Zajchowska Janina, Guty Edyta, Dominik Anna, Kozimala Magdalena, Bilińska Anna. The influence of the education on lifestyle's modification among patients with hypertension and people with prehypertension. Journal of Education, Health and Sport. 2018;8(3):31-42. eISNN 2391-8306. DOI http://dx.doi.org/10.5281/zenodo.1184147
http://ojs.ukw.edu.pl/index.php/johs/article/view/5303

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part b item 1223 (26.01.2017).
1223 Journal of Education, Health and Sport eissn 2391-8306 7

The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 01.02.2018. Revised: 10.02.2018. Accepted: 25.02.2018.

The influence of the education on lifestyle's modification among patients with hypertension and people with prehypertension

Janina Zajchowska[1], Edyta Guty[1], Anna Dominik[1], Magdalena Kozimala[1], Anna Bilińska[1]

[1] Intsitute of Healthcare, State School of Technology and Economics in Jaroslaw, Poland

dr n. med. Janina Zajchowska[1], dr n. med. Edyta Guty[1], mgr Anna Dominik[1], dr n. med. Magdalena Kozimala[1], mgr Anna Bilińska[1]

Abstract

Introdution: The most frequent reason of non-efficient hypertension treatment is lack of cooperation between the patient and the doctor. Increasing the patient's awareness is an important factor which can change the situation. We can do it with the help of educational programs. Purpose of work was to assess the effectiveness of education on the use of lifestyle modifications people with hypertension and prehypertension. Material and methods: The research covered 210 people with hypertension and prehypertension. There were three stages of the research. First stage of the research contained determination of health activities in terms of hypertension. Second stage of the research: education – three patients meetings in small groups twice a week (each meeting lasted an hour and a half). The third stage of the research was conducted three months after the education program. Then, the health activities in terms of hypertension were determined once again. Results: The education have influence some healthy activities in a positive way. After the education 86.2% people used methods which decrease arterial blood pressure. After the education the groups used mainly three methods which decrease arterial blood pressure: salt reduction (55.7%), regular physical activity (65.7%) and animal fat reduction in the diet (38.6%). Discussion: results were similar to results of antother scientific researchs in Poland (among others WOBASZ I, POLSCREEN) and other countries. Conclusions: The education carried out positively influenced some of the health behaviors of the respondents. The most popular methods non-pharmacological main methods for lowering blood pressure after education were salt reduction, regular physical activity and reduced animal fat content diet. The best effects of the educational program were observed among respondents with beginning hypertension.

Key words: health education, hypertension, prehypertension

Introduction

Hypertension is one of the biggest epidemiological problems in XXI century. It is one of the most frequent diseases in Poland and it concerns about 10.5 million people in country with population 38.5 million citizens [1, 2, 3].

Some patients suffer for hypertension during their full life activity and it is connected with their fears of economic and social causes. The most frequent reason of non-efficient hypertension treatment is the lack of cooperation between the patient and the doctor in terms of lifestyle changes and pharmacotherapy. During the consultations the doctor is not able to tell the patient all the vital things about the disease, treatment and disease complications.. The vital factor which can influence on the change of this situation is increasing the patient awareness about the disease. It can be done with the help of the dedicated educational program. The costs of prophylactic and educational activities are much more lower than the expenses which are made for the treatment of heart and blood vessels connected with hypertension complications. These complications are the results of the lack of proper awareness [4].

Purpose of work

The aim of the research was to assess the effectiveness of educational program (designed for patients with hypertension) on the use of lifestyle modifications people with hypertension and prehypertension.

Material and methods

The research was made in Podkarpackie Province, in Internal Medicine and Cardiologic Centre in Lubaczow and also Institute for Health Protection of The Bronisław Markiewicz State Higher School of Technology and Economics in Jaroslaw. There were 210 people with hypertension and prehypertension (age between 16 and 76 years, medium age 53; 55% females and 45% males)

The people were divided into three following groups:

1st group: patients who have been treated because of hypertension for more than 5 years (n=70, medium age 57, 66% females),

2nd group: patients with just diagnosed hypertension (n=70, medium age 54, 50% females),

3rd group: people with prehypertension (systolic pressure from 130 to 139 mm Hg and/or diastolic pressure from 85 to 89 mm Hg) (n=70, medium age 48, 49% females).

There were three stages of the research:

I stage: determination of health activities in terms of hypertension,

II stage: education – three patients meetings in small groups once a week (each meeting lasted 90 minutes),

III stage of the research was conducted three months after the educational program – the health activities in terms of hypertension were determined once again.

The research were made with the help:

1. Program of education and treatment of hypertension (recommended by Polish Association of Hypertension),
2. A survey concerning health activities.

