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Original research article

The importance of education on physical activities regarding cardiovascular illnesses

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Abstract

The aim of this article is to show the positive effects of physical activities in the prevention of cardiovascular illnesses and the options of nurses and doctors in providing education regarding physical activities.

The data were collected using the quantitative research method, which intended to find out the level of education regarding physical activities.

We can say that doctors speak with their patients about physical activities more frequently than nurses. Approximately one fifth of doctors always or frequently speak about changes in physical activities and almost one quarter do not speak about it with the patients at all. The frequency of conversations with doctors about the changes in physical activities varies by patients' gender, age, education, marital status, place of residence and employment. 11.4% of nurses always or frequently speak about this topic with patients and two fifths never speak about it. The frequency of conversations with nurses about the changes in physical activities varies by patients' gender, age, education, marital status, place of residence and employment. People assess the influence of doctors more positively. 24.8% of respondents assessed a nurse's influence as very good or good, 51.1% assessed it as average and 24.1% assessed it as bad. The assessment of a nurse's influence regarding changes in physical activities was related to patients' gender, size of residence and employment.

The research showed that, although the activities are offered by medical personnel, mostly people between 40 and 59 years do not use this possibility.

Keywords: Cardiovascular illnesses; Nurse; Physical activity; Prevention

Introduction

The first half of the 20th century was marked by the increase of the occurrence of heart attacks and other types of ischemic heart disease (IHD), especially in men aged between 40 and 60 years. Due to this fact, cardiovascular epidemiology was developed. At the beginning of preventative cardiology (at the end of the 1960s), an expert manual for the study of cardiovascular illnesses was published (Rosolová et al., 2013). The manual of Cardiovascular Survey Methods was written by Rose and Blackburn (1968) and it defines the basic principles and standardized methods which are specific for studying cardiovascular epidemiology and the prevention of IHD. The manual has been updated twice – in 2002 and 2004 (Luepker et al., 2002; 2004). In the following years, great attention was paid to studying the etiology, diagnostics, treatment and prevention of cardiovascular illnesses. In the 1980s, the WHO was also very active. They developed the Intensified Preventive Programme for IHD, in which 20 world countries participated. Its co-ordination was directed by the Research Base of the Institute of Clinical and Experimental Medicine (Hořejší, 1987). This activity started systematic care in the prevention of cardiovascular illnesses. It was focused on lifestyle changes to decrease the average values of cholesterol and blood pressure and to lead to the restriction and quitting of smoking. Another goal was an increase in active life, especially of people with a sedentary lifestyle (Rosolová et al., 2013). The preventability of IHD was no longer doubted and the importance of preventative cardiology grew, including the necessity of education of medical workers about preventative cardiology (also for them to be able to educate people). The most significant result in preventative education is the change in risk profile, especially morbidity and mortality caused by cardiovascular illnesses (Šimon et al., 2001). Insufficient physical activity is one of the changeable factors of a lifestyle that affects the occurrence of cardiovascular illnesses (Bulava, 2017). The recommendations for clinical practice, which are a summary of contemporary scientific findings and

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are processed according to the medical evidence-based principle (evidence-based medicine), help to improve the quality of care, increase the effectiveness of diagnostics and treatment, and establish the options of primary and secondary prevention (Rosolová et al., 2013). The recommendations of The Fifth Joint Task Force from 2012 (Perk et al., 2012) revise the care regarding cardiovascular prevention, the reason of its importance, benefitted subjects, the methods of the realization of prevention and the place of the preventative programme (Guyatt et al., 2008). The mentioned activities regarding preventative cardiology and the increasing involvement of medical workers in preventative education are growing in importance, where governable factors in the prevention of cardiovascular illnesses are of great significance. Rosolová et al. (2013) state that the basic principles of a healthy lifestyle include the absence of tobacco, physical activities, a well-balanced diet and minimum stress. Prospective longitudinal studies carried out in the 1970s proved the influence of physical inactiveness on the increase of the relative risk of cardiovascular and total mortality (Paffenbarger et al., 1978). Regular physical activities improve cardio-respiratory fitness, help to maintain and reduce body weight and improve the psychological well-being of people (Rosolová et al., 2013). Adequate physical activities should take between at least 2 and 2.5 hours of aerobic activities a week (Perk et al., 2012). Such physical activities must be individualized according to one's health condition, as well as their personal attitude towards physical activities. The goal is not forcing people to be physically active, which would not satisfy them, but to find a convenient activity in every aspect, i.e. recreational walking (Rosolová et al., 2013).

