International Cardiovascular *Research Journal*

www.ircrj.com

Cardiovascular Disease Knowledge among Cardiac Rehabilitation Patients in Eastern Iran: A Cross-Sectional Study

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ARTICLE INFO

ABSTRACT

Background: Cardiovascular Diseases (CVDs) are the major cause of mortality around the world. Knowledge about CVDs is an important subject in encouraging Cardiac Rehabilitation (CR) patients to make health changes related to their condition. However, it is still not clear how much knowledge Iranian patients have about such diseases.

Objectives: This study aimed to investigate CR patients' knowledge of CVDs in East of Iran.

Patients and Methods: This cross-sectional study was carried out on CR patients who had referred to a CR center in Mashhad, Iran between November 2016 and May 2017. A total of 161 patients were recruited using convenience sampling method. A reliable and valid questionnaire was used to assess the patients' knowledge. The data were entered into the SPSS statistical software, version 16 and were analyzed using descriptive and analytical statistics. $P < 0.05$ was considered to be statistically significant.

Results: The mean age of the patients was 54.12 ± 14.57 years (range: 19 to 74 years). Mean score of knowledge about CVDs was 40.66 ± 17.19. Most of the participants had a low level of knowledge about CVDs (52.8%). The results showed a significant difference between the mean scores of knowledge in different age groups ($P = 0.008$) and education levels ($P = 0.001$). Indeed, men had a higher level of knowledge in exercise ($P = 0.009$) and psychosocial risk subscales ($P = 0.012$).

Conclusions: The participants showed an insufficient level of knowledge about CVDs. Thus, appropriate training programs are recommended to improve such patients' knowledge of CVDs. The research findings also provided a sound and fundamental basis for future studies in this field.

1. Background

Cardiovascular Diseases (CVDs) are the major cause of mortality around the world. According to the latest available data, the mortality rate due to these diseases was about 17.7 million, accounting for 31% of all deaths worldwide in 2015 (1).

In Iran, the mean mortality rate of CVDs (among all causes of mortality taking into account age and sexual groups) was about 46% in 2014 (2). This measure is far more than that in developed countries and comparable to that in some Middle-Eastern countries (3, 4). Therefore, these diseases are considered to be the major health problems in Iran (4, 5). Although CVD patients' adequate knowledge plays an important role in prevention of these diseases (6), studies in other countries have suggested that cardiovascular patients do not have a good knowledge regarding their disease (7-10).

Up to now, few studies have specifically focused on the knowledge of patients with regards to CVDs in Iran (6, 11, 12). The results of these studies have revealed a low level of knowledge among ordinary citizens (12), women referring to health care services centers (11), and veterans and their spouses (6). Yet, CVD patients' knowledge is an important issue for encouraging clients to seek for and receive healthcare services (13). Health workers can also use this knowledge to change behavior, improve lifestyle, and eventually design and implement health promotion

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programs for their clients (14).

Despite the high prevalence of CVDs in Iran (2, 3), it is still not clear how much knowledge Cardiac Rehabilitation (CR) patients have about such diseases given the specific economic, social, and health conditions of the country, which is normally different from other societies.

2. Objectives

This study aimed to investigate CR patients' knowledge of CVDs in East of Iran.

3. Patients and Methods

This cross-sectional study was carried out on all cardiovascular patients referring to the CR department of Imam Reza Hospital in Mashhad, Iran between November 2016 and May 2017. The participants were selected using convenience sampling method. Based on a pilot study on 30 participants and using the following formula, a 161-patient sample size was determined for the study.

$$n = \frac{z^2 \times s^2}{d^2}$$

The patients with Coronary Artery Disease (CAD), Congestive Heart Failure (CHF), Percutaneous Coronary Intervention (PCI), Coronary Artery Bypass Grafting (CABG), and heart valve surgery were included in the study. However, the patients who were unwilling to participate in the research were excluded. At the beginning of the study, the research goals were explained to the participants.