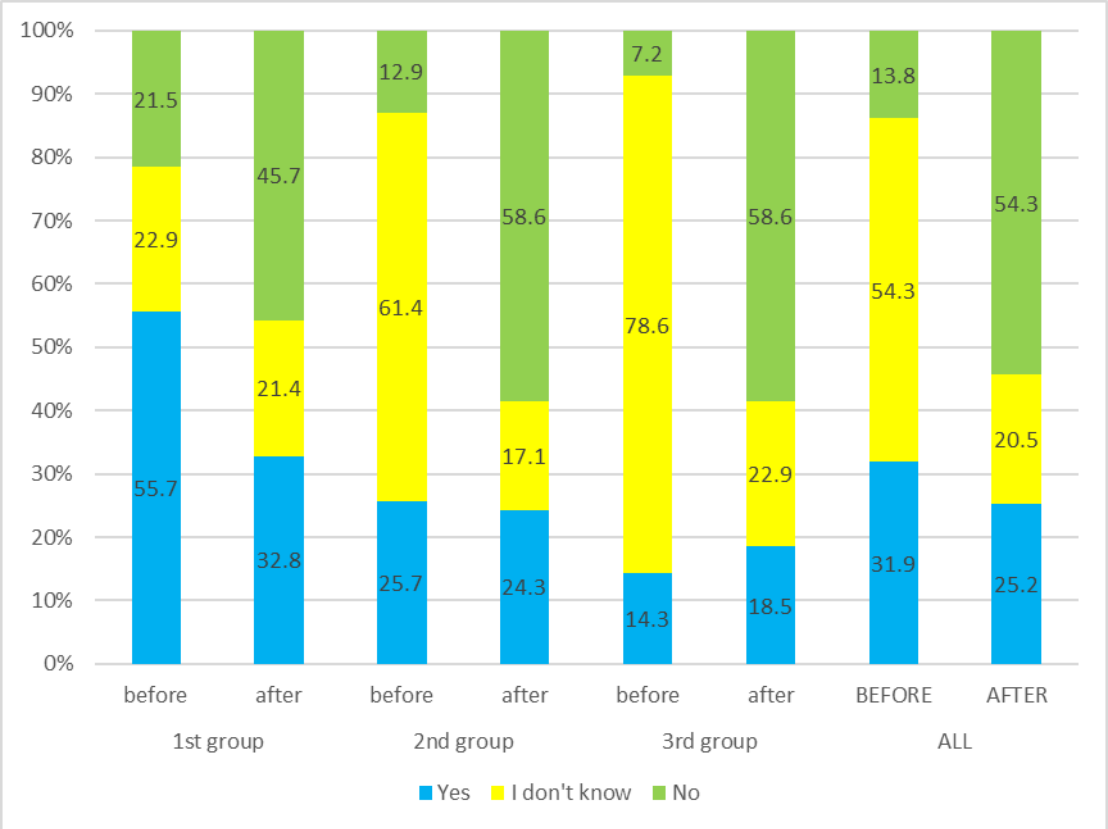
The results of the research were analyzed SPSS (Statistical Package for the Social Sciences) for Windows. Chi-squared test was used. In all cases frequency differences which were at the level $p<0.05$ were thought to be statistically significant.

Results

Before the introduction of the educational program 31.9% of all respondents preferred taking medicine rather than changing the lifestyle. After the education percentage of people who chose that answer decreased to 25.2% (difference wasn't statistically significant). Simultaneously before the education only 13.9% of questioned people mentioned non-pharmacological treatment, but after it was 54.3% (difference statistically significant: $p<0.001$). Percentage of people who chose answer 'I don't know" lowered from 54.3% to 20.5%.

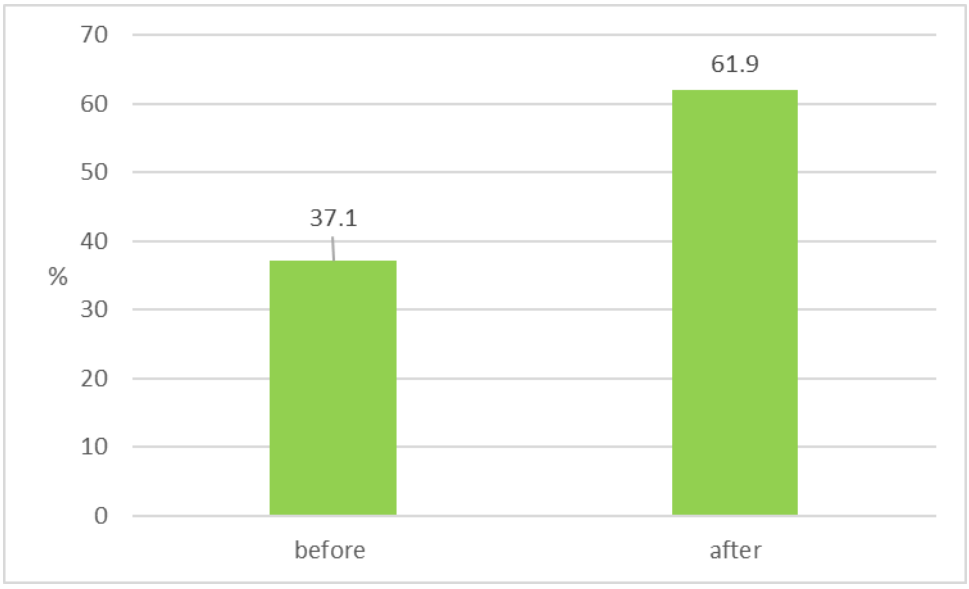
In first group (respondents treated because of hypertension for more than 5 years) most of respondents (55.7%) mentioned only pharmacological treatment. After the education 32.8% of them have had the same opinion (difference statistically significant: $p<0.001$). In second group (people with just diagnosed hypertension) percentage changed from 25.7% to 24.3% (no statistically significant – further: NS). In third group (respondents with prehypertension), percentage rose from 14.3% to 18.5% (NS).