The goal of this article is to assess the positive effect of physical activities on the prevention of cardiovascular illnesses and the options of nurses and doctors in providing education regarding physical activities.

Materials and methods

The data was collected using a quantitative research method. Its purpose was to determine the level of education regarding physical activities. The research team created three non-standardized questionnaires (for doctors, nurses and the public). The research was carried out in the Czech Republic from the 1st to the 20th April 2016 using professional interviewers from the Institute for the Study of Health and Lifestyle. The statistical analysis was carried out using the SASD 1.4.12 and SPSS programmes.

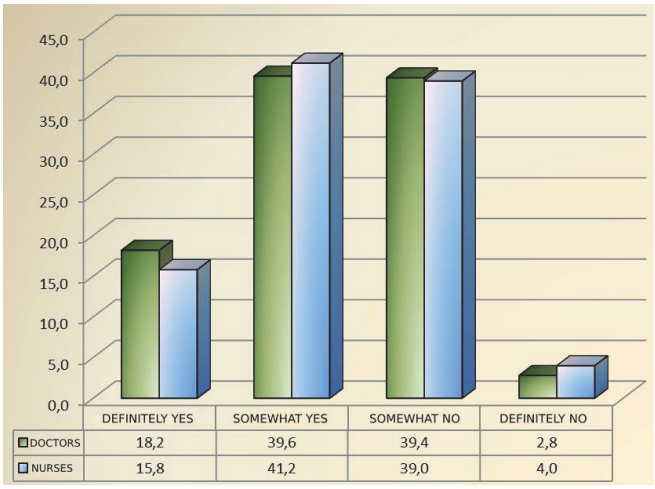
The selected sample group of respondents (at the age of 40 years and older) included 1,992 people who were selected by quotas. There were 937 (47.0%) men and 1,055 (53.0%) women. The size of the sample group was based on the data of the Czech Statistical Office from the 31st December 2014 (Institute of Health Information and Statistics of the Czech Republic, 2014). The data is representative regarding the age of the respondents. The sample group included 1,000 doctors and 1,000 nurses.

We processed the 1st classification stage as well as the 2nd stage of the contingency table of the selected indicators. The 1st classification stage included the calculations of absolute and relative numbers, the modus, the median, the average, the dispersion and the decisive deviation. For every indicator, we calculated the estimate of the dispersion and the decisive deviation, dispersion and interval estimate of the average value of 0.05 and the interval estimate of the dispersion of 0.05. To calculate the level of dependence of selected indicators, we calculated the Wallis, Spearman and correlation coefficient. We also applied the chi-squared test of goodness of fit. In this case, we applied the Yates correction in case of an insufficient number of monitorings. Finally, we calculated the test of independence on the level of significance of $\alpha = 0.05$, $\alpha = 0.01$ and $\alpha = 0.001$.

Results

Both doctors and nurses speak about the necessity of the change of lifestyle regarding physical activities. 51.2% of the respondents said that their doctor always, often or sometimes speaks about this topic, while 34.6% say that it is the nurse who speaks about this subject. 24.7% said that the doctor never speaks about it and 43.6% said the same about the nurse. Doctors speak about the topic more frequently than nurses.

The respondents were asked about their patients' interest in physical activities. 57.8% of doctors and 57.0% of nurses responded that patients are interested in the information regarding physical activities. The rest responded negatively. There were no statistically significant differences in the doctors' and nurses' opinions on this question. The chi-squared test of independence (χ^2) in this case has the value of 4.149 with 3 degrees of freedom, $P = 0.246$ (n. s.). We can conclude that approximately three fifths of doctors and nurses agree that patients are interested in the information regarding changes in physical activities (Chart 1).



