Association between high levels of stress and risky health behavior

Amira Kurspahić-Mujčić¹, Feriha Hadžagić-Ćatibušić², Suad Sivić³, Emina Hadžović⁴

¹Department of Social Medicine, School of Medicine, ²Pediatric Clinic, Clinical Center, University of Sarajevo; Sarajevo; ³Public Health Institute of Zenica-Doboj Canton, Zenica, ⁴Primary Health Care Center Travnik, Travnik; Bosnia and Herzegovina

ABSTRACT

Aim To determine the amount of stress to which young and adult persons were exposed during the last twelve months and relationship between stress levels and risky health behavior.

Methods The study was conducted from November 2011 until January 2012 in the Sarajevo Canton. The study included 700 respondents divided into two groups: 350 young people aged 15-27 years and 350 adults aged over 27 years. As an instrument for data collection a questionnaire was used to provide information on demographic characteristics of respondents and habits, as well as Holmes & Rahe stress scale to determine the level of stress.

Results The average value of the stress scale score was 302.56±149.75 for the total sample, 331.7±165.7 for youth and 273.5±125.6 for adults. Respondents from the group of young people in the last twelve months had an average of 3.6 highly stressful events and 1.9 in the group of adults. In the group of young people there were more respondents with inadequate nutrition (p=0.023) and more smokers (p=0.128). In the group of adults more people were overweight (p=0.001) and had reduced physical activity (p=0.006). Both study groups had an equal number of respondents who consumed alcohol. People with high levels of stress consumed alcohol significantly more (p=0.03) and smoked (p=0.02) compared to those with low levels of stress.

Conclusion The respondents of both groups were exposed to large amount of stress that was associated with smoking and alcohol consumption. There is a need to design appropriate strategies for coping with stress and their implementation in lifestyle.

Key words: stressful life events, age, coping
INTRODUCTION

Today, stress is defined as a physical or mental tension caused by factors which alter the existing balance of the body (1). Stress is conceptualized in three ways (2). Firstly, stress is seen as an objective stimulus that triggers the response to stress. Stress occurs in those circumstances where there is a deviation from the optimal level of requirements (3). Secondly, stress is seen as a response of the body to a stimulus. Stress occurs in response to any stressful stimulus, regardless of its nature (2). Thirdly, stress is an interaction of a person and its environment in a stressful situation. Stress occurs in case of imbalance between knowledge about the existence of specific needs and knowledge about the possibilities for satisfying those needs (4).

Cardiologist Wolf in 1950 noticed that his patients, one year before the onset of the disease, had reported about more frequent stressful events (5). Holmes and Rahe believed that every event that caused a change and discontinuity in the life of people is stressful, because it leads towards the need to adapt. Trying to measure the intensity of experienced stress caused by major life events Holmes and Rahe have constructed a standardized list of stressful events called a Scale in order to assess social adjustment (6). Even the initial applications of Holmes & Rahe stress scale established association of major life events and the occurrence of physical disorders and diseases (7-9). Holmes and Rahe considered that a period of two years after major stressful events is the period of greatest risk, or the period in which the tendency for occurrence of stress-related illness is significantly increased influenced by adaptive efforts that are being made by an individual in order to adjust to life changes that occurred (6).

Conducted studies have found that exposure to stressful events leads to changes in health behavior (10,11). As a way of coping with stress and achieving relaxation some persons consume alcohol, smoke cigarettes, while others turn to excessive food intake, thereby increasing the risk of obesity, cardiovascular diseases and diabetes (12-15).

Measurement of exposure to stress helps its better management, so ultimately better health and positive health behavior (16).

Therefore, the aim of the study was to determine the amount of stress to which young and adult persons were exposed during the last twelve months and relationship between stress levels with risky health behavior.

EXAMINEES AND METHODS

This prospective study was conducted between November 2011 and January 2012, in the local communities within the municipality of Novo Sarajevo. The sample consisted of 700 respondents who were divided into two groups. The first group consisted of 350 young people aged 15-27 years, and the second group consisted of 350 adults aged over 27 years. In order to conduct the study we obtained the approval of the Ethics Committee of the School of Medicine, University of Sarajevo. Each respondent was provided with an informed consent for the participation in this study.

Respondents were selected randomly. Inclusion criteria for the study were habitual residence at Novo Sarajevo municipality and the minimum age of fifteen years. The study did not include people who live alone, have disabilities, recipients of social welfare and people without completed primary school.

Respondents were asked to complete an anonymous questionnaire containing questions related to age, gender, total number of years of education, body weight, body height and habits (smoking, alcohol consumption, physical activity) and the Holmes & Rahe stress scale which summarize the events in life that have occurred in the last twelve months.

The completed questionnaire of respondents was collected through an opening in a special box designed for this study.

Smokers are considered to be persons who daily smoke more than ten cigarettes a day (17). Excessive alcohol consumption was considered if a person drank more than five glasses of beer/two glasses of wine/three small glasses of brandy) per week (18). Decreased physical activity entailed less than 150 minutes of moderate physical activity or 75 minutes of intense physical activity or an equivalent combination of both types of activity per week (19). Persons with Body Mass Index equal to or over than 25 kg/m2 were considered as overweight (20).

The statistical analysis of data included descriptive methods (relative numbers, standard error,
standard deviation, mean) and inferential statistics (chi-square test). A p value below 0.05 was considered statistically significant.

**RESULTS**

In both study groups, of young and adult persons, women were slightly more represented. In the group of young people there were 193 (55.1%) females, 177 (50.6%) in the group of adults. (p=0.128).

