

MODELS OF INTERVENTION, WHICH ARE APPLIED BY THE NURSE AND AIMED AT CHANGING THE BEHAVIOR OF HYPERTENSIVES-REVIEW

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Abstract: *The so-called motivation interviewing is the systematic directing of the patient toward motivation for change. This interviewing includes advices and achieving a feedback, which is aimed at changing the gaps in the patients' unhealthy behavior in a way, that the motivation could improve and change. The modification of lifestyle is an important aspect of the blood pressure control, and serves as a keystone of global managing of many atherosclerotic risk factors. Patients must be informed with a clear rationale of the necessity of special treatment, which responds to their own model of disease. The nurses' effectiveness in the initial hypertension management is very well documented in literature. According to the directions given by the nurse, concerning the managing of hypertension, in appropriately selected individuals, some interventions in lifestyle, have the potential to reduce blood pressure rates, to the equivalence of half to one full standard dose of anti-hypertensive medicament.*

Keywords: *interventions, change, hypertension, nurse*

Introduction: The nurses have the unique possibility to assist the patients, to check their lifestyle, to discover potential spheres of change, and to give individual advices in order to facilitate the performance of the set personal goals. The relationships between the nurse and the patient are based on trust, respect and the holistic approach, the patients' knowledge and their network of social support. The information of the patients' past diseases, including nurses' previous experience in the health care system, as well as cultural patients' beliefs and current knowledge of his health problems, is an integral part of the care plan performance (NIH, 2003).

Aim: Clarification of the nurses' abilities to have an influence on the patient, in order to bring change on the behavior, improving the blood pressure rates and the ways of achieving this change.

Material and methods: A retrospective analysis and systematization of available literature and posts, concerning the interventions, applied on hypertensive patients by the nurse, and the achieved results.

Statement: The Canadian educational programme Hypertension 2010 (CHEP, 2010) presents the lifestyle's effect on blood pressure of hypertensive adults via intervention. By limiting the sodium intake to 1500mg a day, 5.8/-2.5 (systolic blood pressure (SBP)/ diastolic blood pressure (DBP) mmHg. By reducing bodyweight by 4.5kg the blood pressure would respectively change to -7.2/-5.9 mmHg. The alcohol consumption -2.7mmHg. Exercises 3 times /a week -7.4/ -5.8mmHg. The eating habits - DASH diet -11.4/-5.5 mmHg.

Tests show that after a certain diet, consisting mainly of fruit, vegetables and low-fat dairy products, which contain reduced rates of fat and cholesterol (Pickering et al., 2005), and by reducing the amount of sodium consumption, this could simultaneously reduce the risk of high blood pressure, and achieve reduction in already increased such (Ketola, et al., 2000).

The proof from a systematic overview by an inspection of the aftermath of sodium chloride, influencing blood pressure shows that a diet consisting of low sodium consumption helps the maintaining of lower blood pressure after limiting anti-hypertensive medicaments. Advices of a diet, consisting of lower sodium chloride intake, are given to the participated persons, and both their systolic and diastolic blood pressure is being reduced in comparison to those of the control group. They are being scrutinized through 13 and 60 months, as the results show dependence between the rate of reduced sodium intake, and changes in blood pressure (Hooper et al., 2004).

The strategies of reducing salt intake may include (CMA, 1999): a choice of food with small amounts of salt (fresh fruit and vegetables); avoiding refined foods; self-restraint of adding salt in the meals; minimizing the use of salt while cooking and awareness of the amount of salt in meals, consumed in restaurants.

Despite the unclear connection with the high blood pressure, scientific proofs show that the consumption of trans fat increases the frequency of coronary artery disease (Svetkey et al., 2004).

Caffeine is a mighty stimulant of the cardiovascular system and the effects of one cup of coffee are: increase of both blood pressure and heart rate. The regular consumption of caffeine may contribute to a constant increase in blood pressure, which is a problem for hypertensive people (Lane, et al., 2002).

Patients with body mass index (BMI), which is higher or equal to 25, and the girth of waist is over 102cm (for men) and 88cm (for women), must ponder on reducing their weight (Health Canada, 2005).