Percentage of people mentioned the modification of the lifestyle in hypertension treatment rose in all groups: in first from 21.5% to 45.7% ($p<0.01$), in second from 12.9% to 58.6% ($p<0.001$) and in third from 7.2% to 58.6% ($p<0.001$).



Picture 1. Answers for the question from all the groups: '*During hypertension treatment I prefer taking medicine rather than changing the lifestyle*'

The educational programm had a vital influence on doing physical exercises for at least 30 minutes without breaks. Before the education only 37.1% of them were doing some exercises. After the education there were 61.9% active patients. The difference was statistically significant ($p<0.001$).



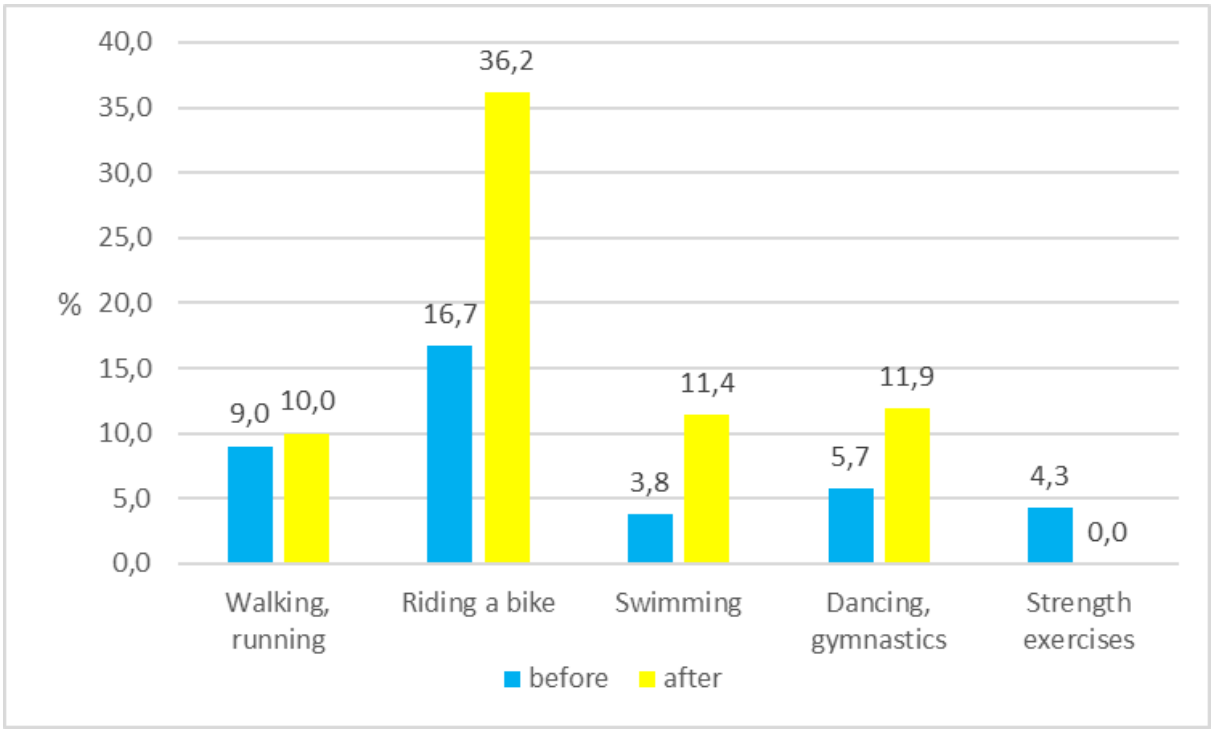
Picture 2. Doing physical exercises for at least 30 minutes without any breaks

In all particular groups differences in doing physical exercises at last 30 minutes without any breaks before and after education were statistically significant. In 1st group percentage rose from 34.3 to 60.0, in 2nd from 44.3 to 70.0 and in 3rd from 32.9 to 55.7.