	DEFINITELY YES	SOMEWHAT YES	SOMEWHAT NO	DEFINITELY NO
DOCTORS	18,2	39,6	39,4	2,8
NURSES	15,8	41,2	39,0	4,0

Chart 1. The interest of patients in the information regarding changes in physical activities

When interviewing the patients about changes in physical activities, we identified statistically significant relationships between all monitored socio-demographic indicators. We identified a statistically significant relationship between the frequency of conversations with doctors about changes in physical activities and the patients' gender. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 10.567 with 4 degrees of freedom ($P < 0.05$). Men speak about the topic with their doctors significantly more frequently than women. The frequency of conversations with doctors about the topic is related to the respondents' age. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 114.862 with 16 degrees of freedom ($P < 0.001$). The youngest respondents (between 40 and 49 years) significantly more frequently stated that they had never

spoken about the topic with their doctors. The frequency of the conversations increases with age and it is significant in age groups between 60 and 79 years. The frequency of the conversations is significantly related to education. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 28.186 with 16 degrees of freedom ($P < 0.05$). We identified the relationship between the frequency of the conversations about the topic with doctors and the respondents' marital status. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 31.352 with 16 degrees of freedom ($P < 0.05$). Single respondents spoke about it with their doctors significantly less than those who were widowed. In terms of the conversations with nurses, we also identified a number of statistically significant relationships between the socio-demographic indicators. The frequency of conversations with nurses about the topic is related to the respondents' age. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 69.853 with 16 degrees of freedom ($P < 0.001$). The youngest respondents (between 40 and 59 years) significantly more frequently stated that they had never spoken about the topic with nurses. The frequency of the conversations increases with age. The frequency of the conversations with nurses is significantly related to education. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 54.189 with 16 degrees of freedom ($P < 0.001$). (The test results were weakened by the insufficient number of monitorings in two boxes of the contingency table. We applied the Yates correction.) Respondents with a lower level of education (primary school and higher vocational school) spoke significantly more frequently about the topic with nurses. University educated respondents significantly more frequently stated that they never spoke about it with nurses. We identified the relationship between the frequency of the conversations about the topic with nurses and the respondents' marital status. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 52.265 with 16 degrees of freedom ($P < 0.001$). (*The test results were weakened by the insufficient number of monitorings in two boxes of the contingency table. We applied the Yates correction.*) Single and married respondents spoke about it with nurses significantly less than the divorced and the widowed. The frequency of the conversations with nurses is significantly related to the respondents' size of residence. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 39.744 with 16 degrees of freedom ($P < 0.001$). The residents of smaller municipalities (up to 5,000 people) significantly more frequently stated that they never spoke about the topic with nurses.

Regarding the influence on the changes in their physical activities, respondents assessed doctors more positively than nurses 36.5% of the respondents assessed the doctors' influence as very good or good, whilst 24.8% gave nurses the same assessment. 17.3% of the respondents assessed the doctors' influence as bad or very bad, whilst 24.1% gave nurses the same assessment (Table 1 and 2). 46.2% of respondents assessed the doctors' influence as average, whilst 51.1% gave nurses the same assessment. We did not identify any statistically significant relationships between the monitored socio-demographic indicators regarding doctors in the second classification degree. This means that the indicators do not influence the respondents' opinion on their doctors' influence on the changes in physical activities, and the division of the total number of the respondents in the sample group is not statistically significantly different from the division in its individual parts which are divided by the socio-demographic indicators.

Regarding the nurses' influence on the changes in physical activities, we identified more statistically significant relationships between the socio-demographic indicators. The assessment of the nurses' influence is significantly related to the respondents' gender. The characteristic of the chi-squared test

Table 1 – The influence of doctors on the changes in physical activities

Indicator	Absolute number	Relative number	Valid relative number	Cumulative total	Relative cumulative total
1. very good	185	9.3%	9.3%	185	9.3%
2. good	542	27.2%	27.2%	727	36.5%
3. average	921	46.2%	46.2%	1,648	82.7%
4. bad	229	11.5%	11.5%	1,877	94.2%
5. very bad	115	5.8%	5.8%	1,992	100.0%
Did not respond	0	0.0%	0.0%	1,992	100.0%
Total	**1,992**	**100.0%**	**100.0%**	**1,992**	**100.0%**

