JCHR

Journal of Community Health Research 2018; 7(1): 42-47.

The Relationship between Ischemic Heart Disease and Lifestyle: A Case-Control Study

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ARTICLE INFO

Original Article

Received: 26 Dec 2017
Accepted: 19 Feb 2018

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ABSTRACT

Introduction: Cardiovascular disease is one of the most common causes of death in the world. Because of uptrend and staggering expenses of health care and remedies, this study was investigated with goal of exploring the relationship between life style and ischemic heart disease.

Methods: This study was as case-control study. It consists of 360 participants for case group and 360 participants for control group in health centers of Uremia. Both groups were compared regarding age, sex, and location. Data collection tool was a standard questionnaire of lifestyle which explored 10 types of life style. SPSS v.20 software has been used for data analysis of T-test, Chi-square test, and Logistic Regression in 0.05 significance level.

Results: The results of this study showed that, the mean difference between two groups was significant in terms of weight and nutrition control exercise and health, physical health, social health, spiritual well-being, psychological health, and disease prevention. Case group is exposed to high risk of catching the ischemic heart disease due to less mean from analysis.

Conclusion: The findings of this study indicate that insufficient mobility, high fat and low fiber diets, as well as poor mental status can be major causes and risk factors for the incidence of cardiac ischemia.

Keywords: Cardiac Ischemia, Coronary Artery Disease, Lifestyle, Case-Control Study

How to cite this paper:
Zareipour MA, Ayuoghi Rahnema V, Mokhtari Tavana A, Moradi Z. The Relationship between Ischemic Heart Disease and Lifestyle: A Case-Control Study. J Community Health Research. 2018; 7(1): 42-47.

Introduction

Due to the prevalence of coronary artery disease worldwide and in our country, which is the most common cause of death, recognizing the main risk factors for cardiovascular disease, controlling these risk factors and minimizing their bad effects, becomes more important.

The presence of any of these risk factors can be with or without a family background and type of diet and lifestyle, increase the risk of cardiovascular disease several times or cause or exacerbate heart disease. [(1)] According to the Ministry of Health and Medical Education, 33-38% of deaths in Iran are due to cardiovascular disease and Iran has the highest death rate in the world. [(2)]

The prevalence and incidence of coronary artery disease is seriously affected by unhealthy lifestyle. Modern lifestyles can directly lead to unhealthy lifestyle choices. [(3)] Changes in people's lifestyle increase the prevalence of heart disease in Iran. Evidence in changing the lifestyle of people shows that the prevalence of cardiovascular disease in Iran is increasing. It is estimated that in 2020, deaths from these diseases will increase to 25 million. [(4)]

Healthy behavior is one of the key determinants of health, it considered as an underlying factor that is Lower the risk of getting many chronic diseases [(5)]. Therefore, empowering individuals to increase control over their health and wellbeing is effective. [(6)] Healthy behavior is a part of lifestyle.

Lifestyle is a very important concept that is often used to express people's lifestyle and reflects the full range of values, beliefs, and social activities [(7)]. The lifestyle is related to the patterns of daily life of a person who normally does [(8)].

The American Heart Association (2001) considers lifestyle as one of the most important predisposing factors in terms of illness and death in the United States, and estimates that about 70% of all physical and mental illnesses are related to lifestyle. [(9)] Despite the advances in diagnosis and treatment, the incidence and mortality of cardiovascular disease is still high. Also, cardiovascular disease can be easily prevented and it seems that planning to prevent this disease is easier and less costly and more effective through lifestyle education. [(10)] So, this study has been designed with the goal of exploring the relationship between lifestyle and ischemic heart disease in Urmia province.

Methods

The present paper is a case-control study. Case sample consists of 720 participants from Urmia province. Due to the rating lifestyle which according to its definition in this research will be in the range of 210-210. Thus, its standard deviation can be considered equal to (0-210) / 10 = 21. With this assumption the sample size for testing is at a 90% confidence level and has a minimum power of 80% and the difference equals 7.5 units or more between the two groups of cases and controls each consisting of 360 participants. Sampling has been chosen randomly from health center of Urmia. The case group (360 patients) include ischemic heart patients that were referred to health centers of Urmia city. The criteria for entering the cases have been a coronary heart disease approved by a cardiologist, Also, for each case and control group those who agreed to participate in the study were matched in age, sex, place of residence and no history of heart disease. Data collection tool was a two-part questionnaire that the first part includes demographic information and the second part is associated to lifestyle questionnaire (LSQ). This questionnaire concludes 70 questions in order to aim lifestyle dimensions differential evaluation (physical health, sport, weight control and nutrition, prevention of disease, psychology health, mental health, social health, avoidance of medicine and drugs, prevention of events and environ health). The terms of this questionnaire are scored on a four degree Likert scale: Never: 0 Sometimes: 1 Usually: 2 Always: 3. This questionnaire has 10 sub-scales. In this questionnaire, the highest score that a person can obtain is 210 and the lowest score is zero. Obtaining a score close to 280 indicates a healthy lifestyle and getting close to the 70 score is

