effects of smoking on the cardiovascular system and on other body systems, the importance of smoking cessation, the consequences, and the side-effects of smoking. Educational contents were prepared by the research team (three faculty members and one master student) from current evidence about smoking. Educational contents used were assessed and validated by more than five faculty members of the School of Nursing and Midwifery, Ardabil University of Medical Sciences, Ardabil, Iran. At the end of each educational session, the researcher answered the questions of the participants.

Group education: The intervention included two sessions of smoking cessation education done by a nurse trained in smoking cessation in the second day of hospitalization (all educational sessions were performed by the same nurse). The nurse had ten years of experience in caring for cardiac patients. She was trained by three nursing faculty members and one psychologist for smoking cessation. The education was carried out in a special room in the hospital. The duration of education was 30-40 minutes per session. Each group included 2-4 patients. At the beginning of each session, the participants shared their opinions, beliefs, and experiences with others and expressed their thoughts with reason and rationale. In this group, the instruction was given using laptops, verbal teaching, and a short clip about the detriments of cigarette smoking. Educational content included an introduction, the statistics of smokers, detriments of cigarette smoking, the effects of smoking on the cardiovascular system and on other body systems, the importance of smoking cessation, the consequences, and the side-effects of smoking. Educational contents were prepared by the research team (three faculty members and one master student) from current evidence about smoking. Educational contents used were assessed and validated by more than five faculty members of Ardabil School of Nursing and Midwifery. At the end of each educational session, the researcher answered questions of the participants.

Control group: Patients in this group did not receive any specific education and they only received routine care and education. In our hospital, cardiac patients did not usually use to receive special education or consultation for smoking secession.

Data collection and instrument: The researcher distributed the questionnaires three times: one time before the intervention at the hospital and two times after hospital discharge (1st and 3rd months). After completing the questionnaire, the participants were asked to inform the researcher to receive the questionnaires 1 and 3 months after the education by making a phone call or sending a message.

The questionnaire consisted of three parts. The first part consisted of demographic data (including age, gender, marital status, education level, economic status, a history of cardiac diseases, underlying diseases, and employment

status); the second part was the “Fagerstrom Test of Nicotine Dependence” (FTND) questionnaire.¹⁶ This questionnaire has six questions computing a score ranging from 0 to 8. Scores 1 to 2 indicate a low affinity, scores 3 to 4 indicate a low to moderate affinity, a score of 5 indicates a moderate affinity, and a score of 8 or higher indicates a high affinity. This questionnaire was translated into Persian in previous studies in Iran, and its validity and reliability were determined to be desirable.¹⁷ The third part was the “Smoking Cessation Motivation Questionnaire” (Q-MAT) developed by Aubin et al. in 2004.¹⁸ This questionnaire has four questions, and the scoring for questions 1, 2, 3, and 4 is 0 to 8, 0 to 3, 0 to 6, and 0 to 3, respectively. The total score is in the range of 0 to 20. A score of 0 to 6 indicates a low motivation and a score of more than seven represents a moderate to high motivation. The Persian version of this questionnaire was not available; therefore, the English version was translated into Persian by two translators. Then, it was reinstated in English. The questionnaires were compared, and the final version was used for face and content validity, and its validity was determined to be desirable. The reliability was also determined using Cronbach's alpha, and after completing the questionnaire by 30 cardiac patients, its reliability was determined to be 0.80.

Based on the normal distribution of data according to Kolmogorov-Smirnov test, parametric tests such as chi-square test, paired t-test, independent t-test, and one-way analysis of variance (ANOVA) were used. P-values less than 0.05 were considered significant in all tests. For data analysis, SPSS software (version 16, SPSS Inc., Chicago, IL, USA) was used.

To conduct this study, the necessary permission was obtained from the Research and

Technology Department of Ardabil University of Medical Sciences (ethics code: IRARUMS.RES.1395.121). The participants participated in the study voluntarily after receiving sufficient information on the objectives and methods of the study. The participants' informed consent was sought and received. The data were collected in special packages and the necessary steps were taken to analyze them. Participants were told that it was not necessary to write their names on the questionnaires.

Results

A total of 255 patients accepted to participate in our study (84 patients in the individual education group, 86 patients in the group education group, and 85 patients in the control group). In all wards studied, 252 patients were men (98.8%) and three patients were women (1.2%). Participants in all three groups did not differ in terms of demographic variables (Table 1).