The study data were collected using a questionnaire and a personal informational form. The personal information form included 9 items including information about the participants' age, sex, marital status, education level, weight, height, history of previous diseases, family history of heart disease, and smoking. The second instrument was the Coronary Artery Disease Education Questionnaire (CADE-Q II) that was first developed by Ghisi in Canada in 2015 (15). This questionnaire contained 31 multiple-choice questions including information about CVD patients' knowledge. The questionnaire included five subscales, namely medical condition, risk factors, exercise, nutrition, and psychosocial risk. The most correct answer gets a score of 3, the option that is somewhat correct gets a score of 1 and the options that are incorrect and/or 'I do not know' get a zero score 0. The total score of the entire questionnaire represented the participants' mean level of knowledge, with the minimum of 0 and maximum of 93. The total score was calculated based on 100%. Accordingly, ranks below 50%, 50 - 75%, and more than 75% were considered as low, moderate, and high knowledge levels, respectively.

CADE-Q II was translated into Persian using forward-backward method after correspondence with the original researcher and receiving authorization for using it in this research. In doing so, the original version was given to two bilingual translators (a cardiologist and a nurse) to be translated individually. Then, the translators and the principal researcher discussed the translated versions in a meeting and combined them into a single copy. The result was given to two cardiologists and the content validity of the instrument was reviewed and approved. In the next step, the Persian version of the questionnaire was back translated into English by two other translators separately. At the end of this phase, the resulting version was transformed into a single copy by two cardiologists. Then, at a meeting with the presence of the translators and the main researcher, the conceptual consistency of the resulting version with the original version was discussed and approved.

To verify the reliability of the questionnaire, the final Persian version was given to 30 participants in a pilot study and the results were analyzed. In this stage, the reliability of the instrument was approved with Cronbach's alpha of 0.70. In a more specific examination of the questionnaire, it seemed that three of the questions were not well understood by the majority of the participants. After fixing these errors, the reliability of the instrument reached 0.86.

The data were entered into the SPSS statistical software, version 16 (IBM Corp., Chicago, Illinois, USA) and were analyzed using descriptive statistics, ANOVA, independent t-test, and Pearson's correlation coefficient. P < 0.05 was considered to be statistically significant.

This study was conducted after obtaining permission from the Biomedical Ethics Committee of Torbat Heydariyeh University of Medical Sciences and after coordination with the research setting.

4. Results

This study was conducted on 161 patients (response rate: 94.7%). The mean age of the patients was 54.12 ± 14.57 years (range: 19 to 74 years) and 59.6% of the participants were male. Most of the participants did not have academic education (88.8%). Moreover, 57.1% of the patients had a family history of heart disease. In addition, 57.1% and 25.5% of the participants had normal Body Mass Index (BMI) and family history of heart disease, respectively. Besides, 87% of the participants had no history of smoking (Table 1).

Mean score of knowledge about CVDs was 40.66 ± 17.19. Most of the participants had a low level of knowledge about CVDs (52.8%) and only a small percentage had a high level of knowledge (6.8%) about these diseases (Figure 1).

The results showed that the patients' mean score of knowledge varied among different age groups. Accordingly, the patients aging below 40 years and those over 70 years of age had the highest and lowest knowledge scores, respectively (P = 0.008). The patients' mean scores of knowledge also differed in different education levels. In this regard, increase in the level of education was accompanied with increase in the mean scores of knowledge. In other words, patients with below diploma education levels had the lowest and those with higher than diploma levels had the highest mean scores of knowledge (P = 0.001). However, no significant difference was found between males and females regarding the mean score of knowledge (P = 0.108). Furthermore, the participants who were smokers had a higher mean score compared to non-smokers although this difference was not statistically significant (Table 2).