Table 2 – The influence of nurses on the changes in physical activities

Indicator	Absolute number	Relative number	Valid relative number	Cumulative total	Relative cumulative total
1. very good	96	4.8%	4.8%	96	4.8%
2. good	398	20.0%	20.0%	494	24.8%
3. average	1,018	51.1%	51.1%	1,512	75.9%
4. bad	225	11.3%	11.3%	1,737	87.2%
5. very bad	255	12.8%	12.8%	1,992	100.0%
Did not respond	0	0.0%	0.0%	1,992	100.0%
Total	**1,992**	**100.0%**	**100.0%**	**1,992**	**100.0%**

of independence (χ^2) in this case has the value of 14.093 with 4 degrees of freedom ($P < 0.01$). Women assessed the nurses' influence more positively than men. Men assessed it significantly more as average. This assessment is also related to the size of the respondents' place of residence. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 28.408 with 16 degrees of freedom ($P < 0.05$). The larger the residence, the higher the percentage of those who assess the nurses' influence as average is. The assessments of people who live in municipalities with up to 1,000 residents are the most ambivalent. They mostly assessed the nurses' influence as very good or very bad. The assessments of the nurses' influence on the change in physical activities were also affected by the respondents' employment. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 46.481 with 20 degrees of freedom ($P < 0.01$). (The test results were weakened by the insufficient number of monitorings in two boxes of the contingency table. We applied the Yates correction.) Employees assessed the nurses' influence very negatively. Pensioners and disabled pensioners assessed it significantly more positively.

Discussion

Špinar et al. (2007) state that physical activities are one of the significant preventative measures regarding cardiovascular illnesses. They can be helpful in achieving the optimal weight, and also decrease blood pressure and affect the metabolism of fats. Hamrik et al. (2014) also point out the importance of physical activities. They state that they are a factor which can influence cardiovascular illnesses. They assessed this factor from the point of view of regularity and frequency. The research which was carried out as part of the project entitled: Interventions in Preventative Cardiology, which is financed by the Czech Health Research Council of the Czech Republic, verified the ongoing education regarding the prevention of cardiovascular illnesses from the point of view of doctors, nurses and patients. Based on the quantitative method of the research, we can state that patients speak about changes in their lifestyle more frequently with doctors than nurses. 51.2% of the respondents stated that doctors always, often or sometimes speak about the topic with them, while 34.6% said that it was the nurse who speaks with them about it. Bártlová (2005) states that the most important factor of targeted health education and consulting is improving health and the motivation to live a healthier lifestyle. Despite that fact, 24.7% of people state that their doctor has never spoken with them about the changes in physical activities and 43.6% say the same about their nurse. Contrary to that fact, the quantitative data from the questionnaires from doctors state that 57.8% of the respondents are interested in the changes in physical activities and the nurses state that it is 57.0%. The education of the public on healthy lifestyle/effective physical activities can be conducted in groups or individually using empathic communication. Such communication can be of great influence in accepting recommendations (Miller and Rollnick, 2004). The co-operation between a doctor and a nurse regarding preventative cardiology is very positive for people, and well-organized interventions are the base for the required effect. Rosolová et al. (2013) state that trained nurses and other medical workers should be included in intervention teams and educate people on diet and regulated physical activities. In the Czech Republic, nurses in preventative cardiology can work independently if they have qualified training (Kordulová, 2017). Nurses can gain such education at higher vocational schools or universities. For example, in Hungary, they gain training regarding the education in preventative activities by maintaining and improving their competences through lifelong education (Erzsébet, 2016). Czech nurses can work independently at the departments of preventative cardiology, GP's surgeries or specialists, where they carry out the education after gaining the doctor's consent. The frequency of conversations with doctors about the topic is related to the respondents' gender. Men speak about the topic with their doctor significantly less than women. The annual publication of the Institute of Health Information and Statistics of the Czech Republic (IHIS, 2014) states that cardiovascular illnesses are responsible for 46.8% of female mortality, and the percentage is 43.1% for men. Evidence-based medicine for the prevention and treatment of cardiovascular illnesses assesses large randomized studies with the tendency of the representative balance of both genders. Despite this fact, the percentage of women in clinical studies is still low, especially compared to the real situation in the population (Melloni et al., 2010). The frequency of conversations with doctors about the topic is related to the respondents' age. The characteristic of the chi-squared test of independence (χ^2) in this case has the value of 114.862 with 16 degrees of freedom ($P < 0.0101$). The youngest respondents (between 40 and 49 years) significantly more frequently stated that they had never spoken about the topic with their doctors. The frequency of the conversations increases with age and it is significant in the age groups between 60 and 79 years. We identified a number of statistically significant relationships between socio-demographic indicators. The frequency of conversations with nurses about the topic is also related to the respondents' age. The youngest respondents (between 40 and 59 years) significantly more frequently stated that they had never spoken about the topic with nurses. This fact changes with age and the frequency of these conversations increases. Respondents with a lower level of education (compared to high-school and university educated respondents) speak with their nurse about the topic more frequently. The residents of smaller municipalities (up to 5,000 people) speak with their nurse about the topic less frequently than the residents of larger cities. The respondents assessed their doctor's influence on the changes in physical activities more positively than their nurse's. 36.5% of the respondents assessed the doctors' influence as very good or good, whilst 24.8% gave nurses the same assessment. Dolák et al. (2017) state that general practitioners maintain that targeted education on maintaining physical health in active patients who have regular check-ups is very effective. The assessments of the nurses' influence on the change in physical activities were also affected by the respondents' employment. Employees assessed the nurses' influence more negatively than pensioners and disabled pensioners, who assessed it significantly more positively. Levin-Zamir et al. (2016) reached the same conclusion. They studied health literacy regarding physical activities, which was related to the level of education.