Smoking cessation motivation (before intervention): The mean scores of smoking cessation motivation in the control, individual education, and group education groups were 9.40 ± 7.70 , 8.50 ± 2.30 , and 8.87 ± 2.40 respectively. The finding revealed that there was no significant difference in the mean score of smoking cessation motivation in the control, individual education, and group education groups before intervention ($P = 0.30$). Comparison of mean scores within groups three times is shown in tables 2 and 3.

Smoking cessation motivation (1 month after the intervention): At this time, the mean scores of smoking cessation motivation in the control, individual education, and group education groups were 8.76 ± 2.90 , 13.52 ± 2.58 , and 13.45 ± 2.58 , respectively.

Table 1. Patients' demographics characteristics

Item	Group education	Individual education	Control	P
Age (year) (mean \pm SD)	53.46 \pm 10.45	53.89 \pm 12.80	55.65 \pm 12.70	0.54
Sex [n (%)]	Men	85 (100)	83 (97.5)	0.30
	Women	0 (0)	2 (2.5)	
Marital status [n (%)]	Married	82 (96.5)	83 (97.5)	0.30
	Single	3 (3.5)	2 (2.5)	
Education level [n (%)]	Illiterate	14 (16.5)	18 (21.5)	0.21
	Lower than diploma	50 (59.0)	42 (49.5)	
	Diploma	17 (20.0)	12 (14.5)	
History of opioids use [n (%)]	Higher education	4 (4.5)	12 (14.5)	0.38
	Yes	50 (59.0)	46 (54.0)	
	No	35 (41.0)	39 (46.0)	

SD: Standard deviation

Table 2. Comparison of mean score of smoking cessation motivation within groups in three times

Group	Before intervention	One month after intervention	Three months after intervention	P
Individual education	8.50 ± 2.30	13.52 ± 2.58	13.75 ± 2.80	< 0.001
Group education	8.87 ± 2.40	13.45 ± 2.58	13.30 ± 2.70	< 0.001
Control	9.40 ± 7.70	8.76 ± 2.90	8.18 ± 3.33	> 0.050

In individual and group education groups, significant differences were found between before intervention with one (P < 0.001) and three months after intervention (P < 0.001). However, the differences in mean scores between one and three months after intervention were not significant (P > 0.05)

The findings revealed a significant difference in the mean score of smoking cessation motivation in all three groups (P < 0.001). The results of the post hoc test revealed a statistically significant difference in the mean score of smoking cessation motivation between the individual education group and the control group (P < 0.001). There was also a significant difference between the group education group and control group (P < 0.001). The results of this test did not show a significant difference between group education and individual education. However, the mean score in the group education was slightly higher (P = 0.86). Comparison of mean score within groups three times is provided in tables 2 and 3.

Smoking cessation motivation (3 months after the intervention): The mean scores of smoking cessation motivation in the control, individual education, and group education groups were 8.18 ± 3.33, 13.75 ± 2.80, and 13.30 ± 2.70, respectively. The findings revealed a significant difference between these groups in the terms of the mean score of smoking cessation motivation (P < 0.001). The results of the post hoc test showed that there was a statistically significant difference in the mean score of smoking cessation motivation between individual education and control groups (P < 0.001). There was also a significant difference between the group education and control groups (P < 0.001). The results of this test did not show a significant difference between group education and individual education. However, the mean

score in group education was slightly higher (P = 0.39). Comparison of mean score within groups three times is shown in tables 2 and 3.

Smoking dependency (before intervention): The mean score of smoking dependency in the individual education group, group education group, and control group was 7.69 ± 5.50, 7.44 ± 1.37, and 7.96 ± 1.53, respectively. The results of one-way ANOVA showed no significant difference in the mean score of smoking dependency in the control group, individual education group, and group education group before intervention (P = 0.19). Comparison of mean score within groups three times is provided in tables 2 and 3.

Smoking dependency (1 month after the intervention): The mean scores of smoking dependency in the individual education group, group education group, and control group were 7.75 ± 1.90, 6.32 ± 0.99, and 6.30 ± 0.81, respectively. The results of one-way ANOVA manifested a significant difference in the mean score of smoking dependency in all three groups (P < 0.001). Based on the results of the post hoc test, the mean scores of smoking dependency in the individual education group and group education group were significantly higher than the control group; however, this difference was not significant. The mean score in the group education group was slightly higher (P = 0.90). Comparison of mean scores within groups three times is depicted in tables 2 and 3.

