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USE OF PREVENTION PROGRAMS AND ANALYSIS OF THEIR EFFICIENCY AMONG PATIENTS WITH ARTERIAL HYPERTENSION

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Abstract. *It is well known that the effectiveness of preventive and curative measures is influenced by the awareness of patients about the disease, its causes, problems and possibilities of their elimination, blood pressure measurement and control, basic principles of non-drug and drug treatment, issues of care or self-care, preventive measures. Poor perception of good health and irregular visits to the doctor are among the most important factors of ignorance, untreated and uncontrolled hypertension. Studying the awareness of patients regarding preventive technologies of hypertension is appropriate, because such data is the basis for their development, improvement and implementation.*

The aim *of the study is to evaluate the effectiveness of the training of patients with hypertension.*

Material and methods*. 120 patients with hypertension were included in the study, who were divided into 2 groups: Group I (main) – 68 people who participated in the educational program on prevention of hypertension; II group (control group) – 52 people who did not participate in the training program.*

Results. *It was established that the patients who participated in the training program significantly ($p<0.05$) improved their knowledge about hypertension (by 47.07%) and FR (by 50.88%), possible complications (by 58.82%), blood pressure indicators are normal (by 32.35%) compared to the control group.*

All patients of the main group mastered the skills of self-measuring blood pressure and heart rate counting (100%, ($p<0.05$), and also improved blood pressure control skills (by 41.18%) and keeping a self-monitoring diary, which made it possible to improve the quality of blood pressure control and contributed to an increase in adherence to drug therapy and an improvement in the relationship between the doctor, nurse and patient. While in the control group, blood pressure measurement and control skills did not change significantly (increased by only 3.84%, 5.77% and 7.68%, respectively), the majority of patients who underwent training showed a positive trend in reducing systolic and diastolic blood pressure levels.

Conclusion. *Patients' participation in the Hypertension Prevention Education Program not only provided them with the necessary knowledge, but also provided them with social support from both medical professionals and other patients.*

ВИКОРИСТАННЯ ПРОГРАМ ПРОФІЛАКТИКИ ТА АНАЛІЗ ЇХ ЕФЕКТИВНОСТІ СЕРЕД ПАЦІЄНТІВ З АРТЕРІАЛЬНОЮ ГІПЕРТОНІЄЮ

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Ключові слова: *програма профілактичного навчання, гіпертонічна хвороба, медичні сестри, контроль артеріального тиску.*

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Резюме. *Загальновідомо, що на ефективність профілактичних та лікувальних заходів впливає поінформованість пацієнтів про захворювання, причини виникнення, проблеми та можливості їх усунення, вимірювання та контроль АТ, основні принципи немедикаментозного та медикаментозного лікування, питання догляду чи самодогляду, профілактичні заходи. Погане сприйняття доброго здоров'я і нерегулярні відвідування лікаря є одними з найбільш важливих факторів необізнаності, нелікованої і неконтрольованої АГ. Вивчення обізнаності пацієнтів щодо профілактичних технологій АГ є доцільним, тому що такі дані – це основа для їх розробки, удосконалення та впровадження.*

Мета дослідження *– оцінити ефективність підготовки хворих на гіпертонічну хворобу.*

Матеріал і методи. *У дослідження включено 120 хворих на АГ, яких було розподілено на дві групи: I група (основна) – 68 осіб, які брали участь в освітній програмі з профілактики АГ; II група (контрольна) – 52 особи, які не брали участі в навчальній програмі.*

Результати. *Встановлено, що в пацієнтів, які пройшли навчальну програму, достовірно (p<0,05) покращилися знання про АГ (на 47,07%) та ФР (на 50,88%), можливі ускладнення (на 58,82%), показники АТ у нормі (на 32,35%) порівняно з контрольною групою.*

Усі пацієнти основної групи оволоділи навичками самостійного вимірювання артеріального тиску та підрахунку пульсу (100%, (p<0,05), а також покращили навички контролю артеріального тиску (на 41,18%) і ведення щоденника самоконтролю, що дозволило підвищити якість контролю артеріального тиску та сприяло підвищенню прихильності до медикаментозної терапії і покращенню взаємовідносин між лікарем, медсестрою, пацієнтом. У контрольній групі навички вимірювання та контролю артеріального тиску не змінилися значно (підвищившись лише на 3,84%, 5,77% і 7,68% відповідно), у більшості пацієнтів, які пройшли навчання, спостерігалася позитивна динаміка зниження рівня систолічного та діастолічного АТ.