Table 1. Physical exercises at least 30 minutes without any breaks in particular groups before and after educational program

Group	Before education		After education		Difference		p
	n	%	n	n	%	n	
I (N=70)	24	34.3	42	60.0	18	25.7	<0.01
II (N=70)	31	44.3	49	70.0	18	25.7	<0.01
III (N=70)	23	32.9	39	55.7	16	22.9	<0.001
TOTAL (N=210)	78	37.1	130	61.9	52	24.8	<0.001

The most often chosen kind of physical activity before (16.7%) and after (36.2%) the education was riding a bike (difference was statistically significant: $p<0.001$). After the education there were some other changes: swimming – before the education 3.8% and after the education 11.4% ($p<0.01$), dancing and gymnastics – before the education 5.7% and after the education 11.4% ($p<0.05$). The patients have stopped doing strength exercises which are not recommended in hypertension ($p<0.01$). The results are shown in Picture 3.



Picture 3. Kinds of physical activity (N=210)

Before the educational program only 37.1% patients prevented the disease or higher levels of arterial blood pressure. After the education 86.2% patients used the methods which could decrease arterial blood pressure. The result is statistically significant (before *vs.* after the education $p<0.001$).

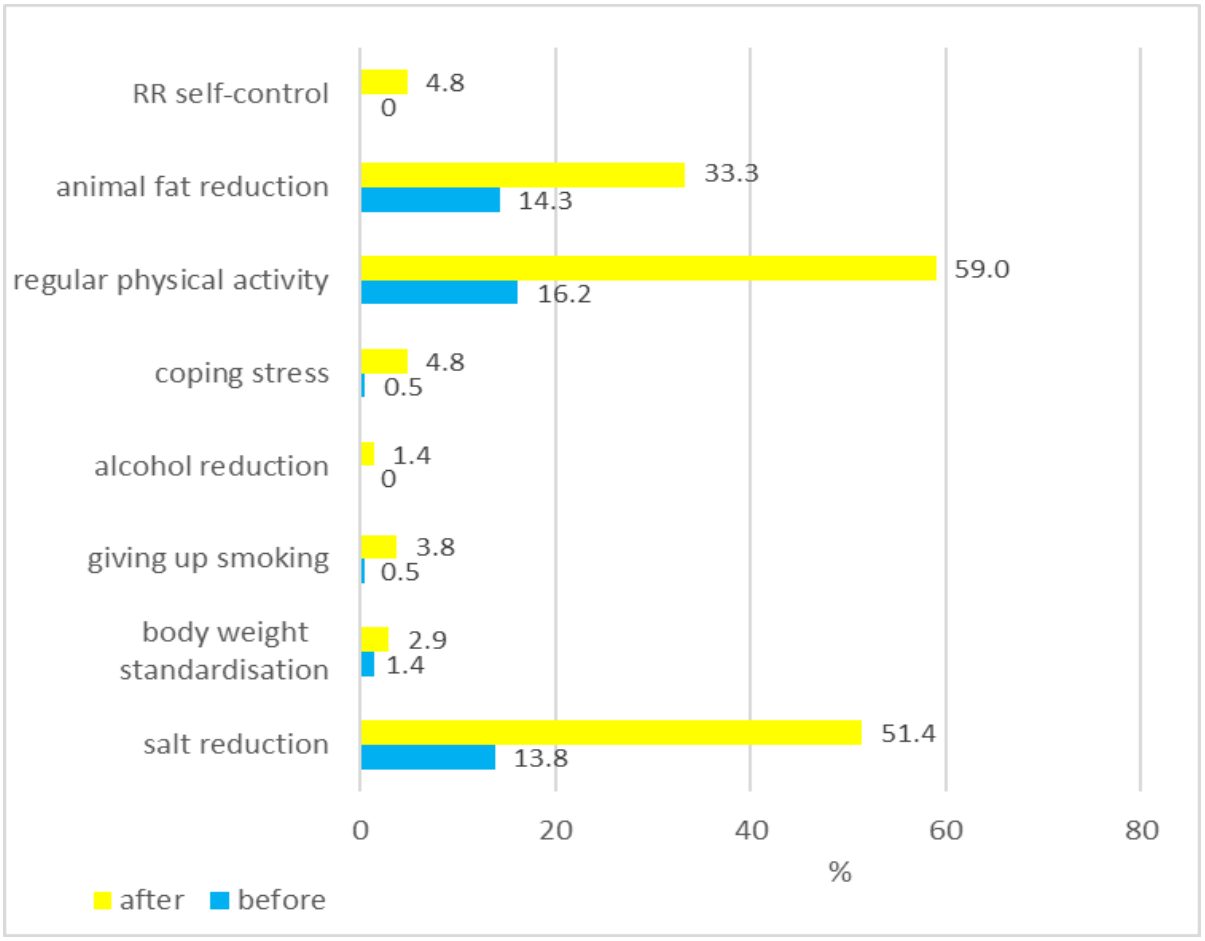
Before the education in the first and the second group there was the same percentage of people (41.4%), who were using methods to decrease arterial blood pressure in a conscious way. Only 28.6% patients from the third group were using these methods before education and 82.9% after ($p<0.001$). At remaining groups percentage of users rose to 84.3% (1st group) and 91.4% (2nd group) – differences were statistically significant (both $p<0.001$).