an unhealthy lifestyle. The score of each subscale is also calculated by summing the questions of each subscale, so the highest score in this questionnaire is without Reverse Scoring. The validity and reliability of this questionnaire have been confirmed in previous studies by Lali and Abedi. [11] The normality of the data distribution was investigated by Kolmogorov-Smirnov test, which were normal.

Data were entered SPSS v.20 software version 18 after collecting. T-test, Chi-square test, and Logistic Regression in (P = 0.05) 0.05 significance have been used in order to analyze the data.

Results

The analysis of present study findings showed that two groups of participants are divided into terms of age, sex, and location. Most of the participants in case and control groups had low literacy skills. The difference between the two groups was not statistically significant in terms of education. (P = 0.667) (using Chi-square test). Two groups didn't have statistical significance differences between marital status (P = 0.253) and employment status (P = 0.779). The difference between body mass index and smoking as shown in Table 1 is significant (P = 0.014).

Table 1. Demographic features in case and control groups

Variable	Case Group	Control Group	P-Value (Chi-square test)
Age	61.88±8.88	61.38±8.95	0.447
Sex			0.823
Man	191(53.1)	188 (52.2)	
Woman	169 (46.9)	172 (47.8)	
Location			
City	196 (54.4)	183 (50.8)	
Village	164 (456)	177 (49.2)	
Body mass index (BMX)	28.47±2.09	26.28±2.75	0.001
Smoking			0.0 14
yes	38 (0.6)	20 (5.6)	
No	322 (89.4)	340 (94.4)	

Mean and standard deviation of lifestyle areas showed that there is no significant difference between two groups in areas of social health, avoidance of medicine and drugs, prevention of events and environmental health, but there are significant differences in other dimensions (table2).

Table 2. Mean and standard deviation of lifestyle questionnaire in both case and control groups

Questionnaire Areas	Mean ±SD		P-value (T-test)
	Case	control	
Weight control and nutrition	11.21±1.94	5.58±2.54	0/001
Sport and healthy	14.22±2.53	15.77±1.70	0/001
Physical health	15.03±2.62	16.75±2.55	0/001
Social health	15.61 ±2.16	15.80±1.77	0/220
Mental health	14.42±2.54	15.50±1.76	0/001
Psychology health	13.71±3.04	15.77±1.86	0/001
Prevention of illness	12.31±2.56	14.75± 1.91	0/001
Avoidance of medicine and drugs	15.62±0.28	15.15±1.95	0.648
Prevention of event	15.38±2.67	15.73±2.34	0.060
Environmental health	16.18±2.09	16.21±1.92	0.824
Total	157.40±8.68	143.70±12.23	0.001

It has been shown that in the exploring the intensity relation between associated areas of lifestyle and cardiovascular disease by logistic regression analysis , the risk of cardiovascular disease catching in case group participants is more than control group participants (table3).

Table 3. The relationship between the scales of lifestyle questionnaire and cardiovascular disease (logistic regression test)

Questionnaire areas	case group	control group	OR (95 CI)
Weight control and nutrition	11.21	15.58	2.04 (1.85-2.25)
Sport and healthy	14.22	15.77	1.40 (1.29-1.50)
Physical health	15.03	16.75	1.30 (1.22-1.39)
Social; health	15.61	15.80	1.05 (0.97-1.12)
Mental health	14.42	15.50	1.25 (1.17-1.35)
Psychology health	13.71	15.77	1.36 (1.28-1.45)
Preventing of illnesses	12.31	14.75	1.57 (1.45-1.70)
Avoiding of medicine and drugs	15.62	15.15	0.98 (0.92-1.05)
Preventing of event	15.38	15.73	1.06 (0.99-1.12)
Environmental health	16.18	16.21	1.01 (0.94-1.08)
Total	157.40	143.70	1.15 (1.12-1.17)

