ORIGINAL STUDIES

Lifestyle and cardiovascular health: opinions and behaviors among adults having relatives with cardiovascular diseases

Lucia Maria Lotrean[1], Daniel Ursu[2], Mira Florea[3], Codruța Lencu[4]
[1]*Department of Hygiene, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania*
[2]*Graduating student, University of Medicine and Pharmacy, Cluj-Napoca, Romania*
[3]*Department of Family Medicine, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania*
[4]*Department of Endocrinology, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania*

Abstract
Background. Assessment of opinions and behaviors related to cardio-vascular diseases (CVD) prevention is needed in order to develop appropriate interventions for CVD prophylaxis.
Aims. The study aims to assess the opinions and behaviors related to a healthy lifestyle and CVD prevention among Romanian adults who have relatives with cardiovascular diseases.
Methods. The study was performed in 2 hospital settings from Cluj-Napoca, Romania and involved 180 adults (90 men and 90 women) who had relatives with diagnoses of CVD. Data were collected through anonymous questionnaires, and height and weight were measured.
Results. The results show that a percentage of 58.3% of the adults had a body mass index higher than 24.9 and one quarter of the subjects declared that they do not perform at least 30 minutes of physical activity each day. With respect to alimentary habits, 78.3% of the study sample declared eating less than 3 portions of fruits and vegetables/day, while only 8.3% fulfilled the recommendations to eat at least 5 portions of fruits and vegetables per day. Nevertheless, 46.1% intend to eat more fruits and vegetables in the next month. 26.1% of the subjects were smokers (smoked in the last week), while 31.9% of the smokers declared that they would like to quit smoking in the next 6 months. The majority of the participants declared that they would like to receive more information and education regarding healthy lifestyle promotion and CVD prevention.
Conclusions. The results underline the need for appropriate screening, assessment, education and counseling of adults which have CVD patients in their family in order to detect and correct CVD risk factors.
Keywords: healthy lifestyle; cardiovascular disease prevention; adults having relatives with cardiovascular disease.

Introduction

According to Eurostat data, diseases of the circulatory system are one of the main causes of mortality in each of the European Union Member States (EU MS). In 2014, they caused 1.83 million deaths in EU MS; they accounted for 50-60% of all deaths in the Baltic Member States and Romania (1).

Diseases that affect the heart and vessels or cardiovascular diseases (CVD) have both non-modifiable risk factors (e.g. gender, age, genetic factors, ethnicity,) and modifiable risk factors (such as blood pressure, lipid and lipoprotein levels, body weight, nutritional habits, smoking behavior) (2); (Cannon, 2008; Zhang et al., 2018).

There is substantial evidence that health promotion activities targeting the modifiable risk factors can prevent or reduce CVD (2); (Cannon, 2008; Zhang et al., 2018); (3). Hence, the World Health Organization (WHO) emphasizes the need of measures and activities at different levels in order to prevent and reduce active and passive smoking, to promote healthy nutrition, an active lifestyle and moderate consumption of alcohol, maintaining mental well-being for important benefits for CVD prevention and management, as well as for the prevention and reduction of other chronic diseases, such as different forms of cancer, diabetes, respiratory diseases (3).

Through exercise (30 minutes of moderate to vigorous-intensity activity on most days of the week), maintenance of appropriate body weight (a body mass index less than 25), proper diet (consumption of at least 400 g of fruits

and vegetables, consumption of fish minimum 2 times per week, reduced consumption of saturated fats and trans fatty acids, appropriate consumption of dietary fibers daily, reduction of dietary sodium intake) and a smoke-free lifestyle, an individual can decrease the risk for developing CVD (3); (Piepoli et al., 2016).

Hypothesis

This study focuses on Romanian adults who have relatives with CVD and aims to assess their opinions and behaviors related to healthy lifestyle and cardiovascular disease prevention, as a first step in order to develop appropriate interventions for CVD prophylaxis.

Material and methods

Research protocol
a) Period and place of the research
The study was performed in 2011, in 2 hospital settings from Cluj-Napoca, Romania. Approval for the study was obtained from the medical doctors in charge of the patients from the clinic units where the study was performed, an accepted procedure at the time when the study was performed. The study subjects were relatives of patients from hospitals with diagnoses of cardiovascular diseases and were contacted for participation in the study during their presence in the hospital for accompanying or visiting their relatives. Informed oral consent for participation was obtained from all participants.

b) Subjects and groups
The study involved 180 adults (90 men and 90 women) who had relatives with diagnoses of CVD and visited these relatives in the hospital during their stay there for checks or treatment. The participants received information from medical students regarding the study and the fact that participation was voluntary and implied completing an anonymous questionnaire and the measurements of height and weight. The persons who refused to participate were replaced with other relatives of the hospitalized patients. Persons who accepted to participate filled in the anonymous questionnaire. The final sample included 52.2% persons up to 45 years of age and 47.8% older, 36.7% from rural areas and 63.3% from urban areas, while the educational level was the following: 23.3% low, 41.1% medium, 35.5% high.

c) Tests applied
Anonymous questionnaires assessing several lifestyle behaviors were filled in by all the participants; their weight and height were also measured and the body mass index was calculated.