Table 3. Comparison of mean score of smoking dependency within groups in three times

Group	Before intervention	One month after intervention	Three months after intervention	P
Individual education	7.44 ± 1.37	6.32 ± 0.99	6.40 ± 0.90	< 0.001
Group education	7.96 ± 1.53	6.30 ± 0.81	6.30 ± 1.07	< 0.001
Control	7.69 ± 5.50	7.75 ± 1.90	7.72 ± 1.27	> 0.050

In individual and group education groups, significant differences were found between before intervention with one (P < 0.001) and three months after intervention (P < 0.001). However, differences in mean score between one and three months after intervention were not significant (P > 0.05)

Smoking dependency (3 months after the intervention): The mean scores of smoking dependency in the individual education group, group education group, and control group after the second evaluation were 7.72 ± 1.27 , 6.40 ± 0.90 , and 6.30 ± 1.07 , respectively. The results showed a significant difference between these groups in terms of the mean score of smoking dependency ($P < 0.001$). Results also showed that the smoking dependency scores in the individual and group education groups were significantly higher than the control group, but there was no significant difference between the patients in the individual and group education groups; however, the mean score in the group education group was slightly higher ($P = 0.90$). Comparison of mean score within groups three times is shown in tables 2 and 3.

Discussion

Smoking cessation is very important in the treatment and care of patients with cardiac diseases. The present study examined the effects of group and individual education done by a nurse on smoking dependency and smoking cessation motivation in patients with CAD. Based on the findings, patients' education done by a nurse plays a significant role in the reduction of cigarette smoking dependency and increase of smoking cessation motivation 1 month and 3 months after receiving hospital educational intervention. The results also did not show a significant difference between the two types of education methods; however, the status was slightly better in patients who received group education.

Although no study has been conducted to examine the effects of group and individual education on cigarette smoking dependency and smoking cessation motivation in patients with CAD, previous studies showed somewhat similar results in other fields. A study was done by Bolman et al. on the effect of a short bedside intervention on smoking cessation in cardiac patients. Bolman et al. aimed to evaluate the effect of smoking cessation intervention and showed that in patients receiving intervention, there was a greater chance of smoking cessation 3 months after the intervention.¹³ Another study was conducted by Gies et al. on 68 hospitalized smoking patients. Patients in the intervention group received nursing education in addition to routine education. They showed that patients

receiving nursing education had a greater chance of smoking cessation 3 months after the intervention compared to those who did not receive education.¹⁹ Smoking cessation guidelines emphasize the important role of nurses in patient education.²⁰ Nurses are usually in close contact with patients and spend a lot of time with them; therefore, this provides an opportunity to educate them to promote their health in relation to smoking cessation. Furthermore, patients usually do not consume cigarettes while they are in the hospital environment, so this can provide an opportunity to educate them about smoking cessation as well. Nurses also provide holistic care. This makes the nurse consider all aspects of a patient at the time of education, which also increases the effectiveness of their education. It seems that international health organizations such as WHO need to pay more attention to the role of nurses in educating smokers and provide the required conditions for this group; as this study and other studies have demonstrated that education done by a nurse has significant effects on smoking behaviors.

The results of our study also revealed that group education in patients with CAD was slightly more effective than individual education although this was not significant. Groups of education were closed type in this study. In other words, the number of participants in the group was constant and no one was added to them. The benefits of this approach involve better communication between patients and creating strong social relationship between people in the group. Although no study evaluating the effects of individual and group education in cardiac patients has been found in our searches, there are limited studies in this regard on other patients. In a study conducted by Benson et al., different methods of education on smoking cessation behaviors were studied among people in different environments. They confirmed that the success of smoking cessation was higher in hospitals using group education methods.²¹ Researchers have proved numerous benefits of group education done by nurses, including cost-effectiveness in terms of time and payment due to lack of nurses and resource constraints, especially in developing and less developed countries.²² In this method, the members of the group also learn behaviors that they do not experience in individual

education, and most importantly, the positive reactions of individuals are higher in this way, leading to better insight and less resistance to behavioral change.²² However, regarding all the benefits of group education, nurses should consider the educational environment in choosing a type of education in relation to smoking-related behaviors. The present study was conducted on hospitalized patients. Some previous studies indicated that the environment might have an impact on the effectiveness of group education in a closed type of group. For instance, in a study in 2016, Benson et al. studied different methods of education about smoking cessation behaviors among people in different environments. They showed that group education in a closed type of group had the best effects on hospitalized patients, while this method had a lower impact on the community setting.²¹ Nurses should also receive the necessary education themselves in order to more effectively educate patients about smoking.

