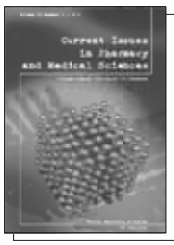

2012 Curr. Issues Pharm. Med. Sci. Vol. 25, No. 1

Current Issues in Pharmacy and Medical Sciences

Formerly ANNALES UNIVERSITATIS MARIAE CURIE-SKLODOWSKA, SECTIO DDD, PHARMACIA
on-line: www.umlub.pl/pharmacy

The health-related behavior of myocardial infarction patients before the onset of the disease

ELŻBIETA PIETRYKA-MICHAŁOWSKA[1*], JOLANTA SZYMAŃSKA[2], ANNA WALEWSKA[3]

[1] Department of Mathematics and Medical Biostatics, Medical University in Lublin, Poland
[2] Chair and Department of Paedodontics, Medical University in Lublin, Poland
[3] Independent Catastrophe Medicine Unit, Medical University in Lublin, Poland

ABSTRACT

The more important risk factors for myocardial infarction include high cholesterol; the presence of hypertension, diabetes and obesity; the practice of smoking and consumption of alcohol in excessive quantities; being stressed, as well as inherited genetic factors. Of these factors, the majority are, or are influenced by life-style choices, hence can be prevented. The purpose of the study was to analyze the attitude of patients towards their health before the onset of myocardial infarction. The survey covered 268 patients staying at the rehabilitation department of a spa hospital in Nałęczów, Poland. The results of the survey reveal that in the lifestyles of the surveyed, the dominating attitude to health was not conducive to the strengthening of good health: most of the surveyed indulged excessively in alcohol consumption, were heavy smokers of cigarettes, undertook little physical activity, practiced an improper diet, were overweight and faced stressful situations. These negative behaviors were significantly statistically more often found among young people, men, and people with lower education levels. The results of the survey indicate that a healthy lifestyle should be promoted from an early age. Moreover, beyond providing education, those concerned with the betterment of public health should be stressing the benefits of proper health-related attitudes and behaviors.

Keywords: myocardial infarction, health-relation behavior, risk factors

INTRODUCTION

The total number of hospitalizations due to acute coronary syndromes was, in Poland, in 2009, around 125 000, of which 67% were persons with infarction of the heart, and 33% were patients with unstable angina pectoris [10]. According to previous research, the more important risk factors of the disease are high cholesterol, hypertension, diabetes, overweight and obesity, smoking, drinking excessive amounts of alcohol, stress, genetic factors, or little physical activity [2, 5]. The purpose of our study was the analysis of the health-related behavior of the patients who were treated due to myocardial infarction before the onset of the disease.

MATERIAL AND METHODS

The survey covered 268 patients staying at the rehabilitation department of the spa hospital in Nałęczów. The research tool was a questionnaire survey developed by the authors of this paper, which was first validated in a pilot study. The following parameters were assessed, their dietary habits, cigarette and alcohol consumption, physical activity, body weight, as well as their exposure to factors inducing stress and the frequency in which these impact upon them. The obtained results were statistically analyzed. The values of the analyzed quality parameters (measured in the nominal scale) were characterized using size and proportion. Moreover, the test of homogeneity χ^2 was used to detect the existence of differences between the analyzed groups. In addition, there was an assumed 5% error of inference, and the related significance level of $p < 0.05$ was used to indicate the existence of statistically significant differences, as well as the relationship between the examined features. The statistical analysis undertaken in this paper was based on STATISTICA software 9.0 (STATSOFT, Poland).

The study involved people aged 26–76 years. The average age of respondents was 54 ±11.4 years. Most were men - 64.9% (174 persons), while women made up 35.1% (94 persons) of the studied group. The average age of the women in this study, was 51±10.8 years, while that of men alone – 55.6±11.4 years. The observed differences were statistically significant ($t = 3.196$; $p = 0.001$). The place of residence for the majority was a city – 187 persons (69.8%), while the rural population was represented by 81 persons (30.2%). The majority of the surveyed were persons with a vocational educational background – 103 persons (38.4%). Subsequently, 85 people (31.7%) put forth that they had completed their secondary education; 57 persons (21.3%) stated that they had attained higher levels of formal education; while 23 persons (8.6%) had only an elementary education.

