



Relationship between life style-related factors with cardiac ischemia among inpatients: A case-control study

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Received 2 Nov 2014; Accepted 23 Dec 2014

ABSTRACT

Introduction: More than seventeen millions people die due to cardiovascular diseases which account for one third of death worldwide. Half of 60% of all mortality caused by acquired diseases throughout the world is due to heart disorders and this ratio will augment to 73% by 2020. It is known that individual lifestyle has a great influence on the well-being of cardiovascular system. Seven of the top ten etiologies leading to death are related to the pattern of lifestyle. This study explored various lifestyle-related factors affecting ischemic conditions.

Method: This study was performed as a case control investigation on 65 subjects along with 65 controls who were all admitted at Sevome Shaaban hospital in Damavand town of Iran. All data (demographic and life-style variables) were gathered, using three different types of questionnaire obtained from each person. $p < 0.05$ was considered as significant.

Results: Age, marriage status, smoking, physical activities, diet and mental health condition were shown to have a significant effect on ischemia ($P < 0.001$). Insufficient physical activities, fatty and low fiber food as well as impaired psychology conditions were among the risk factors that contributed to Ischemic heart disease.

Conclusion: Insufficient physical activities, fatty and low fiber food as well as impaired psychology conditions were among the risk factors that contribute to ischemic heart disease.

Keywords: Ischemia, Life style, Physical activity, Psychologist

► Please cite this paper as:

Eftekhari Ardebili H, Barkati H, Omrani A, Khosravizadeh O, Mohseni M. Relationship between life style-related factors with cardiac ischemia among inpatients: A case-control study. J Health Man & Info. 2015;2(1):1-4.

Introduction

There are lot of controversial arguments as to improving the health, focusing on proper patient treatment. They all aimed at the core health issues where preventive measures, increased health status, and provision of health conditions are known to be the cornerstone of healthy lifestyles. Moreover proper lifestyle excludes all ill-effects from life(1).

Individual lifestyle is correlated to routine and daily activities and conditions that exist for each person (2). American Heart Society (AHS) has declared lifestyle as an important factor in induction of morbidity and mortality in U.S. Moreover, 70% of all physical and psychological disorders are due to risky lifestyle(3). Other studies have shown that various causes of death are due to 53% lifestyle, 21% environmental factors, 16% genetic factors, and 10% health related services(4).

Expansion of industrial life, control of acquired diseases, and aging population contribute to an increase in non-acquired disorders such as cancers, cardiovascular diseases, and diabetes(5). Although infectious diseases and malnutrition were the among the most common causes of death in 1900, this trend has declined and cardiovascular diseases have increased instead. In 1900, close to 46.6% of all deaths were due to heart diseases(6). It is also estimated that more than 25 million heart-related deaths will have occurred by 2020(7).

Studies by Wilson et al demonstrated that 63.7% of men and 61.4% of women carry at least one contributing factor for cardiovascular diseases(8). Nevertheless, heart diseases in Iran are known to be the main causes of disease in 18 provinces, which constitute 46% of all deaths in 2020. Heart diseases have been the main cause of mortality in recent years, as reported in a study done by the ministry of health in Iran. Moreover, the figure in

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Beheshte Zahra indicated that death rates due to ischemia in 2001 and 2002 were 36.2% and 36.4%, respectively(9).

Although cardiovascular diseases are considered to be the most preventable disorders among chronic and non-infectious diseases(10) the influence of each factor and the role it plays in heart diseases will help to plan short-term and long term health plans with the aim of controlling the risk factors and reducing the death rate in country. This study explored the relationship between lifestyle-related factors and cardiac ischemia among inpatients.

Methods

This is a case-control study on the patients with ischemic heart diseases who referred to Sevom Shaaban hospital in Damavand. The patients were selected by simple random sampling from the family of patients. The main tool used to collect the data was a questioner prepared to acquire information in regard to the roles of diet and physical activities based on 17 questions (11). The mental health form based on Goldberg et al.'s GH2-28 analyzed 4 factors including anxiety, somatization, social dysfunction, and depression(12). The physical activities were measured based on comparative distances and scored by likert scale. The score for dietary habit was based on one and zero for acceptable and rejection of individual health status in terms of food type and its consumption.