Conclusion

The current findings showed that the individual and group education done by a nurse could increase smoking cessation motivation and reduce smoking dependency. The findings can be useful for managers, planners, and nurses in order to have an effective education regarding smoking behaviors. Managers and planners should also provide the required conditions for nurses.

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Similar studies are recommended to be carried out due to the lack of them, especially in developing countries. Patients' follow-up in a longer period is also recommended in future studies. It is also suggested to measure patients' satisfaction in future research studies.

Limitations: In Iran, most smokers are men, and smoking is not commonplace in women in Iranian culture. Hence, most participants in this study were men; this makes the generalizability of the findings to women consuming cigarette difficult. Also, patients in intervention groups were not blinded, which might have affected their behavior.

Conflict of Interests

The authors have no conflict of interest.

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Designing protocol of study, data interpretation, manuscript writing: BD; Designing protocol of study, manuscript writing: NM; Data analysis, data interpretation: AB; Designing protocol of study, data collection, manuscript writing, data interpretation: AB.

All authors approved the final version of the manuscript before submission.

Authors' Contribution

The present study is a master's degree dissertation of a nursing student. The authors would like to thank all the participants in this study.

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بررسی تأثیر آموزش توسط پرستار به روش انفرادی و گروهی بر وابستگی به سیگار و انگیزه ترک سیگار در بیماران مبتلا به بیماری عروق کرونر

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مقاله پژوهشی

چکیده

مقدمه: پژوهش حاضر با هدف بررسی تأثیر آموزش توسط پرستار به روش انفرادی و گروهی بر وابستگی به سیگار و انگیزه ترک سیگار در بیماران مبتلا به بیماری عروق کرونر انجام شد.

روش‌ها: این مطالعه از نوع کارآزمایی بود و در بیمارستان بوعلی سینای قزوین انجام گردید. در مجموع، ۲۵۵ بیمار به طور تصادفی در سه گروه «آموزش فردی، آموزش گروهی و شاهد» قرار گرفتند. اطلاعات با استفاده از پرسش‌نامه میزان وابستگی به نیکوتین Fagerstrom (Test for Nicotine Dependence Fagerstrom یا FTND) و پرسش‌نامه (Smoking Cessation Motivation Questionnaire یا Q-MAT) جمع‌آوری گردید. اطلاعات قبل، ۱ ماه و ۳ ماه پس از مداخله آموزشی ثبت شد.

یافته‌ها: میانگین نمره انگیزه ترک سیگار و وابستگی به سیگار در بیماران گروه‌های آموزش فردی و گروهی در تمامی زمان‌ها بعد از مداخله (ماه اول و سوم) نسبت به بیماران گروه شاهد بهتر بود ($P < 0/05$). اگرچه اختلاف معنی‌داری در میانگین نمره انگیزه ترک سیگار و وابستگی به سیگار بین بیماران در گروه اول و دوم پس از آموزش در هر دو زمان وجود نداشت، اما وضعیت در گروه دوم اندکی در هر دو زمان در مقایسه با بیماران گروه اول بهتر بود.

نتیجه‌گیری: آموزش توسط پرستاران شاید بتواند تأثیر قابل توجهی بر انگیزه ترک سیگار و وابستگی به سیگار در بیماران مبتلا به بیماری‌های عروق کرونر داشته باشد که انجام مطالعات بیشتر در این زمینه توصیه می‌شود.

واژگان کلیدی: پرستاران؛ آموزش بهداشت؛ بیماری‌های قلبی؛ ترک سیگار

ارجاع: بادروح افسانه، مظفری ناصر، باریکانی آمنه، دادخواه بهروز. بررسی تأثیر آموزش توسط پرستار به روش انفرادی و گروهی بر وابستگی به سیگار و انگیزه ترک سیگار در بیماران مبتلا به بیماری عروق کرونر. مجله اعتیاد و سلامت ۱۳۹۹؛ ۱۲ (۴): ۷۷-۲۶۹.

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