Corresponding author
* Chair and Department of Paedodontics,
Medical University in Lublin, 7 Karmelicka Str., 20-081 Lublin, Poland
e-mail address: szymanska.lublin@gmail.com

Pensioners and emeriti made up the most numerous group - 95 persons (35%). Subsequently, blue collar workers were 75 in number and comprised up 28% of the surveyed population; while 39 people listed themselves as having work that requires both physical and intellectual activity (14.6% of the surveyed). Finally, 59 people stated that they were white collar workers (22% of the surveyed population).

Most of the surveyed persons were married – 175 (65.3%), while 42 people (15.7%) were widows/widowers, 38 persons (14.2%) were never married and 13 persons (4.9%) were divorced.

Those living in conditions that they considered to be good, numbered 123 persons (45.9%) out of the total population. Those describing this as being satisfactory numbered 112 (41.8%), A total of 29 persons (10.8%) considered their living conditions to be very good, while 4 persons (1.5%) described their living conditions as being bad.

RESULTS

Analysis of the lifestyle of the patients before the onset of myocardial infarction included occupational activity, subjective assessment of the diet, attitude to smoking cigarettes and drinking alcohol, levels of physical activity, subjective evaluation of the body weight and the incidence and causes of exposure to stress.

It was found that 174 people (64.9%) were physically active professionally, with 75 (28.0%) of the blue collar workers and 60 (22.4%) white collar workers stating so, while the remaining group specified the nature of their work as containing elements of both physical and intellectual work – 39 persons (14.6%). Among the respondents, 94 people (35.1%) were not physically active professionally, having either an annuity or were retired.

The majority of respondents – 191 persons (71.3%) assessed their diets as healthy, however, 77 persons (28.7%) stated that they were indifferent to their eating habits. The diet followed was associated with gender ($\chi^2 = 58.367$; d.f. = 1, $p < 0.05$) and the levels of education ($\chi^2 = 12.381$; d.f. = 3; $p = 0.0062$). In the surveyed results, what was statistically significant was that more often than did men, women underlined their concern about the quality of their and their family members' diet. This trend was also evident among people with better levels of education, those having higher and secondary education being more concerned with what they ate (Fig.1).

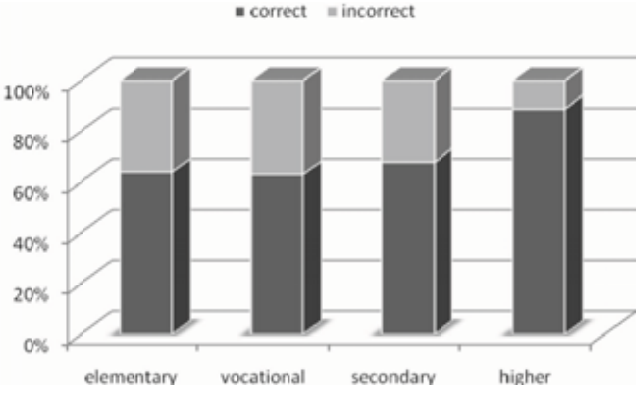

Fig. 1. The diet with regard to the level of education

Further to this, city inhabitants expressed a statistically significant concern in regard to healthy eating ($\chi^2 = 5.159$; d.f. = 1; $p = 0.0231$) than did rural dwellers.

In regard to tobacco use, more than 48% of the surveyed reported that they were cigarette smokers, and the number of cigarettes smoked by those with the habit, ranged from 5, to over 20 per day. Among these individuals, 28% smoked more than 20 cigarettes a day, 36% – up to 20 cigarettes, 23% – to 10 cigarettes and 13% – to 5 cigarettes a day (Fig. 2). The number of smoked cigarettes was also related with gender ($\chi^2 = 41.506$; d.f. = 3; $p < 0.05$). What was significant statistically was that men declared that they smoked far more cigarettes, compared to women who had acquired the habit.