The scoring technique for psychology questioner (GH-28) was based on Kazem Mohammad's method(13). Scores for healthy living aspects were obtained from total scores derived for physical activities, mental health and proper diet. 65 cases and 65 controls participated in this study. The range of scores used for comparison of aspects of lifestyle was about 13-114 with a standard deviation of 16.8. The confidence level was 95% with the minimum capability of 80%; a variation of 7.5 units or more existed between the two group of samples and controls and was calculated by :

$$n = \frac{(Z_{0.05} + Z_{0.80})^2 (6_1^2 + 6_2^2)}{d^2} = \frac{(1.645 + 0.84)^2 (16.82^2 + 16.82^2)}{7.5^2} = 61.97 \approx 62$$

All cases and controls were interviewed and scored through questionnaires and their scores were then analyzed for ischemic patients and healthy individuals for various aspects of lifestyle. The data were statistically analyzed using Chi-square, T-test and Fishers Exact test using SPSS, version 18. The basic criteria for entering the study were clinically confirmed cardiovascular diseases, lack of history of heart disease and age of 40 years old. Control subjects had no history of heart problems in and their close family. Consent forms were taken from each patient prior to participation in the study and an attempt was made to take care of their rights for keeping their information private and confidential.

Results

The distribution of patients and healthy individuals based on gender and age is shown in Tables 1 and 2, and three

groups of >50 years, 50-60 years and above 60 were compared in both controls and patients.

The average age for patients and controls was 63.1 and 45.6, respectively (P< 0.001). 22% of the studied cases and 6% of controls were single (P<0.009); also 20% of the cases and 8% of the controls were smoker (P= 0.039) with an average of 32 years smoking for patients and 22.4 years for controls(P=0.06).

Table 1. Distribution of ischemic patients verses healthy individual based on genders

Group		Male	Female	Total
Cases	Number	35	30	65
	Percent	53.8%	46.2%	100%
Controls	Number	27	38	65
	Percent	41.5%	58.5%	100%
Total	Number	62	68	130
	Percent	47.7%	52.3%	100%

Table 2. Distribution of ischemia patients verses healthy individual based on age

Group		<50 Years	50-60 Years	>60 Years	Total
Cases	Number	6	19	39	64
	Percent	9.4%	29.7%	60.9%	
Controls	Number	52	10	3	65
	Percent	80%	15.4%	4.6%	
Total	Number	58	29	42	129
	Percent	45%	22.5%	32.5%	

Chi square= 70.13 df2, p<0.001

Table 3. Mental disorders in patients with ischemic heart disease (IHD) and healthy individuals

Group		IHD			Total
		Without disease	Suspected disease	Mental disease	
Cases	Number	9	25	22	56
	Percent	16.1%	44.6%	39.3%	
Controls	Number	41	9	14	64
	Percent	64.1%	14.1%	21.8%	
Total	Number	50	34	36	120
	Percent	41.7%	28.3%	30%	

Chi-Square =29.4 df=2, P < 0.001

Physical activities indices (PaI) of ischemic patients and healthy individuals are presented in Table 4. Also, Table 5 depicts evaluation of diets in terms of protein, oil, and dairy contents. Table 6 presents various dietary regimens in regular status of patients and controls are compared in table.

The cases were also examined in terms of disorder or lack of disorder for four factors of body building, anxiety, social function, and depression (intermediate and influential factors GHQ). 65% of cases and 20% of the controls had

problem with body building process ($p<0.001$); 38% of the cases and 22% of the controls had social dysfunction ($p=0.04$). Also, 30% of the cases and 19% of the controls had some degree of depressions ($p=0.136$).

Table 4. Physical activity indices of patients verses controls

Group	No.	Score	SD	Test
Pettiest	60	38.7	7	13%
Contests	64	42.1	8.2	

Table 5. Dietary regimens and status of health in cases

Diet	Group	No.	Score	SD	Test
Protein	Cases	31	1.39	0.92	0.002
	Control	42	2.07	0.89	
dairy	Cases	7	2.43	0.98	0.374
	Control	13	1.85	1.52	
Oil	Cases	31	0.42	0.50	0.109
	Control	55	0.6	0.49	

Table 6. Dietary regimens, vegetables and fruits

Food	Group	Weekly avg.	SD	Test
Veges	Cases	0.7	4.4	0.65
	Control	7.9	3.9	
Fruits	Cases	0.5	2.8	0.329
	Control	0.6	1.8	

Table 7. Mental health indices

Group	Number	Score	SD	Test
Cases	65	18.2	5.3	<0.001
Control	65	24.2	4.3	

The combined scores for psychological aspect, physical activities and dietary regimens of healthy lifestyle of each individual are analyzed in Table 8.