Висновок. *Участь пацієнтів у навчальній програмі з профілактики гіпертензії не лише дала їм необхідні знання, а й забезпечила їм соціальну підтримку як з боку медичних працівників, так і з боку інших пацієнтів.*

Introduction. Since most of the risk factors are modifiable, it was important to identify the level of knowledge of patients about preventive measures for hypertension. The prevalence of hypertension and the complications it leads to require measures to be taken for early detection and prevention of this disease. The solution to this problem is possible by informing a larger number of the population about the methods and means of preventing the development of cardiovascular diseases (CVD) and training people with HF in the training program on the prevention of hypertension, which aims to improve knowledge about hypertension both for nurses and patients with such a disease.

According to the recommendations of the European Society of Cardiology and the European Society of Hypertension [1-4] for the treatment of hypertension, the important role of nurses and pharmacists in the education, support and long-term observation of patients with hypertension is emphasized as part of the overall strategy to improve blood pressure control. They consider patient education aimed at increasing their knowledge and motivation, and especially non-pharmacological treatment, as the main method of management of all patients with hypertension [5].

The professional practice of the nursing staff at the current stage involves identifying and solving the patient's problems within their own competences, providing nursing services to patients with the most common diseases, conducting classes with different groups of patients within the competences [6,7]. The competencies of nurses, as noted by many researchers, should include the ability to provide an individual approach to the patient, the skills of cooperation with patients' families, the qualities of a manager and a psychologist in the field of business and human relations [8].

Today, the first priority is to teach patients to manage their health and be responsible for it [9,10]. After all, active prevention of hypertension can help avoid cardiovascular complications that threaten not only the quality of life, but also life itself. A nurse should conduct training on disease prevention together with a doctor [11,12].One of the main measures for the prevention of hypertension at the primary level of health care should be to increase the level of awareness of patients and their active participation in the treatment and diagnostic process[13,14].

However, the patient's motivation for prevention and treatment is important. Only after receiving information about the preventive measures for hypertension and its complications, the patients' adherence to treatment increases and responsibility for their health appears. Therefore, at this level, patient education contributes to increasing the level of knowledge, skills and abilities for quality control and monitoring of their condition.

The aim of the study. To conduct an analysis and evaluate the effectiveness of the training of patients with hypertension.

Materials and methods. 120 patients with hypertension were included in the study. Inclusion criteria were diagnosed hypertension (verification of the diagnosis was carried out on the basis of complaints, anamnestic data, as well as with the help of clinical, laboratory and instrumental research methods) and informed written consent of the patient to participate in the study.

The distribution of patients according to the stages of hypertension was carried out in accordance with the clinical recommendations on arterial hypertension of the European Society of Hypertension (ESH) and the European Society of Cardiology (ESC) in 2013 and 2018.

The main part of patients, 73 (60.83 %), had hypertension of the first degree, less than 29 (24.17 %) of the second and 18 (15 %) of the third degree.

The examined patients were aged from 23 to 79 years; the average age was 48.33±12.93 years. The largest number of patients with hypertension aged 40-59 years.

Among the examined patients, the majority were women (68 (56.67%) women and 52 (43.33%) men).

All respondents were divided into two groups of patients: Group I (main) - 68 (56.7%) individuals with well-controlled hypertension who participated in the hypertension prevention program and, therefore, had a high level of awareness and practical skills regarding rational treatment of the disease, prevention of complications and improvement of the quality of life; II group (control) - 52 (43.3%) persons with poorly controlled arterial hypertension, who, accordingly, did not participate in the program.

Results.