A research among Canadian citizens aged under 55, shows that the hypertension frequency is at least 5 times higher, among people with BMI higher than 30, than among those with BMI lower than 20 (CMA, 1999). A rate of 18.5 -24.9kg/m² is considered a healthy IBM. The body mass index and girth of waist must be used as a part of the overall assessment of the health risk. All two of them are easy to deal with (Douketis, et al., 2005), and must be assessed as a part of the routine physical checkup. The central type obesity found in girth of waist, marks unwanted cardiovascular results (Williams et al., 2004) and is related to metabolic syndrome. The obesity is a waist-determined circumference for different population groups (International Diabetes Federation, 2005). A girth of waist > 94cm for men and > 80cm for women of the Caucasian race, is considered risky; the South-Asian race (Chinese, Malaysian and Asian-Indian populations): > 90cm for men and > 80cm for women.

The advantages of losing weight include: decrease of expenses and side effects of anti-hypertensive medicaments, which reduce the cholesterol rates, reduction of glucose levels of people suffering from diabetes, a decrease of risks of cardiovascular diseases, and finally, improving the patients' quality of life.

The metabolic syndrome is an aggregation of cardiovascular risk factors, concerning blood pressure, a typhoid type of obesity, dyslipidaemia and insulin resistance (NIH, 2003). International Diabetes Federation 2005 defines the presence of metabolic syndrome as central obesity, plus two or more of the following: triglycerides > 1.7 mmol/l (or a specific treatment of those lipid abnormalities); reduced HDL cholesterol 0.9 mmol/l for men and 1.1mmol/l for women; specific treatment of those abnormalities; high blood pressure: SBP > 130mmHg or DBP > 85mmHg or treatment of a diagnosed hypertension; plasma glucose on an empty stomach > 5.6mmol/l or a diagnosed diabetes type 2.

The decrease of weight by limiting calories is suitable for the greater part of hypertensives, as many of them have a present overweight. Low-

calorie diets have a moderate effect on blood pressure of overweight patients, but approximately to 50% of men it is likely to expect a decrease of 5.5mmHg or a short-term improvement (Williams et al., 2004). Losing one kilo is regarded to a decrease in both systolic and diastolic blood pressure to 1.05mmHg. In a multi-variation analysis which is standardized to the size of weight loss, the effect on diastolic blood pressure is greater when bodyweight is being reduced by physical activity in comparison to limiting of energy (Neter et al., 2003). The efficacy of weight loss at reducing blood pressure among patients with overweight, is similar to that of an anti-hypertensive mono-medicament therapy. Patients with both overweight and hypertension on anti-hypertensive therapy, must be advised to lose weight for a preliminary anti-hypertensive effect. Sympathomimetic drugs repressing appetite, might as well increase blood pressure and have a limited effect in losing weight (CMA, 1999).

The nurses use professional therapeutic relations, concerning their role in the health care system (College of Nurses of Ontario, 2004), their education and contact with the patients, in order to assess and encourage physical activity for people with high blood pressure. The nurse must consider how the patient's specific variables, such as demographics (gender, age, ethnic origin, earnings, education, etc.); geography (where they reside); physical characteristics (physical state, current health status, risk factors of a disease); behavioral characteristics (what they like to do, what places do they visit); psychographic characteristics (beliefs, opinions, desires, feeling of independent efficacy, readiness for the climate, perceived barriers) would influence the present and future levels of physical activity (CNA, 2004).

Cooper and co-operators (2000) summarize the data, describing the aftermath on blood pressure by physical exercises, which invariably show that aerobic training reduces systolic and diastolic blood pressure, in both people with normal blood pressure, and hypertensives. The proofs show that the regular rhythmic physical activity of the lower limbs decreases SBP and DBP by 5-7mmHg, in spite of weight loss, and salt or alcohol intake (CMA, 1999). The encouraging of weight control along with physical exercises, could help decreasing blood pressure by 7mmHg for SBP and 5mmHg for DBP (Blumenthal et al., 2000).

Among patients suffering from acute hypertension, or such with bad blood pressure control, the hard physical activity must be avoided, or postponed till its optimization (Williams et al., 2004).

The alcohol abuse causes 9.2% of the general burden of diseases in the developed countries (National Program to Prevent Alcohol Abuse in Bulgaria, (NPPAA) 2009). A total of 226 million of adult Europeans drink up to 20g a day (women) or 40g of alcohol a day (men), and more than 58 million (15% in general) drink even more than that. Approximately 23 million Europeans every year (5% of men and 1% of women) are alcohol dependent. Almost half of all this alcohol is drunk in the form of beer (44%), as the rest of it is split between wine (34%) and spirits (23%) (Andersen, P., B. Baumberg, 2007).