The results of ANOVA showed no significant difference between the patients with and without the previous history of diseases, such as diabetes, hypertension, and hyperlipidemia,

Table 1. The Participants' Demographic Characteristics and Smoking Status (n = 161)

Variables		
Gender		
Male	96	(59.6)
Female	65	(40.4)
Marital status		
Married	146	(90.7)
Single	15	(9.3)
Body mass index		
< 18.5	15	(9.3)
18.5 - 25	67	(41.6)
18.5 - 25	50	(31.1)
> 30	29	(18.0)
Previous disease history		
Diabetes	13	(8.1)
Hypertension	17	(10.6)
Hyperlipidemia	9	(5.6)
Anything	122	(75.7)
Family history of heart disease		
No	119	(74.5)
Yes	42	(25.5)
Smoking		
No	140	(87.0)
Yes	21	(13.0)
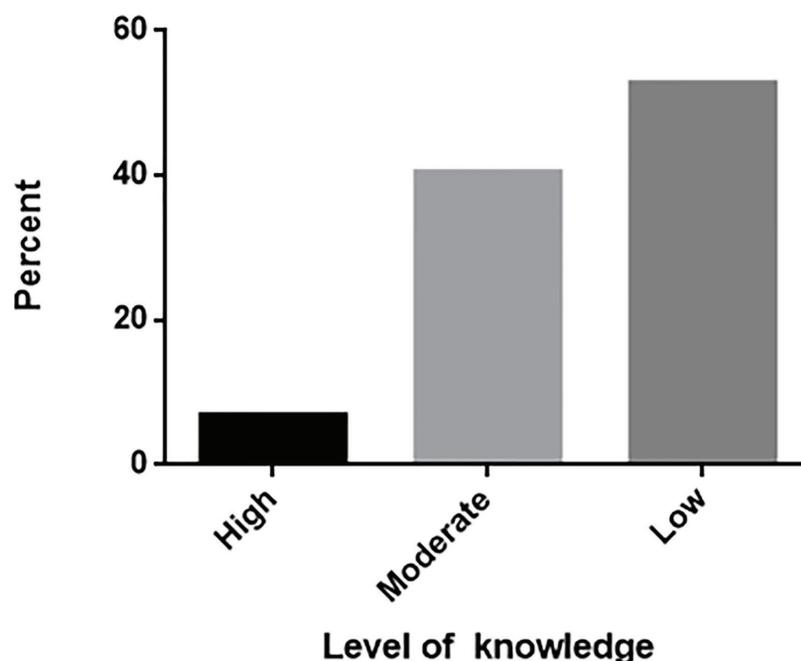
Figure 1. The Participants' Level of Knowledge about Cardiovascular Diseases

regarding their knowledge scores (P = 0.132). The results of independent t-test also indicated no significant differences between the patients with and without family history of the disease in this regard (P = 0.702).

The results revealed that men had a higher knowledge score in all subscales compared to women. However, this difference was only significant in exercise and psychosocial factors subscales (Table 3).

The results also indicated a significant weak inverse relationship between age and mean score of knowledge

about CVDs (r = −0.220, P < 0.009). This finding showed that older participants had lower knowledge levels.

5. Discussion

According to the findings, most of the participants had a low level of knowledge about CVDs, which is consistent with the results of some studies performed in this field (8, 10, 15, 16). However, Kopp et al. reported that patients had a moderate level of knowledge about CVDs (9).

In the present study, there was a significant difference

Table 2. Comparison of the Participants' Cardiovascular Disease Knowledge based on Some Demographic Characteristics and Smoking Status (n = 161)

Variables	Mean	SD	Significance
Age			F = 3.60, df = 4, *P = 0.008
< 40	48.50	18.84	
40 - 50	47.78	19.83	
50 - 60	45.62	17.75	
60 - 70	40.01	17.15	
> 70	29.43	17.99	
Level of education			F = 12.05, df = 2, *P = 0.001
< Diploma	39.44	17.91	
Diploma	39.46	16.61	
> Diploma	59.37	17.90	
Gender			T = 1.61, df = 159, **P = 0.108
Male	42.49	17.12	
Female	37.97	17.87	
Smoking			T = -1.94, df = 159, **P =0.05
No	42.61	19.27	
Yes	51.10	13.80	