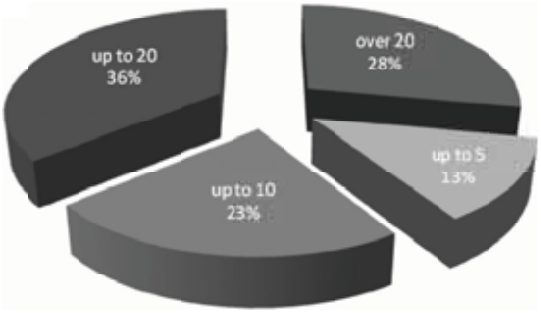

Fig. 2. The number of smoked cigarettes per day

Concerning alcohol consumption, the majority of those polled, responded affirmatively – 225 people (84%), while 43 persons (16%) gave a negative answer. The largest group among those drinking alcohol – 132 persons (49.3%), declared that they were occasional drinkers, while 28 persons (10.4%) out of the total number of respondents, replied that they consumed alcohol on a daily basis, 55 persons (20.5%) drank something containing alcohol once a week, and 10 persons (3.7%) – did so once a month (Fig. 3).

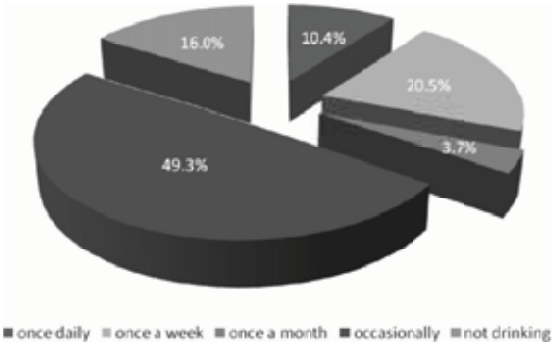

Fig. 3. The attitudes of the research population towards alcohol consumption

The presented attitude was related to the gender of patients ($\chi^2 = 69.124$; d.f. = 4; $p < 0.05$). Significantly statistically was that more men declared that they consumed alcohol. The percentage of non-drinking women amounted to

37.2%, while for men, this proportion was at 4.6%. Everyday consumption of alcohol was reported by 14.9% men and 2.1% women (Fig.4).

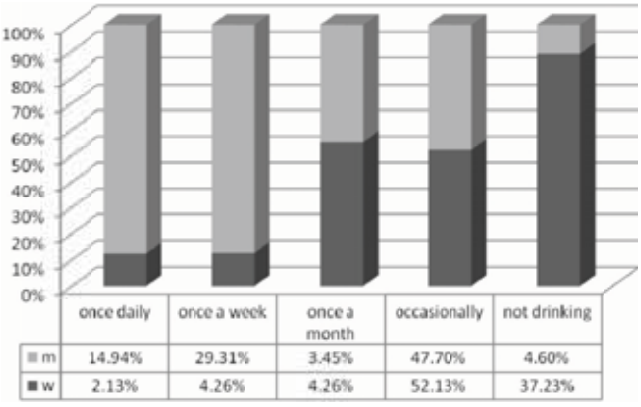

Fig. 4. The frequency of alcohol consumption with regard to gender

The investigation also revealed that the frequency of alcohol consumption was associated with the age of the patients ($\chi^2 = 40.992$; d.f. = 12; $p < 0.05$). Most often, the youngest patients, i.e. people up to 30 years of age, conceded to "everyday" and "once a week" consumption of alcohol, while the respondents older than 70 years of age consumed alcohol occasionally – 48% or not at all – 36% (Fig. 5).

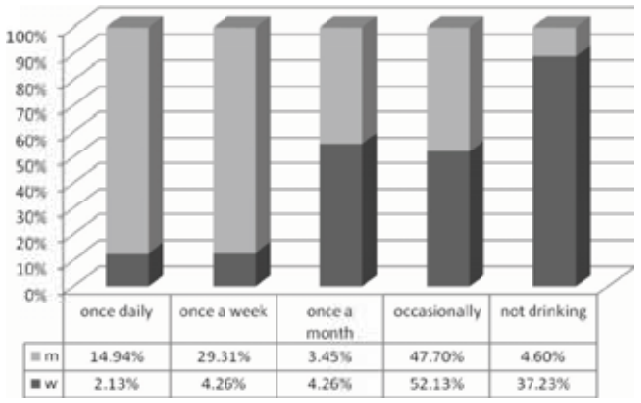

Fig. 5. The frequency of alcohol consumption with regard to age

The study suggested four possible responses that allowed for the assessment of physical activity among the respondents: intense physical exercise, moderate exercise, low exercise, lack of physical exercise. A majority of the patients chose the answer "moderate exercise" – 124 persons (51.2%), followed by "little exercise" – 52 persons (21.5%) and "lack of physical activity" – 38 people (15.7%), while 28 people (11.6%) chose "intensive exercise" (Fig. 6).