Table 2. Conscious using methods to prevent hypertension or prehypertension in particular groups

Group	Before education		After education		Difference		p
	n	%	n	%	n	%	
I (n=70)	29	41.4	59	84.3	30	42.9	<0.001
II (n=70)	29	41.4	64	91.4	35	50.0	<0.001
III (n=70)	20	28.6	58	82.9	38	54.3	<0.001
TOTAL (N=210)	78	37.1	181	86.2	103	49.0	<0.001

Before and after the education the groups mainly used three methods decreasing arterial blood pressure: salt reduction, regular physical activity and fat reduction in their diets. Even after education no more than 4.8% used remaining five methods.

The education which was made have statistically significant influence on using six methods decreasing arterial blood pressure: RR self-control ($p<0.01$), animal fat reduction ($p<0.001$), regular physical activity ($p<0.001$), coping stress ($p<0.05$), giving up smoking ($p<0.05$) and salt reduction ($p<0.001$).



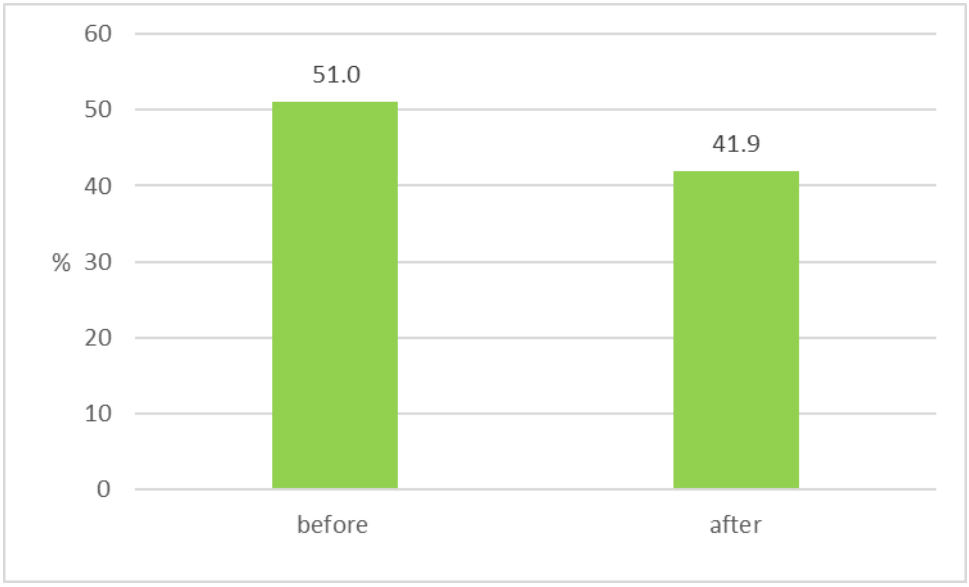
Picture 4. Using of different kinds of methods decreasing arterial blood pressure (the patient could choose more than one answer; N=210)

In particular groups differences in using methods described earlier which decrease arterial blood pressure in this population of patients were not so clear. Only changes of using three methods were statistically significant: salt reduction (differences from 30.0 to 41.4% in all groups), regular physical activity (differences 40.0–45.7% in all groups) and animal fat reduction (22.9% in 2nd group and 24.3% in 3rd group).