In the group of young people average age was 22.1 years (SD±2.3), the youngest respondent was 15 and the oldest 27 years. In the group of adults average age was 48.2 years (SD±11.3), the youngest respondent was 28 years old and the oldest 84 years.

Analysis of results on scale of recent stress shows that the mean score was 302.56±149.75 for the total sample, 331.7±165.7 for the group of young people and 273.5±125.6 for adult respondents. Statistical analysis showed that between the two groups a statistically significant difference was observed in the average score on the stress scale (p=0.000). Respondents from the group of young people had significantly higher values at the scale of recent stress compared to those from the group of adults (Table 1).

The analysis of the number of stressful events in specific score categories per person, which occurred during the last year, shows that the respondents from the group of young people had a statistically significantly higher number of highly stressful events (60-100 points), while respondents from the group of adults had a significantly higher number of low stressful events (5-25 points). Between the groups there was no statistically significant difference in the number of moderately stressful events (30-55 points) (Table 2).

The analysis of the number of respondents with risky health behavior shows that in the group of young people there were significantly more respondents with inadequate nutrition (p=0.023) and more smokers, but not with significant difference (p=0.128). In the group of adults there were significantly more respondents who were overweight (p=0.001) and with reduced physical activity (p=0.006). In both study groups there was an equal number and percentage of respondents who consumed alcohol (Figure 1).

![Number of respondents with risky health behaviors in the group of young people and the group of adults](image)

The analysis by Pearson’s coefficients of linear correlation showed a significant correlation between the scale of recent stress with tobacco smoking (p=0.02) and alcohol consumption (p=0.03). Significant correlation between the value of the stress scale score and overweight (p=0.51), inadequate nutrition (p=12.24) and reduced physical activity (p=0.52) was not found.

**DISCUSSION**

The goal of the study was to determine the amount of stress to which young persons and adults were exposed during the last twelve months.

![Number of stressful events, certain score categories by respondents in the group of young people and the group of adults](image)
months with a Holmes & Rahe stress scale and relationship between stress levels and risky health behavior. The results of the study showed a very high average value of the score on the stress scale of respondents from the group of young people (331.7±165.7 points). According to the results of other studies on young people, students are particularly exposed to a large amount of stress (12, 21, 22). A study conducted among students of public and private schools in India found the average value in the range 404.5-458.7 points (23). The average value of the recent stress scale score in the group of adults in our study was 273.5±125.6 points, or it was at medium high level. Adults were exposed to the same amount of stress as health professionals in a study carried out in India (24). Stress levels of adult respondents were at the same level of stress as in persons in highly stressful occupations (25).

Given the score values obtained by Holmes & Rahe stress scale it can be concluded that the risk of stress-related diseases occurrence in the near future for respondents in the group of young people is high or very high, and for the respondents in the group of adults medium to high (6).

In the past twelve months the respondents from both groups had a number of events that did not happen every day and which were by nature generally unchangeable. The number of such stressful events of different score categories by the respondent in the study ranged from 1.9 to 4.1, which is considerably higher when compared to the results of studies conducted in the United States where the number of stressful events per respondent was 1.79±2.10 (26). In the structure of stressful events among respondents in the group of young persons it significantly more represented high score events that require great effort of the individual to adapt to a new situation. Events which represent easier life changes were significantly more represented among the respondents from the group of adults.

Some longitudinal studies have shown that exposure to a large amount of stressful experiences is a predictor of risky health behaviors (27). A study conducted among medical doctors, which registered a high level of stress, has determined that physicians, as a way to reduce the negative effects of stress, used to smoke, use alcohol, have excessive food intake and reduce their physical activity, besides the fact that it has been proven that this way of coping with stress breaks the natural anti-stress mechanisms and does not lead to reduction of stress, but creates addiction (28).

Significant association of high levels of stress and alcohol consumption was found in a study conducted in the Netherlands on a sample from the general population that included 2714 subjects aged 15-74 years (29). A study conducted in India has shown that an increase in the level of stress leads to greater alcohol consumption, and that in the same manner, the reduction in the level of stress leads to the reduction of alcohol consumption (26).

The results of our study showed a significant association of high levels of stress with smoking and alcohol consumption. Smoking was more frequent among respondents in the group of young people, who also have higher average value of stress score compared to those from the group of adults. Exposure to stressful events in their youth may be the reason for the beginning of excessive alcohol drinking and smoking, which is shown in a study conducted among 1,074 students in Los Angeles (30).

Although a significant number of studies conducted around the world found a connection between risky health behaviors and stress levels, in Bosnia and Herzegovina similar study has not been conducted, despite the additional fact that in the Federation of Bosnia and Herzegovina, prevalence of smoking among adults is 37.6%, 14.3% among young people, while 29.5% of the adult population consume alcohol and 21.5% are overweight (31).

In conclusion, the study found that the respondents of both groups were exposed to a large amount of stress that was associated with smoking and alcohol consumption. The obtained results are appealing and suggest the need to design intervention programs with alternative techniques to reduce stress such as muscle relaxation, meditation, physical activity and their incorporation into lifestyle in order to reduce the use of alcohol and smoking as a way of coping with stress.

Given that the respondents from the group of young people had an extremely high value of stress scale score, there is a need to conduct
similar research, which will be focused on students as a risk group in which high levels of stress can have negative implications on the emotional and health status and later on their professional career.

REFERENCES


FUNDING

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TRANSPARENCY DECLARATION

Competing interests: None to declare.