The current study presents information collected by means of anonymous questionnaires regarding the following issues:
- Demographic variables: age, gender, residence in urban or rural areas, educational level (1-low, meaning only junior high school or less, 1-medium, meaning only high school, 2-high, meaning university studies or more).
- Opinions regarding the importance of body weight, physical activity, several alimentary habits, active and passive smoking in influencing the risk of CVD.
- Involvement in intense and moderate physical activity, as well as walking; the participants were asked about the number of days on which they performed each of these types of physical activity in the last week and the length of time dedicated to these activities with each occasion.
- Frequency of consumption of different food products (fruits and vegetables, different types of meat, different types of fats, beans, white and dark bread in the last week (less than 1/week, 1-2 times week, 3-4 times/week, 5-6 times/week, daily), as well as of activities such as removing skin from the chicken meat before eating it (never, sometimes, frequently).
- Special attention was given to the consumption of fruits and vegetables, the participants being asked how many days they had consumed fruits and vegetables in the last week and how many portions they had consumed each of these days, being explained that a portion is defined as one medium fruit or one half cup of fruits or vegetables or one cup of raw leafy vegetables (e.g. lettuce), or three-fourths of a cup of vegetable or fruit juice.

At the same time, the participants were asked to indicate if they thought the amount of fruits and vegetables they consumed was enough and if they intended to eat more the next month.
- Exposure to passive smoking in public places and at home in the last week
- Behavior related to active smoking (smoking status, intention to quit in the future among smokers)
Persons who declared smoking in the last week were considered smokers.
- Availability to receive more information and education regarding healthy lifestyle promotion and CVD prevention

d) Statistical analysis
The medium time dedicated to physical activity per day by each participant was calculated using the following formula: $[2(E \times H)+(F \times I)+ (G \times J)]/7$

Where E - number of days/week when intense physical activity was performed

H - number of minutes of intense physical activity performed on those days

F - number of days/week when moderate physical activity was performed

I - number of minutes of moderate physical activity performed on those days

G - number of days/week when walking was performed

J - number of minutes of walking performed on those days

Similarly to other studies, we considered that 30 minutes of vigorous physical activity were equivalent to 60 minutes of moderate physical activity (4).

The medium number of portions of fruits and vegetables was calculated by multiplying the number of days/week when they consumed fruits and vegetables by the number of portions/day and divided by 7.

The body mass index (BMI) was calculated using the following formula: $weight/(height \times height)$; weight was measured in kg and height in m. The following cut-off values for the body mass index were considered: underweight (BMI <18.5), normal (BMI 18.5-24.9), overweight (BMI ≥25), obese (BMI ≥30) (5).

Pearson bivariate correlations were used to assess the associations between socio-demographic characteristics

(age, gender, residence and educational level) and lifestyle-related behaviors among the study sample. Data analysis was performed with the SPSS-20.0 statistics program. Significant results were reported at $p < 0.05$.

Results

Opinions regarding the role of lifestyle in CVD prevention

The results show that more than 91% of the study sample recognizes that a high body weight and active and passive smoking increase the risk of CVD, while performance of physical activity decreases the risk (Table I). The majority also know that consumption of fruits and vegetables contributes to prevention of CVD, but only 73% of the participants know that high consumption of animal fat increases the risk of CVD, while less than half know that consumption of food rich in dietary fibers (e.g. dark bread, beans) contributes to prevention of CVD.

BMI and lifestyle-related behaviors

A percentage of 58.3% of the adults had a BMI higher than 24.9. One quarter of the subjects declared that they did not perform at least 30 minutes of physical activity each day.

With respect to alimentary habits, 78.3% of the study sample declared eating less than 3 portions of fruits and vegetables/day, while only 8.3% fulfilled the recommendations to eat at least 5 portions of fruits and vegetables per day. Nevertheless, 52.8% of the participants believed that they should eat more fruits and vegetables, and 46.1% intended to do so the next month.

A percentage of 73.9% of the participants declared eating white bread at least 1-2/week and half of the participants even daily, while 63.9% consumed dark bread at least 1-2 times per week (one third of the participants consumed it daily). Weekly beans consumption was declared by 76.7% of the participants.