Table 3. Using of different kinds of methods decreasing arterial blood pressure in particular groups (respondents could choose more than one answer)

Group	Method	Before education		After education		Difference		p
		n	%	n	%	n	%	
I (n=70)	Salt reduction	12	17.1	33	47.1	21	30.0	**<0.001**
	Body weight normalisation	2	2.9	6	8.6	4	5.7	>0.05
	Giving up smoking	–	–	2	2.9	2	2.9	–
	Alcohol reduction	–	–	1	1.4	1	1.4	–
	Coping stress	–	–	3	4.3	3	4.3	–
	Regular physical activity	11	15.7	41	58.6	30	42.9	**<0.001**
	Animal fat reduction	10	14.3	17	24.3	7	10.0	>0.05
	RR self-control	-	-	5	7.1	5	7.1	>0.05
II (n=70)	Salt reduction	10	14.3	39	55.7	29	41.4	**<0.001**
	Body weight normalisation	1	1.4	–	–	-1	-1.4	–
	Giving up smoking	–	–	2	2.9	2	2.9	–
	Alcohol reduction	–	–	1	1.4	1	1.4	–
	Coping stress	–	–	1	1.4	1	1.4	–
	Regular physical activity	14	20.0	46	65.7	32	45.7	**<0.001**
	Animal fat reduction	11	15.7	27	38.6	16	22.9	**<0.001**
	RR self-control	-	-	5	7.1	5	7.1	>0.05
III (n=70)	Salt reduction	7	10.0	36	51.4	29	41.4	**<0.001**
	Body weight normalisation	–	–	–	–	–	–	–
	Giving up smoking	1	1.4	4	5.7	3	4.3	>0.05
	Alcohol reduction	–	–	1	1.4	1	1.4	–
	Coping stress	1	1.4	6	8.6	5	7.1	>0.05
	Regular physical activity	9	12.9	37	52.9	28	40.0	**<0.001**
	Animal fat reduction	9	12.9	26	37.1	17	24.3	**<0.001**
	RR self-control	–	–	–	–	–	–	–

Education have also influence on using stimulants (cigarettes, vodka, wine, beer, coffee). Before the education 51.0% patients used them – after the education the percentage was 41.9% (difference wasn't statistically significant: p=0.063).



Picture 5. Using stimulants before and after education program (N=210)

Before the education the most (68.6%) patients using stimulants were in the third group (treated because of hypertension for more than 5 years), then, the second group (just diagnosed – 52.9%) and finally the first group (with prehypertension – 31.4%). After the educational program only in second group using of stimulants was reduced on statistically significant level (from 52.9% to 34.3%, $p<0.05$).

Table 4. Using stimulants in particular groups

Group	Before education		After education		Difference		p
	n	%	n	%	n	%	
I (n=70)	22	31.4	18	25.7	4	5.7	NS
II (n=70)	37	52.9	24	34.3	13	18.6	<0.05
III (n=70)	48	68.6	46	65.7	2	2.9	NS
TOTAL (N=210)	107	51.0	88	41.9	19	9.0	NS

Education affected the type of stimulants used by patients significantly. Coffee was the most frequent stimulant before (42.4%) and after the education (33.3%) (difference wasn't statistically significant). Before the educational program 17.6% patients were smoking cigarettes; after three months 10.5% patients were still smokers ($p<0.05$). Interesting, but not statistically significant were growth of drinking wine and beer (from 2.4% to 4.3%) and lowering percentage people drinking vodka (from 1.9% to 1.4%).

Table 5. The types of stimulants (the patient could choose more than one answer)

Stimulant	Before education		After education		Difference		p
	n	%	n	%	n	%	
Cigarettes	37	17.6	22	10.5	15	7.1	<0.05
Vodka	4	1.9	3	1.4	1	0.5	NS
Wine	1	0.5	3	1.4	-2	-1.0	–
Beer	4	1.9	6	2.9	-2	-1.0	NS
Coffee	89	42.4	70	33.3	19	9.0	NS

Results in particular groups show that statistically significant difference was only in lowering percentage of smokers at second group (from 20.0% to 11.4%; $p<0.05$). Other differences were not statistically significant or groups were to small for data analysis. The most stimulants in all groups were coffee (from 31.4% to 54.3% before education program and 25.7% to 52.9% after them) and cigarettes (4.3%–28.6% before and 4.3%–18.6% after).

Table 6. The types of stimulants in particular groups (respondents could choose more than one answer)

Group	Stimulant	Before education		After education		Difference		p
		n	%	n	%	n	%	
I (n=70)	Cigarettes	3	4.3	3	4.3	0	0.0	NS
	Vodka	–	–	–	–	–	–	–
	Wine	–	–	1	1.4	-1	-1.4	–
	Beer	–	–	–	–	–	–	–
	Coffee	20	28.6	15	21.4	5	7.1	NS
	ALL	22	31.4	18	25.7	4	5.7	NS
II (n=70)	Cigarettes	14	20.0	6	8.6	8	11.4	<0.05
	Vodka	2	2.9	2	2.9	0	0.0	–
	Wine	–	–	–	–	–	–	–
	Beer	–	–	1	1.4	1	14	–
	Coffee	31	44.3	18	25.7	13	18.6	NS
	ALL	37	52.9	24	34.3	13	18.6	<0.05
III (n=70)	Cigarettes	20	28.6	13	18.6	7	10.0	NS
	vodka	2	2.9	1	1.4	1	1.4	–
	Wine	1	1.4	2	2.9	1	1.4	–
	Beer	4	5.7	5	7.1	1	1.4	NS
	Coffee	38	54.3	37	52.9	1	1.4	NS
	ALL	48	68.6	46	65.7	2	2.9	NS

Discussion

The answer to the question whether education of hypertensive patients influences the change of health behaviors and better control of blood pressure is an extremely important aspect of preventive actions taken and may be important in preventing complications of cardiovascular hypertension.