Discussion

The results of the study showed that there is a significant relation between lifestyle and hypertension disease, so that case group participants are at risk 1.15 times more than control group. Investigated areas were weight and nutrition control, sport, physical health, social health, mental health, psychology health, avoidance of medicine and drugs, prevention of events, and environmental health. Because of the difference in risk factor definition in different countries, comparison of applied studies on risk factors of cardiovascular disease and hypertension is difficult and hard [12]. A study was conducted in 2009 in the United States. The aim of this study was to investigate the effect of lifestyle factors on cardiovascular disease in the age group of 40 to 74 years old, The results of this study showed that individuals who follow a healthy lifestyle (taking fruits and vegetables, doing regular exercises, having ideal weight, being non-alcoholic or smoker) are at lower risk for cardiovascular disease than those in the control group. [13] In another study on the six risk factors for cardiovascular disease (cigarette, low intake of fruits and vegetables, obesity, hypertension, high blood fat and diabetes) in Italy, showed that 90% of people had more than one of these factors and 84% had between 2 and 5 risk factors. [14] According to the results of these studies, it can be said that planning for the improvement of lifestyle should be a priority of national and global programs in order to reduce the incidence and burden of this disease. [14] Another cohort study was conducted in the United States, factors related to lifestyle includes moderate consumption of alcohol, physical activity, not smoking, avoiding obesity, as factors preventing the development of cardiovascular disease, respectively. The risk of cardiovascular disease in people with healthy lifestyle were 45 percent lower than other groups. [15] In this study, high salt intake was associated with an increased risk of cardiovascular disease. In this study, the relationship between physical activity and cardiovascular disease was also examined. This finding was consistent with the results of Jian Lee et al. which showed that there is a significant relationship between physical activity and cardiovascular disease in both genders. [15] It is also consistent with the results of the study by Sattelmai et al. which indicates that increased physical activity is a preventative factor in cardiovascular disease. Increasing physical activity in multiple studies is a risk factor for cardiovascular disease. On the other hand, reducing body weight, lack of diabetes and

hypertension indirectly contribute to reducing the risk of cardiovascular disease. [16]

In present study, there is a significant relation between body weight and cardiovascular disease that its findings are consistent with the results of Marjorie Bastien et al. research, the investigation of Epidemiology and overweight role in Epidemiology [17]. Also the results of Alban De Schutter et al. investigation of overweight effect on prevalence and improvement of cardiovascular disease, are in accord with the present study .In recent years, the prevalence of obesity has been increasing significantly all over the world. According to World Health Organization estimates in 2008, 35% of people (34% of men and 35% of women) over 20 years of age have overweight and nearly 10% of men and 14% of women have obesity. According to these statistics, special attention should be paid to lifestyle modification, in order to reduce the burden of heart disease and other chronic diseases. [18]

Cigarette smoking is another risk factor that was higher in the study group than the control group. This finding was consistent with the results of Baba et al. studying the effect of smoking on heart disease in middle aged people. [19] Also in a study by Ebbert et al. there was a significant relationship between alcohol consumption and cardiovascular disease [20] .Taghadosi et al. in their study showed that there was a significant relationship between smoking and cardiovascular disease [22] and there is significance relation between nutrition and hypertension disease in the present study. This finding is consistent with Taghadosi et al. study which has shown that there is a significant relation between salty and fatty food consumption, (p=0/001), fruit, vegetables, dairy and starch (p=0/001) , nuts, and meat consumption (p=0/001) and cardiovascular disease. [21] There was a significant relation between diet and cardiovascular disease in Shirani et al. study, the results showed that receiving a low glycemic load diet has beneficial effects on glucose metabolism and serum lipid concentration in the body and it can be a protective factor in cardiovascular disease. Investigating the effect of food patterns on predictive factors of cardiovascular disease is a simple and cost-effective way to reduce disability and mortality due to these diseases. [22] Social health was the other factor which had a significant relation with cardiovascular disease. Also, Social health is one of the most important factors in developing cardiovascular disease. There is also a relationship between mental health and heart disease. Among the psychological factors, stress is one of the most important factors that has recently been taken into consideration and according to American Heart Association stress should be considered as a risk factor for cardiovascular disease. Depression is also a risk factor for heart disease. In a meta-analysis study by Chalmers et al. The results showed that there is a relationship between mental health and cardiovascular disease, and people who are in poor mental and psychological conditions are more at risk for cardiovascular disease, which is consistent with the results of the present study. [23]

Conclusion

The findings of this study indicate that insufficient mobility, high fat and low fiber diets, as well as poor mental status can be major causes and risk factors for the incidence of cardiac ischemia. The cross-sectional nature of our study was its limitations. Therefore, it cannot be precisely indicated the cause-and-effect relationship. It is better to determine the type of association and to identify the causes of appropriate trials and longitudinal studies in this regard. It is better to determine the type of relationship and understanding of the causes, appropriate trials and longitudinal studies to be conducted.

Acknowledgments

The authors would like to thank all the participants, officials and staffs of all health care centers in the study who helped us.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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