Conclusions

The research was part of the project entitled: Interventions in Preventative Cardiology, which is financed by the Czech Health Research Council of the Czech Republic. It questioned people, nurses and doctors about the educational methods aimed at the improvement of a healthy lifestyle regarding nutrition, physical activities, smoking and stress. It proved that, although medical workers were active in informing their pa-

tients, people (mostly between 40 and 59 years) did not use this possibility. They probably do not sufficiently appreciate the influence of non-pharmacological methods in preventative cardiology and do not acknowledge the risk of such illnesses (considering their age). It is up to medical workers to motivate and communicate effectively so that people know their possibilities to influence their lifestyle and prevent cardiovascular illnesses, and how to maintain physical activity at an elderly age and a subjectively good quality of life.

Conflict of interests
The authors have no conflict of interests to disclose.

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Význam edukace o pohybové aktivitě v prevenci kardiovaskulárních onemocnění

Souhrn
Cílem příspěvku je popsat přínos pohybové aktivity v prevenci kardiovaskulárních onemocnění a možnosti sester a lékařů při poskytování zdravotní edukace v oblasti pohybových aktivit.

Příspěvek přináší data z kvantitativního výzkumu, který byl realizován za účelem zjištění stavu edukace v oblasti pohybových aktivit.

Lze konstatovat, že o změně životního stylu z hlediska úpravy pohybových aktivit hovoří s občany častěji lékař než sestra. O nutnosti úprav pohybových aktivit hovoří s pacientem vždy nebo často přibližně pětina lékařů, necelá čtvrtina lékařů na toto téma s pacientem nehovoří nikdy. Frekvence hovorů s lékařem o nutnosti úpravy pohybových aktivit se významně liší dle pohlaví, věku pacienta, jeho vzdělání, rodinného stavu, místa bydliště a zaměstnání. O nutnosti úprav v pohybových aktivitách hovoří s pacientem vždy nebo často 11,4 % sester, více než dvě pětiny sester na toto téma s pacientem nehovoří nikdy. Frekvence hovorů se sestrou o nutnosti úpravy pohybových aktivit se významně liší dle věku pacienta, jeho vzdělání, rodinného stavu, velikosti místa bydliště a zaměstnání. Z hlediska změny cvičení hodnotí občané pozitivněji vliv lékařů. Vliv sestry na změnu cvičení hodnotí jako velmi dobrý či dobrý 24,8 % občanů, průměrné hodnocení zvolilo 51,1 % dotázaných a jako špatný či velmi špatný označilo vliv sestry v této oblasti 24,1 % respondentů. Hodnocení vlivu sestry na změnu cvičení významně souvisí s pohlavím, velikostí místa bydliště a zaměstnáním občana.

Výzkumné šetření prokázalo, že přestože aktivita je zdravotnickými pracovníky nabízena, občané, především ve věkové kategorii 40–59 let, této možnosti nevyužívají.

Klíčová slova: Kardiovaskulární onemocnění; Pohybová aktivita; Prevence; Sestra

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