Looking at the types of methods which decrease arterial blood pressure we can observe one positive thing – physical activity is getting bigger; there was a change from 16.2% to 59.0%. After the education in Mexico which was made by nurses for patients suffering hypertension the physical activity has also increased [5].

However, after the general research it must be said that the situation was not satisfying. After the educational program 38.1% patients have not doing physical exercises for at least 30 minutes without breaks and 41.0% have not doing regular activities.

Research called WOBASZ I (Wieloośrodkowe Ogólnopolskie Badanie Stanu Zdrowia Ludności; Multi-centre National Population Health Examination Survey) confirms that situation – more than 50.0% adults do not do any physical exercises which last at least 30 minutes. What is more, people in Poland do not any exercises in their free time – WOBASZ I research shows that 34.7% people do not do any physical activities [6].

The results gained in this and other researches [7] concerning physical activities show that there are better results among ill people – beginning of the disease can be motivating. The problem occurs was with people with prehypertension. The results of the research show that the medical staff should motivate healthy people and inform them about it through educational programs and prophylactic actions.

During first stage of survey 37.1% respondents confirmed that they use some methods to prevent hypertension. After three months the percentage of the people was bigger – 86.2%. But despite this what the people said there was not any change in many aspects.

After the education more patients changed their food habits. More popular were reducing of salt (growth from 13.8% to 51.4%) and animal fat in their diets (from 14.3% to 33.3%). Reduction of salt is good for the patients with hypertension but also the people with prehypertension. Slightly reduction of using salt can decrease arterial blood pressure [8]. In this research the second group had the best results in reducing the salt. After the education in Italy there were similar results [9]. In this research was observed a big reduction of using salt in the food. According to Płaszewska [10] more than 50.0% people reduced using the salt after three months and some of them reduced salt consumption to minimum. Reduction of the salt in the diet requires motivation and knowledge both among the patients and healthy people. The results gained by us and other researchers have been reached by the education in small groups (a few people). It should therefore be assumed that classes in small groups affect the change of some health behaviors..

More than half (51.0%) patients were using stimulants before the education. After the education this number was decreased to 41.9%. The patients mainly smoked cigarettes and drank coffee.

Small group (4.3%) of patients suffering for hypertension more than 5 years were smoking cigarettes before and after the education. There were more smokers (20.0%) in the group with beginning hypertension and people with prehypertension (28.6%). After three months there were respectively 8.6% and 18.6% addicted patients with prehypertension. Research made by Kara [11] show that 36% patients with hypertension smoked cigarettes. The situation is much worse in the research made by Pachciarek et al. – 77% patients with hypertension and 73% healthy people smoked cigarettes [12]. After one year only 14% ill people and 7% healthy people have given up smoking. The results of POLSCREEN research (Ogólnopolski Program Prewencji Choroby Wieńcowej, Polish Cross-country Program of Coronary Disease Prevention) also show the high level (41%) of addicted to nicotine [13].

The research show 68,6% people with prehypertension and 44.3% patients with beginning hypertension drank coffee. After the education only 18.6% ill people and only 2.9% people with prehypertension pressure stopped drinking coffee. There are many controversies connected with drinking coffee. The research show that caffeine can causa rapid growth of arterial blood pressure. However, there is an individual body reaction for it so each patient should be examined individually [14].

The education has not modified using of stimulants of the patients suffering for hypertension more than 5 years and people with prehypertension.

It should be assumed that one of the reasons may be too short observation time of the respondents, which was three months. Education in this direction should be carried out not only by a nurse, but requires the inclusion of a wider group, including family physicians, specialist doctors and even psychologists (in justified cases)

Conclusions

1. The education carried out positively influenced some of the health behaviors of the respondents, after the training 86.2% of all respondents consciously used methods that lower blood pressure.
2. The surveyed groups after education usually used the three main methods for lowering blood pressure: salt reduction (55.7%), regular physical activity (65.7%), and reduced animal fat content diet (38.6%)
3. The best effects of the educational program were observed in the second group – respondents with beginning hypertension.