Physical activity was associated with gender ($\chi^2 = 12.904$; d.f. = 3; $p = 0.005$), age of the respondents ($\chi^2 = 54.633$, d.f. = 9; $p < 0.05$) and level of education ($\chi^2 = 31.179$; d.f. = 3; $p < 0.05$). More willing and more active physically were men, as well as the young and better educated respondents (Fig. 7).

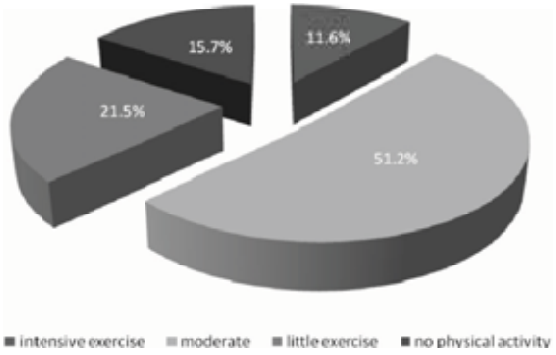

Fig. 6. Physical activity of the respondents

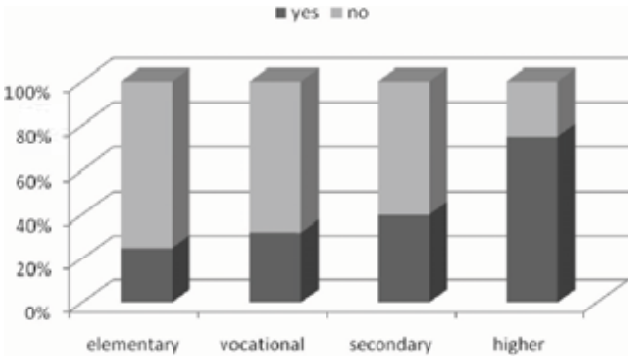

Fig. 7. Physical activity in various categories of education

Most of the respondents – 153 persons (57.1%) stated that they were of appropriate body weight, while the other respondents – 115 (42.9%) expressed the opinion that they were overweight. Significantly statistically, more often than did men, the women who responded to this survey declared that they were of the correct weight for their age and build ($\chi^2 = 7.145$; d.f. = 1; $p = 0.007$). Young people, up to 30 years of age, stated the same ($\chi^2 = 24.29$; d.f. = 3; $p < 0.05$).

The question "Do you often find yourself in stressful situations?" was replied with "quite often" by 120 respondents (44.8%), "often" by 83 persons (31,0%), and "occasionally" by 65 people (24.3%). The most common source of stress stated was work – 97 people (36.2%), then personal financial situation and problems with health – respectively 25.4%; 24.3% and, last, the home atmosphere (14.2%). Of statistical significance was that women more frequently listed problems with health as a source of stress, than did men, while men listed work more often than did women ($\chi^2 = 47.88$ min; d.f. = 3; $p < 0.05$).

DISCUSSION

In the investigated group of patients, the presence of risk factors for cardiovascular diseases that were listed earlier, was confirmed. This risk factor presence follows a worldwide trend. Heart attack and ischaemic heart disease, afflicts an increasing percentage of the world's population. This trend is also evident in Poland [12]. According to a published report by the American College of Cardiology and American Heart Association, of all cardiovascular diseases,

ischaemic heart disease is the most common cause of death and disability. What is more, increasingly, it is affecting younger people, particularly men [1].