On the other hand, 60.6% of the participants declared having eaten fish at least 1-2 times in the last week. The consumption of pork and beef at least 1-2 times weekly was declared by 74.9% and 44.6% of the participants, respectively. A percentage of 90% of the study sample ate chicken at least 1-2 times per week, while 48.3% frequently removed the skin before eating it.

Regarding the consumption of fats, it can be seen that the preferred type of fat was sunflower oil, with 93.3% declaring using it at least once per week and 48.7% even daily. Olive oil was consumed at least 1-2 times per week by 46.3% of the participants. A percentage of 61.1% of the participants consumed butter at least weekly, margarine was consumed at least 1-2 times per week by 47.4% of the adults, while 52% declared consuming the traditional fatty pork bacon at least 1-2 times/week and 26.3% used the pork fat for cooking/eating at least weekly.

The results show that 26.1% of the subjects were smokers (smoked in the last week), while 31.9% of the smokers declared that they would like to quit smoking in the next 6 months.

Exposure to passive smoking in public places in the last week was declared by 29.3% of non-smokers, while 12.5% of non-smoking subjects were exposed to passive smoking in their own houses in the last week.

A percentage of 85.8% of the participants declared that they would like to receive more information and education regarding healthy lifestyle promotion and cardiovascular disease prevention.

Factors which influence behaviors

The results of the bivariate correlation analyses show that there were several differences regarding behavior based on age, gender, residence and educational level (Table II).

Older people had a higher tendency to have a higher BMI, to cook with pork fat, not to avoid chicken skin, while they ate dark bread more frequently and were less involved in active smoking or exposed to passive smoking in public places or in their homes. On the other hand, they were more interested in getting more information about health promotion and cardiovascular disease prevention.

In comparison with men, women performed less physical activity. They declared a stronger intention to consume more fruits and vegetables, consumed olive oil more frequently, and fish and chicken as well as margarine and traditional bacon fat less frequently. They were less involved in active smoking.

In comparison with people from rural areas, people from urban areas declared eating more fruits and vegetables, consuming pork and beef meat less frequently, while using pork fat for cooking less frequently and eating dark bread more frequently. Active smoking was more frequent in urban areas.

Table I
Opinions regarding the role of lifestyle in CVD prevention

Opinions	I totally agree/ I partially agree %	Do not know %	I totally disagree/ I partially disagree %
A high body weight increases the risk of CVD	91.4	6.3	2.3
Consumption of fruits and vegetables contributes to prevention of CVD	88.3	7.8	3.9
Consumption of food rich in dietary fibers (e.g. dark bread, beans) contributes to prevention of CVD	43.9	43.3	12.8
High consumption of animal fat increases the risk of CVD	73	24.7	2.3
Performance of physical activity contributes to prevention of CVD	93.3	3.9	2.8
Active smoking increases the risk of CVD	95.6	4.4	0
Passive smoking increases the risk of CVD	93.9	5.6	0.5

Table II
Factors which influence behaviors - results of bivariate correlation analyses.

Indicators	Age [a]	Gender [b]	Rural-urban [c]	Education level [d]
BMI [e]	0.304	NS	NS	NS
Physical activity [f]	NS	-0.203	NS	NS
Portions of fruits and vegetables [g]	NS	NS	0.213	NS
Intention to consume fruits and vegetables [h]	NS	0.159	NS	0.168
Frequency of beans consumption [i]	NS	NS	NS	-0.247
Frequency of dark bread consumption [i]	0.273	NS	0.345	NS
Frequency of white bread consumption [i]	NS	NS	-0.309	NS
Frequency of fish consumption [i]	NS	-0.403	NS	NS
Frequency of pork consumption [i]	NS	-0.242	-0.149	NS
Frequency of beef consumption [i]	NS	NS	-0.237	NS
Frequency of chicken consumption [i]	-0.255	-0.174	NS	NS
Removing skin from chicken meat [j]	-0.263	NS	NS	0.186
Frequency of sunflower oil consumption [i]	NS	NS	NS	NS
Frequency of olive oil consumption [i]	NS	0.230	NS	NS
Frequency of butter consumption [i]	NS	NS	NS	0.214
Frequency of margarine consumption [i]	NS	-0.334	NS	NS
Frequency of pork fat use for cooking [i]	0.231	NS	-0.233	-0.347
Frequency of traditional fatty pork bacon consumption [i]	NS	-0.360	NS	-0.258
Active smoking [k]	-0.397	-0.162	0.440	NS
Passive smoking in public places [l]	-0.273	NS	NS	NS
Passive smoking at home [l]	-0.278	NS	NS	NS
Want more information [m]	0.217	NS	NS	0.195