Bibliography

1. Dłużniewski M, Mamcarz A, Krzyżak P, Kucha M, Grzywanowska-Łaniewska I, Sawicki J, Syska-Sumińska S, editors. Kardiologia w praktyce – wybrane zagadnienia. [Cardiology in practice – selected issues]. Lublin: Czelej; 2007. (in Polish).
2. Januszewicz A, Dobrucki T. Diagnostyka nadciśnienia tętniczego. [Diagnostisc of hypertension]. *Przewodnik Lekarza* 2001; 12(36): 58-64. (in Polish).
3. Szczęch R, Kosmol A, Narkiewicz K. Edukacja chorych z nadciśnieniem tętniczym w codziennej praktyce lekarskiej. [Education of hypertensive patients in daily medical practice] *Przewodnik Lekarza* 2001; 12(36): 103-105. (in Polish).
4. Gaciong Z. Nadciśnienie tętnicze – jak się zaczyna i jak się może kończyć. [Hypertension – how it starts and how it can end]. In: Strzelecki Z, Szymborski J, editors. Zachorowalność i umieralność na choroby układu krążenia a sytuacja demograficzna Polski. [Morbidity and mortality of cardiovascular diseases and the demographic situation of Poland]. Warszawa: Rządowa Rada Ludnościowa; 2015: 185-193. https://bip.stat.gov.pl/files/gfx/bip/pl/zamowieniapubliczne/426/248/1/81_gp_rrl_2015_monografia_kardiologiczna.pdf [accessed: 11.11.2018]. (in Polish).
5. Garcia-Pena C, Thorogood M, Armstrong B, Reyes-Frausto S, Munoz O. Pragmatic randomized trial of home visits by a nurse to elderly people with hypertension in Mexico. *International Journal of Epidemiology* 2001; 30: 1485-1491.
6. Drygas W, Kwaśniewska M, Szcześniewska D, Kozakiewicz K, Głuszek J, Wiercińska E, Wyrzykowski B, Kuriata P. Ocena poziomu aktywności fizycznej dorosłej populacji Polski. Wyniki programu WOBASZ. [Assessment of the level of physical activity in the adult population of Population. The WOBASZ program results]. *Kardiologia Polska* 2005; 63, 6 (supl. 4): 636-640. (in Polish).
7. Wojciechowska M, Izdebska E. Profilaktyka nadciśnienia tętniczego. [Prevention of hypertension]. *Medycyna Ogólna i Nauki o Zdrowiu* 2014; Tom 20, Nr 4, 370-373. (in Polish).
8. Heleniak G, Jabłoński E, Kaźmierczak U. Leczenie niefarmakologiczne nadciśnienia tętniczego – modyfikacja żywienia. Część II. Składniki mineralne: sód, potas, wapń i magnez w diecie osób z nadciśnieniem tętniczym. [Non-pharmacological treatment of hypertension – modification of nutrition. Chapter II. Minerals: sodium, potassium, calcium and magnesium in the diet of people with hypertension]. *Nadciśnienie Tętnicze* 2002; 6(2): 123-132. (in Polish).
9. Scala D, D'Avino M, Cozzolino S, Mancini A, Andria B, Caruso G, Tajana G, Caruso D. Promotion of behavioural change in people with hypertension: an intervention study. *Pharmacy World & Science* 2008; 30: 834-839.
10. Jones DW, Hall JE. Światowy Dzień Nadciśnienia Tętniczego 2007 [World Hypertension Day 2007]. *Hypertension* (Polish edition) 2007; 9: 222-224. (in Polish).
11. Kara I, Marcinkowski JT: Antyzdrowotne zachowania 40-letnich pacjentów z chorobami układu sercowo-naczyniowego – konieczność intensyfikacji edukacji. [Anti-healing behaviors of 40-years-old patients with cardiovascular disease – the need to intensify education]. *Zdrowie Publiczne* 2006; 116(2): 363-364. (in Polish).
12. Pachciarek G, Celczyńska-Bajew L, Horst-Sikorska W. Skuteczność działań profilaktycznych dotyczących wybranych czynników ryzyka chorób układu sercowo-naczyniowego podejmowanych w praktyce lekarza rodzinnego u chorych na nadciśnienie tętnicze. [Effectiveness of prevention measures on selected risk factor for cardiovascular diseases undertaken in the practice of a family doctor in hypertensive patients]. *Family Medicine & Primary Care Review* 2008; 10(3): 591-593. (in Polish).

13. Cieśliński A., Pająk A., Podolec P, Rynkiewicz A, editors. Ogólnopolski Program Prewencji Choroby Wieńcowej POLSCREEN. [Polish Cross-country Program of Coronary Disease Prevention POLSCREEN], Poznań: TerMedia; 2006. (in Polish).
14. Kozłowska-Wojciechowska M. Czynniki żywieniowe w profilaktyce i leczeniu nadciśnienia tętniczego. [Nutritional factors in the prevention and treatment of hypertension]. *Terapia* 2005; 7-8: 17-22. (in Polish).