The educational program for the prevention of hypertension included a set of means and methods of individual and group influence on patients with hypertension, aimed at increasing the level of their knowledge, awareness and practical skills regarding rational treatment of the disease, prevention of complications and improvement of quality of life.

The program is an organizational form of preventive group counseling (hygiene training), a preventive medical service provided to patients with hypertension in the primary health care system.

The purpose of the educational program on the prevention of hypertension is to optimize, improve and increase the coverage, availability and quality of medical preventive care for patients with hypertension and is aimed at:

- increasing the awareness of patients with hypertension about the disease and its FR of development, exacerbations and complications;
- formation of patients' skills and abilities to reduce the adverse impact on their health of behavioral FR (nutrition, physical activity, stress management, giving up bad habits);
- formation of patients' abilities and skills in self-monitoring of their health, provision of first aid in cases of exacerbations and crises;
- formation of a rational and active attitude of the patient to the disease, motivation to recovery, commitment to treatment and implementation of the doctor's recommendations;
- formation of patients' practical skills in the analysis of causes, factors affecting health and teaching patients to draw up an individual recovery plan;
- increasing the patient's responsibility for preserving his health.

The proposed Hypertension Prevention Curriculum was aimed at improving hypertension knowledge and skills for both patients (core group, n=68) and nurses.

Patients who participated in the educational program probably ($p<0.05$) improved their knowledge about hypertension (by 47.07%) and FR (by 50.88%), possible complications (by 58.82%), indicators of blood pressure is normal (by 32.35%), while in the control group, which did not undergo training, the majority of patients did not significantly improve their knowledge about blood pressure, possible complications (Table 1).

Nurses paid special attention to individual training of patients in the method of measuring blood pressure, counting the pulse and keeping a patient's diary. At the same time, the lectures were built on interactive communication with the audience and supplemented with individual classes, which were positively perceived by the patients themselves.

All patients of the main group (100%) who received training ($p<0.05$) mastered the skills of self-measurement of blood pressure and pulse counting, and they also improved the skills of controlling blood pressure (by 41.18%) and keeping a self-monitoring diary, which allowed to improve the quality of hypertension control and contributed to increased adherence to drug therapy and improved relationships between the doctor, nurse and patient. On the contrary, in patients of the control group, the ability to measure and control blood pressure did not change significantly (increased by only 3.84%, 5.77% and 7.68%, respectively).

It is known that the probability of successful BP normalization directly depends on the regularity of taking antihypertensive drugs. After the training, repeated questionnaires showed a probable increase in the number of patients who take antihypertensive drugs, in particular, 86.76% of patients started taking them constantly and 13.24% - only when blood pressure increased. This indicates an increase in adherence of patients with hypertension to drug treatment, in contrast to patients in the control group. Thus, according to the Morisky-Green test, 61 (89.7%) patients of the main group showed a high level of motivation for treatment after training, while only 18 (34.62%) patients had this indicator in the comparison group.

In addition, it is necessary to take into account that poor adherence to drug treatment, as a rule, is accompanied by poor adherence to non-drug treatment methods, which further hinders BP reduction.

The main reasons for low patient adherence reported in the literature were lack of information and skills as they relate to self-management, difficulties with motivation and self-efficacy, and lack of support for behavior change. Enhancing the impact of interventions targeting these factors is critical. Patients must be informed, motivated, and skilled in the use of cognitive and behavioral strategies if they are to cope with the treatment demands of their illness.

At the beginning of the survey, only 23 (33.82%) patients followed the principles of a healthy lifestyle, however, after training, their number increased more (63 people; 92.65%) than in the control group.

The results of the survey indicate the need to train patients with hypertension in the skills and abilities that will allow them to correctly measure blood pressure and assess the level and risk of possible complications, as well as the importance of observing non-pharmacological methods of treatment and the rules for taking hypotensive agents.

In the majority of patients who underwent training, positive dynamics regarding the reduction of systolic (SBP) and diastolic (DBP) blood pressure levels were

observed and were more pronounced in the main group compared to the control group of patients (Table 2). Management of patients with hypertension involves both drug treatment and mandatory lifestyle modification and influence on modifiable cardiovascular risk factors.