Table 8. Lifestyle evaluation (psychologist, physical + diet)

Group	Number	Score	SD	Test
Cases	40	60.8	8.9	<0.001
Control	64	70.3	9.9	

Although 53.8% of the patients and 41.5% of the control were male, a significant difference did not exist between both groups. Studies by Saliemzadeh et al. in 2002 did not show any significant di

also indicated that death rate due to heart disease is the same among infertile male and female (15). While the

majority (about 40%) of patients had an age range of 50-60 and above 60 years, the healthy individual (about 80%) constitute the age group below 50 ($p.0.001$). The studied patients' ($p<0.001$) significant age difference in both patient and control groups indicated that age plays a major role in induction of Ischemic Heart Disease(IHD), and that increased age augments the chance of disease.

In this study, the effect of obesity on IHD was not significant; however, it can be considered as a risk factor (16). As shown, 6.2% of the controls were single and this rate was almost 4 times (22.2%) higher in married patients ($p=0.009$); hence marriage could be an effective factor in IHD.

Recently, the data on blood pressure taken showed no significant difference among married and single individuals whereas the mean blood pressure for systolic and diastolic phases based on age was higher in singles, and the BMI level (as a risk factor) was also higher in single people(17).

Another research has shown that single men are more prone to IHD than the married man; this could be related to variation in their lifestyle(18). 20.3% of patients were smoker whereas this rate was only 7.7% among healthy individuals ($p=0.039$). This indicates that smoking alone can augment the IHD up to 3 times.

A survey of patients in Zahedan has shown that smoking is the main risk factor in IHD in patients below 50 years old (19). Studies in 70 IHD Indian patients aged 36-40 years have shown that almost 62% were smokers(20). Moreover, mental disorders found in patients and controls have also shown to be a risk factor for IHD ($P<0.001$). In a large study performed in industrial workers in Switzerland, stress was correlated with the initiation of IHD (21).

Based on Framingham's study, stress could increase the ischemia and chest pain chances up to two times (22). Physical activities in IHD patients were significantly less than that of healthy individuals ($P=0.013$). The mean physical activity for studied cases and controls was 38.7% and 42.1%, respectively.

Physical activity can reduce the risk of IHD by increasing and improving glacolysis, and decreasing cholesterol as well as blood pressure (23). The American society of general surgery has indicated that regular daily physical activities of 30 minutes can reduce the coronary heart disease and just by walking alone the overall body physiology and cholesterol level will be improved to the level that can reduce the risk of IHD drastically. Also, a study by Garber has demonstrated that lack of activity was the most common risk factor for heart diseases.

Studies done in Tehran and Qazvin implied that cherlipidemia was the most common factor in causing heart disease(24). The study also indicated that in those cities the use of fish in the diet was less though seafood is considered to be a major dietary regimen in industrial countries (25).

While 65% of ischemic patients had trouble in body building, this rate was only 20% in healthy individuals; the difference was statistically significant ($p<0.001$).

The frequency of anxiety in patients and controls was 90% and 30%, respectively and the difference was

($p < 0.001$). The social dysfunction in patients and controls was 38.1% and 21.5%, respectively; this implies that less than 50% of subjects were suffering.

Although the dysfunction rate in patients with IHD was twice that of healthy subjects, the difference between the two groups was significant ($p = 0.04$). Although the level of depression was also slightly higher than the controls (29.7% vs. 18.5%), their difference was not noticeable.

Consequently, body building, anxiety and social dysfunction were among the effective factors on induction of IHD. The total scores of healthy lifestyle of subjects evaluated for aspects such as mental health, physical activities and proper dietary regimens were 60.8% for patients and 70.3% for controls with significant differences ($p < 0.001$). Therefore, lifestyle can significantly affect the level of IHD.

These results illustrated that insufficient activity, fatty food with low fiber as well as mental disorders can all be important and effective factors influencing the IHD in people.

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