* Analysis of variance (ANOVA), ** Independent samples t-test

Table 3. Comparison of Male and Female Participants' Knowledge of Different Subscales (n = 161)

Subscales	Male, Mean (SD)	Female, Mean (SD)	P value *
Medical condition	1.39(0.62)	1.38(0.62)	0.911
Risk factors	1.56(0.73)	1.49(0.73)	0.553
Exercise	1.79(0.83)	1.44(0.77)	0.009
Nutrition	1.83(0.74)	1.76(0.80)	0.606
Psychosocial risk	1.43(0.61)	1.21(0.41)	0.012

* Independent samples t-test.

between the two genders as well as between the patients with different education levels concerning the mean score of knowledge. In line with this finding, Amory et al. found a significant relationship between the level of knowledge of patients with different levels of education, marital statuses, and BMIs (17). However, our findings showed no significant relationship between the patients' mean score of knowledge and level of marital status and BMI, which might be due to the small number of single patients participating in the study.

Based on the results, men had a higher knowledge score compared to women, but this difference was not statistically significant. This finding is consistent with the results of the research by Saeedi et al. (18). However, some studies have indicated higher knowledge levels among women with a high risk of CVDs in comparison to men (9). This seems to be due to some cultural differences among societies as well as the varied attitude of men and women towards the disease. In the same vein, Vaidya et al. found that cardiovascular patients with insufficient knowledge of CVDs did not have a proper attitude toward their disease (10).

The current study findings showed a significant difference between the patients with various education levels regarding the mean score of knowledge. Accordingly, the lowest mean score belonged to the patients with lower-than-diploma education levels and the highest mean score to those with higher-than-diploma degrees. This finding is supported by the results of the study by Saeedi et al. (16).

The results of the present study showed no significant difference between the patients with and without the previous history of diseases, such as diabetes, hypertension, and hyperlipidemia, with respect to the mean score of knowledge. However, Kopp et al. demonstrated that patients with a history of heart disease in one of their family members had a higher level of knowledge about CVDs (9).

The present study findings also indicated that the participants who were smokers had a higher mean score of knowledge in comparison to non-smokers although this difference was not significant. This issue is considered as an unexpected finding and an important point in the present study. In fact, it does not seem that smokers unknowingly smoke cigarettes, which is a risk factor for CVDs. They seem to be doing it deliberately and consciously. Therefore, this point should be seriously taken into account in future pathology and in designing additional possible interventions.

In the present study, men had a higher knowledge score in all subscales compared to women, but this difference was significant only in two subscales; i.e., exercise and psychosocial risk. This could reflect the women's perspective regarding these two important factors. Therefore, these factors and women's attitude towards these issues in the context of Iran's socioeconomic climate should be further explored in later studies. Although this research assessed the knowledge of patients with CVDs and provided useful basic results, there are still question marks regarding the attitude and practice of these patients in the same context.

5.1. Study Limitations

The present study was performed in a university center, which may limit the generalizability of the results. The other limitation was that the questionnaire not validated before in Iranian context.

5.2. Conclusion

This study assessed CR patients' knowledge of CVDs in East of Iran. Based on the findings, the patients did not have a sufficient level of knowledge about these diseases. In addition, younger patients exhibited a moderate level of knowledge, while older ones showed lower knowledge levels. Besides, the majority of men had a moderate level of knowledge, while most women had low knowledge levels. Therefore, appropriate training programs are recommended to improve these patients' knowledge. The research findings also provided a sound and fundamental basis for future studies in this field.

Authors' Contribution

Study concept and design: Hossein Ranjbar. Acquisition of data: Fatemeh Ebrahimi. Analysis and interpretation of data: Hossein Ranjbar. Drafting of the manuscript: Elahe Mehrabi. Critical revision of the manuscript for important intellectual content: Hossein Ranjbar.

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