During the classes, nurses paid special attention to non-pharmacological methods of treating hypertension, since the active participation of patients in their implementation is a necessary condition for effectiveness, and lifestyle correction measures were discussed.

Table 1

The results of a questionnaire survey of patients with hypertension before and after training and observation

Question	Main group (n=68)		Control group (n=52)	
	Prior to training abs. (%)	After training abs. (%)	Output data abs. (%)	After observation abs. (%)
Do you have enough knowledge about hypertension?				
• Enough	32 (47,05)	64 (94,12)*	27 (51,93)	31 (59,62) ^
• Not enough	27 (39,71)	1 (1,47)	21 (40,38)	17 (32,69)
• Not interested	9 (13,24)	3 (4,41)	4 (7,69)	4 (7,69)
Do you know about FR?				
• Yes	46 (47,65)	67 (98,53) *	39 (75)	42 (80,77)
• No	22 (32,35)	1 (1,47)	13 (25)	10 (19,23)
Do you know your blood pressure is normal?				
• Yes	44 (64,71)	66 (97,06) *	37 (71,15)	40 (76,92)
• No	24 (35,29)	2 (2,94)	15 (28,85)	12 (23,08)
Do you control blood pressure yourself?				
• Yes	36 (52,94)	64 (94,12)	31 (59,62)	35 (67,3) ^
• No	32 (47,06)	4 (5,88)	21 (40,38)	17 (32,7)
Do you know about the complications of hypertension?				
• Yes				
• No	27 (39,71)	67 (98,53)*	21 (40,38)	23 (44,23) ^
	41 (60,29)	1 (1,47)	31 (59,62)	29 (55,77)
Do you know how to measure blood pressure yourself?				
• Yes	45 (66,18)	68 (100) *	38 (73,08)	40 (76,92) ^
• No	23 (33,82)	-	14 (26,92)	12 (23,08)
Can you count your heart rate yourself?				
• Yes	47 (69,12)	68 (100) *	41 (78,85)	44 (84,62)
• No	21 (30,88)	-	11 (21,15)	8 (15,38)
When do you take blood pressure medication?				
• Constantly	17 (25)	59 (86,76) *	13 (25)	20 (38,46) ^
• Only with an increase in blood pressure	38 (55,88)	9 (13,24)	31 (59,62)	27 (51,92)
• Short courses (1-2 weeks)	13 (19,12)	-	8 (15,38)	5 (9,62)
Do you follow the principles of a healthy lifestyle?				
• Yes	23 (33,82)	63 (92,65)*	15 (28,84)	19 (36,54) ^
• No	13 (19,12)	2 (2,94)	9 (17,31)	8 (15,38)
• Not always	32 (47,06)	3 (4,41)	28 (53,85)	25 (48,08)
Level of commitment (Morisky-Green test):				
• High	17 (25)	61 (89,7) *	14 (26,92)	18 (34,62) ^
• Low	51 (75)	7 (10,29)	38 (73,08)	34 (65,38)

Note: ** – probable difference in the indicators of the main group after the training compared to the indicators before the training ($p<0.05$);*

^ – probable difference in the indicators of the main and control groups after training ($p<0.05$)

Table 2

Results of changes in blood pressure levels of patients with hypertension before and after training and observation

Degree of hypertension	Main group (n=68)		Control group (n=52)	
	Before training M±m	After training M±m	Output data M±m	After observation M±m
I degree n=73(60.83%)				
SBP, mm Hg Art.	143,23±1,15	136,23±1,14*	145,12±3,02	143,71±1,17^
DAT, mm Hg Art.	92,09±2,02	80,09±1,85*	92,59±2,74	93,59±1,89
II degree n=29 (24.17%)				
SBP, mm Hg Art.	165,32±3,08	148,63±2,06*	164,08±3,12	158,32±2,09^
DAT,mm Hg Art.	96,42±2,89	84,37±1,83*	98,64±3,17	95,47±2,12
III degree n=18 (15%)				
SBP, mm Hg Art.	194,57±3,12	161,57±2,42*	195,16±3,22	174,16±2,73^
DAT,mm Hg Art.	112,67±1,89	97,57±2,37*	110,17±2,54	102,26±2,16