Epidemiological researches show that the consumption of alcohol is a mighty predictor of hypertension among men (up to 33%) and a weaker one among women (up to 8%) (CMA, 1999). The excessive use of alcohol increases blood pressure, regardless of the other risk factors, including smoking, age, gender, race, drinking coffee, level of education, a previous tough story of alcohol abuse, and its type (Boggan, 2003).

A research made by De La Sierra (1996, quoted in Estruch, 2003), shows that some people are sensitive to the compressor effects of alcohol. A group of persons, who had an average rate of at least 3mmHg increase of blood pressure, in comparison to another group, who had not had any increase because of drinking alcohol, in the same controlled conditions. Despite that the results of that research are controversial, there are general theories which explain the effect that alcohol has on blood pressure: increase of the intracellular calcium or other electrolytes; inhibition of relaxing substances; stimulating the sympathetic nervous system; renin-angiotensin-aldosterone; insulin or cortisol resistance; calcium or magnesium depletion; chronic state of abstinence from a heavy dependence (Boggan, 2003).

Approximately a half of the patients who drink alcohol in excessive amounts, have high blood pressure. Alcohol abuse leads to high rates in both SBP and DBP during the episode of drinking, and a drop in all two pressures up to below the initial level, directly after the period of drinking, usually in early morning hours. It is also determined that feasts appear to be a risk factor of stroke among young people. Despite there are no direct proofs, this research would suggest a connection between alcohol, stroke and hypertension (Seppa and Sillanaukee, 1999).

Other researches show an insignificant difference in blood pressure of patients, who drink small amounts of alcohol, and those who restrain themselves from it. There are proofs supporting the limited alcohol consumption and its cardio-

protective effects. But this proof should not be used as encouragement to start drinking alcohol, as a method for decreasing the risk factor (Williams et al., 2004). The limited use of alcohol could delay or forestall the cases of hypertension, and lead to a decrease in systolic blood pressure up to 2 - 4mmHg (NIH, 2003).

Alcohol has a high calorie content, without any nutritional value. The limitation of drinking it, would help reducing the bodyweight, high blood pressure, the levels of triglycerides may also decrease (ICSI, 2004). Combining the strategy of limited alcohol usage with other strategies of lifestyle change, lead to a subsequent decrease of blood pressure (NIH, 2003; Williams et al., 2004; SIGN, 2001).

Smoking and hypertension are two independent risk factors, which accelerate atherosclerosis and damage the blood vessels, which increases the risk of a vascular disease and extreme organ damage (Faxon et al., 2004; Lamb et al., 2002). That could hinder the useful effects of some anti-hypertensive drugs (beta-blockers), or could hinder the benefits of a more intensive decrease of the blood pressure. To stop smoking is the most powerful measure for changing lifestyle, which could reduce the risk of vascular diseases (ESH, 2003).

The cardiovascular risk has a drop of about 50% after 1 year for those, who stop smoking. Up to 10 years may be needed to obtain the level of the risk of those, who have never smoked before (Williams et al., 2004). Rice & Stead (2005) who have made an overview of researches, determine that the advices and support of the nurse personnel could increase the patients' success of stopping smoking, especially in a hospital environment. Such advices and support, given by the nurses during the health checkups or the preventive activities, could be less effective, but there may be any influence anyway. RNAO (Registered Nurses' Association of Ontario, 2002b) and CNA (Canadian Nurses Association, 2001) admit that "the nurses are perfectly positioned to provide a leadership role, concerning the stop of smoking in an individual program and/or political level" (RNAO, 2002b). According to ANA (American Nurses Association, 1995), the training of patients and the preventive interventions of stopping the use of tobacco, must be a part of the nurses' practice.

The use of nicotine - replacing therapy (NRT) is a safe method among hypertensives, and it approximately doubles the stop of smoking (Williams et al., 2004). NRT is not an independent risk factor for acute myocardial event, but nonetheless, it should be used with a certain alert by patients in the upcoming fortnight, after an

experienced myocardial infarction; by those with severe arrhythmia; as well as by those with severe or worsening angina (Fiore et al., 2000).

The stress, connected with depression, social isolation, as well as the lack of support, increases the risk of coronary artery disease, similar to the conventional risk factors, such as smoking, dyslipidaemia and hypertension, but it remains unclear what is the role of the effective management of the stress, for optimizing the blood pressure control (Bunker et al., 2003; Matitila et al., 2003).