From 22 to 80 years old; a- Coded as Men-1; Women -2; b- Coded as Rural-1, Urban-2; c- Coded as Low-1, Medium-2, High-3; d- Coded as 1-Underweight, 2-Normal, 3-Overweight, 4-Obese; e- Coded as less than 30 minutes/day-1, at least 30 minutes per day-2; f- Medium number of portions of fruits and vegetables consumed per day; g- Coded as No-1, Yes-2; h- Coded as less than 1/week-1, 1-2 times/ week-2, 3-4 times/week-3, 5-6 times/week-4, daily-5); i- Coded as Never-1, Sometimes-2, Frequently-3; j- Coded as 1-No, 2-Yes; k- Number of days/week; l- Coded as No-1, Yes-2; NS- non-significant (P<0.05).

On the other hand, a higher educational level was associated with a stronger intention to eat more fruits and vegetables, eating butter more frequently and consuming traditional fatty bacon or pork fat for cooking less frequently, while removing skin from chicken meat more frequently. People with a higher educational level also expressed a higher interest in finding more information about prevention of CVD.

Discussions

More than 93% of the participants know that active and passive smoking have a risk for CVD. Other studies also underline the high level of knowledge of the Romanian population regarding the health effects of smoking (Trofor et al., 2018). One quarter of the participants declared smoking, this habit being more frequent among men and among those from urban areas. Almost one third of the smokers declared their intention to try to quit smoking in the next six months, emphasizing the need for medical counseling for this, in accordance with the results of other studies (Cehab et al., 2018; Vogiatzis et al., 2017). Among non-smokers, 29% declared exposure to passive smoking in public places in the last week and 12% in their own houses, exposure to passive smoking being more frequent among younger non-smokers. The study was performed before the ban of smoking in public places including bars and restaurants, which came into force in Romania in 2016. It might be possible that exposure to passive smoking in public places has since diminished as a consequence of the legislation, as other studies indicated with regard to the effects of comprehensive banning of smoking in public places (Lotrean, 2008).

At the same time, more than 91% of the study sample know that physical activity and maintaining an appropriate body weight contribute to prevention of CVD. Half of the participants had a higher BMI, with older people having a higher tendency to be overweight. This underlines the need for education and counseling activities with regard to body weight management and chronic disease prevention, issues which were also underlined by other Romanian studies performed in different groups of Romanian adults (Lotrean et al., 2016; Lotrean et al., 2013). Three quarters of the participants declared performing at least 30 minutes of physical activity daily, which is a positive issue.

With regard to nutritional habits, the majority of the subjects recognize the importance of consuming fruits and vegetables. Nevertheless, the majority do not consume 5 portions of fruits and vegetables as recommended daily, but almost half declared their intention to eat more the next month. Other studies also emphasized the fact that low consumption of fruits and vegetables is an important issue which should be targeted by educational campaigns, programs and counseling (Lotrean et al., 2016; Lotrean et al., 2013; Slavin & Lloyd, 2012; Zhan et al., 2017).

The study shows the tendency of the majority of the study sample to frequently include in their diet chicken

meat (but only half of these remove the skin frequently) and pork, while fish meat is consumed at least once/week by less than two thirds of the participants and less than half eat beef weekly, with men eating fish and chicken more frequently than women, while people from rural areas eat pork and beef more frequently in comparison with those from urban areas.

The fat preferred for cooking is sunflower oil, while almost half consume or use for cooking at least once per week butter (consumption is more frequent among those with a higher educational level), margarine (men consume more than women), pork fat for cooking (more frequent among people from rural areas and among those with a lower educational level), fatty pork bacon (more frequent among men and people with a lower educational level). On the other hand, less than one out of two participants use olive oil at least once weekly, women tending to consume it more frequently. This situation is probably in relation to gastronomic and cultural influences, but also with the fact that more than one quarter do not know that animal fat increases the risk of CVD, as other studies also suggest (Lotrean et al., 2016). At the same time, consumption of white bread is preferred over consumption of dark bread, which is also in accordance with the gastronomic culture of the region, while less than half of the participants recognize the importance of eating food rich in fibers such as dark bread and beans for CVD prevention.

Conclusions and suggestions

1. The study evaluated the opinions and behaviors of Romanian adults having relatives with CVD with regard to lifestyle and cardiovascular health promotion.

2. The results underline the need for appropriate screening, assessment, education and counseling of adults which have CVD patients in their family in order to detect and correct inappropriate lifestyle and medical conditions.

3. The majority of the participants declared that they would like to receive more information and education regarding healthy lifestyle promotion and CVD prevention, which is an encouraging fact.

4. Efforts should be made to also get access to groups such as people with a lower educational level who seem to be less interested in these types of interventions.

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