Note: * – probable difference in the indicators of the main group after the training compared to the indicators before the training ($p<0.05$);

^ – the probable difference between the indicators of the main group and the control group after training ($p<0.05$)

Table 3

Dynamics of risk factors of patients with hypertension before and after training and observation

Risk factor	Main group (n=68)		Control group (n=52)	
	Prior to training abs. (%)	After training abs. (%)	Prior to training abs. (%)	After training abs. (%)
Body weight:				
- norm	20 (29,41)	27 (39,7)	16 (30,77)	16 (30,77)
- excess body weight	31 (45,59)	27 (39,7)	25 (48,07)	26 (50)
-obesity of the I century	13 (19,12)	11 (16,18)	9 (17,31)	8 (15,38)
-obesity of the II century	4 (5,88)	3 (4,42)	2 (3,85)	2 (3,85)
Physical activity:				
- sufficient	2 (2,94)	13 (19,12)	2 (3,85)	2 (3,85)
- average	23 (33,82)	28 (41,18)	18 (34,61)	22 (42,31)
- low	43 (63,24)	27 (39,7)	32 (61,54)	28 (53,84)
Stress level:				
- low	17 (25)	25 (36,76)	10 (19,23)	12 (23,08)
- average	34 (50)	30 (44,12)	28 (53,85)	27 (51,92)
- tall	17 (25)	13 (19,12)	14 (26,92)	13 (25)
Smoking	25 (36,76)	19 (27,94)	17 (32,69)	17 (32,69)
Level of alcohol consumption:				
- never	47 (69,12)	63 (92,65)	42 (80,77)	43 (82,69)
- little and moderately	18 (26,47)	5 (7,35)	9 (17,31)	8 (15,39)
- a lot	3 (4,41)	-	1 (1,92)	1 (1,92)
Salt consumption:				
- up to 5 g/day	27 (39,7)	48 (70,59)*	21 (40,38)	23 (44,23) ^
- > 5 g/day	41 (60,3)	20 (29,41)	31 (59,62)	29 (55,77)
Compliance with the regime and rational nutrition:				
- enough vegetables	17 (25)	50 (73,52)*	14 (26,92)	29 (55,77)
- sea fish (3 times or more/week)	9 (13,24)	37 (54,41)	6 (11,54)	18 (34,62)
- salty and spicy 2-3 times/week	19 (27,94)	5 (7,35)	16 (30,77)	12 (23,08)

Note: ** – significant difference in the indicators of the main group after the training compared to the indicators before the training ($p<0.05$);*

^ – significant difference in the indicators of the main group and the control group after training ($p<0.05$)

The analysis of patient questionnaires showed the influence of education on the lifestyle and habits of the interviewees (Table 3). It was important for patients to understand the need to implement such measures to

normalize lifestyle in reality, such as reducing body weight, increasing physical activity, following the principles of rational nutrition, reducing the use of table salt to 5 g/day, giving up smoking, and limiting the use of alcoholic beverages.

One of the risk factors for the development of hypertension is obesity. For this purpose, BMI (kg/m2) was determined in the study. The analysis of the received data showed that after training, the patients of the main group had a normalization of body weight by 10.29% (in 7 people) and a decrease in patients with excessive body weight (4 people, by 5.89%) and several people with obesity. Along with the fact that in the control group this indicator almost did not change. It should be noted that most patients are ready to deal with this problem in the future.

The majority of patients have been diagnosed with a general average and high level of psychosocial stress, which is possibly related to the stressful rhythm of life. In the main group after the training, an increase of persons with a low level of stress was noted, which is greater by 11.76% compared to the indicator before the training, as well as a decrease in the number of persons who had an average and high level of stress. In the control group, the dynamics of indicators turned out to be smaller.

To assess the level of physical activity in this study, two characteristics were used: motor activity at work and during leisure hours. After training in the main group, a slight increase (by 23.5%) was noted in the number of patients who increased physical activity at work and during leisure time (in sports mode). While the control group showed a slight increase in the indicator (by 7.69%).