Estimates indicate that about 30% of adult Poles are tobacco smokers [4]. Smoking is one of the more important risk factors for coronary artery disease. This is noted in many multi-centre studies (INTERHEART, Framingham, Heart Study, Health and Nutrition Examination Survey) [16]. The risk of heart failure among smokers, is, in surveyed populations, about 70% higher. Moreover, statistically, they suffer heart attacks on average 10 years earlier than non-smoking subjects [6]. Additionally, studies conducted by Mähönen at al. [11] show that the percentage of people smoking tobacco is worryingly high in the younger population. Rosengren et al. [13] demonstrate that the likelihood of ST Elevation Myocardial Infarction (STEMI) in patients with acute coronary disease, who smoke cigarettes, is twice as high in amongst those who consume tobacco. In our study, 48% of the respondents reported smoking cigarettes: among these individuals, as many as 28% smoked more than 20 cigarettes a day.

Improper nutrition positively correlates with the occurrence of chronic heart disease (CHD). This often leads to a myocardial infarction [15]. Bad eating habits can lead to obesity, and reduced physical activity, hyperlipidemia and diabetes are the risk factors increasing the likelihood of progression of in coronary vessel atherosclerosis [8]. In the conducted studies, over 71.3% of the respondents rated subjectively their diet as healthy, while 28.7% stated that they did not attach great attention to diet. However, as the respondents were all heart patients, it seems, therefore, that dietary treatment should be the first step in the prevention of CHD.

Obesity lead to many diseases. Rosengren et al. [14] point out that over 1/3 of women and 1/4 men in Europe with acute coronary syndromes below 65 years had a body mass index – BMI ≥ 30 kg/m^2. The statistical analysis of our own research material shows that 42.9% of the respondents reported themselves to be overweight. Significantly, statistically, more women and young people to the age of 30 declared that they are of the correct weight for their body size.

It should be stressed that in dieting, people who consider themselves to be obese or overweight should pursue a diet limited in calorie intake (limited (animal) fats and carbohydrates). By reducing the weight of the body, particularly in patients with visceral obesity, a reduction in the level of triglycerides and cholesterol is achieved. This means in particular, a reduction of the concentrations of small, dense LDL with an accompanying increase in HDL-cholesterol [9].

The modern life-style is one that is comparatively sedate. This affects the condition of the cardiovascular system. Bijnen [3], based on a 10-year study of elderly men, reveals that the risk of morbidity and mortality due to diseases of the cardiovascular system (as well as other reasons), is inversely proportional to the amount of time spent undertaking physical activity. It appears from the present study that more than 51% of the respondents opine that they undertake "moderate amounts of exercise", while 11.6% believe they undertake "intensive exercise". However, more than 15.7% stated that they did not take up any physical exercise at all. Interestingly, the better educated and the younger respondents, to a greater percentage, declared that they practiced some sport or exercise.

Alcohol consumption is considered an important contributing risk factors for cardiovascular system diseases. Alcohol accelerates the development of atherosclerosis by its direct toxic effect on endothelial cells and promotes the presence of other athero-generating factors [7]. As can be seen from own research, 1/3 of the respondents to this survey consumed alcohol regularly (once a month, week, a day).

A significant contributory factor to cardiovascular diseases, as evidenced in our survey, is that of the degree of stress individuals face. Almost l' of all the surveyed confirmed that they were quite frequently impacted by stressful situations. Thus, learning how to cope with stress or how to avoid stress-filled situations, results in a healthier population.

In summary, it seems that the results of the research confirm that health education, in particular about diet, the smoking of cigarettes, physical activity, alcohol consumption and coping with stress, is needed to lessen the degree of cardiovascular disease amongst the Polish people. Furthermore, males especially have to be concerned with the lifestyle they lead. What is more, a generally better educated population is a healthier one.

CONCLUSIONS

In the group of patients surveyed, all of whom are undertaking treatment due to heart failure, before the onset of their disease, there were dominating behaviors which were not conducive to the maintenance of their health. These negative behaviors were more often practiced by young people in general, men and the less educated people of both genders. It is recommended by the researchers that healthy lifestyles should be promoted from an early age. Moreover, the population should informed of the dangers of cigarette smoking. What is more, exercises, as well as healthy eating practices must be promoted. In other words, health-promoting attitudes and behaviors should be encouraged.

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