One of the harmful habits is smoking, which the patients refused very reluctantly. Thus, 42 of the interviewees (36 men and 6 women) smoked before the study: of them - 25 (36.76) of the main and 17 (32.69) of the control group. Only 6 people of the main group, who had a weak degree of nicotine addiction and a high degree of motivation to quit smoking, gave up smoking after training. It was noteworthy that in this group most patients tried to stop smoking and also reduced the number of cigarettes smoked. All other smokers of the main and control groups explained their refusal that smoking helps them to stimulate mental activity; concentrate attention (concentrate); relax, rest; get satisfaction; communicate; reduce body weight; live. This is evidence of an improper attitude to one's health.

After the training, 3 (4.41%) patients stopped drinking "a lot" of alcoholic beverages, 13 (19.12%) reduced their consumption, and 16 (23.52%) refused altogether. In the control group, this indicator changed slightly.

Regarding the regimen and rational nutrition - the majority of patients noted a violation of the nutritional regimen, insufficient consumption of vegetables and fruits, sea fish, and frequent consumption of salty and spicy foods. In general, during repeated questionnaires after training, the patients of the main group noted that they changed the nature of their diet by 48.52 % increased the consumption of vegetables and fruits, sea fish (3 times or more per week) by 41.17%, and 14 people began to consume less (2-3 times per week) salty and spicy foods, and also limited the use of animal fats and increased unsaturated fats in the diet. In turn, no such significant changes occurred in the control group. The majority of patients (72 people, 60%) noted salt abuse (> 5 g/day). After the training, 11 people (16.18%) limited their salt intake, and only 2 (3.85%) in the control group.

Discussion. Arterial hypertension is one of the most common diseases of the cardiovascular system. Mortality from the disease is increasing all over the world, regardless of the economic level of countries. According to available data, high blood pressure (BP) is the leading cause of death worldwide, accounting for 10.4 million deaths per year [15,16]. As stated in the works of scientists, every fourth patient with hypertension does not know about his disease [17,18]. In Ukraine, it was found that people are not aware of high blood pressure. It has been studied that only 70% of people know about their presence of hypertension and 50% of them are treated, and only 18.7% of patients in urban areas and 8% in rural areas control their blood pressure [19,20]. Blood pressure is important for determining the patient's condition and subsequent interventions and treatment [21,22].Self-monitoring of blood pressure is important, which allows the patient with hypertension to demonstrate the success or problems of treatment, contributes to the improvement of indicators of blood pressure control and interaction with medical professionals. Managing the complex lifestyle behavior of patients with hypertension requires nurses to have advanced professional knowledge and skills in providing medical care, active implementation of preventive activities in the field of health care in accordance with national and international professional standards [23,24]. Therefore, the application of a preventive educational program is a relevant direction in the formation of progressive approaches to overcoming problems associated with the ineffectiveness of treatment of hypertension [25]. According to scientific sources, there are many studies on the development of nursing strategies to promote blood pressure control in patients, but there is a lack of studies that focus on the selection of factors relevant to the prevention of hypertension in the professional and personal competencies of nurses [26,27].

Conclusion. Thus, the participation of patients in the Educational Program for the prevention of hypertension not only provided them with the necessary knowledge, but also provided them with social support from both medical professionals and other patients. This form of training contributed to the formation of adequate ideas about the causes of the disease in patients, understanding of the factors that affect the prognosis, significantly increased the adherence of patients to the recommendations and appointments of the doctor, which allowed them to be trained in the skills of reducing negative stereotypes of behavior.

For the effective prevention of arterial hypertension, nurses should use the Training Program on prevention, which will contribute to the formation of new psychological attitudes in patients that lead to changes in behavior, style and lifestyle, giving up bad habits, learning

the skills of measuring and self-monitoring of blood pressure, motivation to ensure continuous therapeutic process, stabilization of the disease, assistance with sharp blood pressure fluctuations, increased adherence to treatment and improvement of quality of life.

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