Bengtson and Drevenhorn (2003) find, that the nurses are in best position to provide training of patients, having to do with the anti-hypertensive medicaments, and track their therapeutic effectiveness, despite the fact that prescription of those medicaments is usually out of the nurses' obligations. An exception of this are the practicing US nurses (RNS in Extended class), who work on nurse directives in a hospital environment. It is known that some herbal medicaments could boost the anti-hypertensive effects (like garlic), whereas others could counteract, because of their own hypertensive qualities (like ephedrine, yohimbe, ginseng) or via influencing the levels of anti-hypertensive medicaments (like tutsan, licorice, yarrow, paprika, mistletoe, Don angelica, coltsfoot) (CPhA, 2005).

Drugs like cocaine, pot, amphetamines and MDMA (extasy) are a potential cause of hypertension development. Their use might be an underlying factor at resistant hypertension (NIH, 2003). The abuse with those drugs is an important health problem, especially among growing-ups and young people, a problem whose symptoms include high blood pressure and cardiovascular manifestations (Ferdinand, 2000).

The degree in which the patients' behavior coincides with the opinion of the one who gives advices, is the most important factor, which could be modified for a compromised outcome of the treatment (WHO, 2003). The expectations are defined as a verbal or an explicit communication between the patients' wishes and those of who provides health. Patients, whose expectations are unsatisfied, are less likely to be happy with the care, as well as to stick to the recommended treatment and the advices of health care. They report poorer results concerning health than those, whose expectations are fulfilled. (Ogedegbe, Mancuso & Allegrante, 2004) have researched patients' trust of the necessity of the prescribed medicaments, and their worries of the necessity of medicine intake, in order to estimate the relationship between conviction and keeping up the prescriptions. Their discoveries support the idea, that patients should be regarded as ones

who actively make decisions, who would be more motivated to use the prescribed medicaments according to the instructions, if the trust of necessity surpasses their worries.

Ogedegbe, Mancuso & Allegrante, 2004 have revealed the following patient delusions, concerning hypertension and the anti-hypertensive therapy when researching an Afro-American population:

- it's not necessary to have any medicaments when there are no symptoms, or blood pressure is normal;
- high blood pressure could self-regulate, so there's no need of having medicaments;
- the medicaments are toxic and may cause damage of the kidneys, the liver, eyes, or other part of the body, and even cause death;
- the daily intake of high blood pressure medicaments causes addiction or dependence;
- the medicaments don't work, so there's no reason to have any.

The documentation in a health diary, is an integral part of an effective and safe nursing practice. All data must be recorded during the assessment process, the re-assessment or intervention and must include the patient's response and nurse care. It's also an important component for improvement of the quality and management of the risk (Anderson, 2000).

According to the Association of nurses in Ontario (Canada), patient-centered care is a key moment in the nurse-patient relationship. That includes vindication, empowerment at considering autonomy, self-determination and participation of the patient at making decisions (RNAO, 2002a). Understanding the patient's beliefs could be facilitated by designing a plan for hypertension treatment, the mutual encouragement and improving the adherence of prescriptions in a long-term period. Comprehension during communication, convictions and values help nurses to undo the ethical conflicts and work for overcoming them when they arise (CNO, 2004c). Explorations have determined that the nurse interventions, including a checkup of blood pressure, lifestyle and medicaments, consultations and monitoring via home visits or a clinic, have been effective in reducing the blood pressure of hypertensive patients (Garcia-Pena et al., 2001; New et al., 2003).

For assessing blood pressure, the right technique is required, a suitable sized cuff and well-kept and calibrated equipment. The most common mistake is the use of an improper cuff to a big hand (84% of all other mistakes) (Graves, Bailey & Sheps, 2003). When the cuff is properly dimensioned, its bubble must surround 80-100% of the patient's forearm. When the cuff used is too small, with

every increase by 5cm of the arm circumference, an increase of 2-5mmHg to SBP and 1-3mmHg to DBP, is being observed (Fonseca-Reyes et al., 2003). And the other way around, using a too big cuff leads to a misjudgment of blood pressure. The patient needs to be comfortably seated for five minutes, with his back upright and recumbent and the upper part of his arm not covered by a close-fitting dress. The legs should not be crossed. The arm must be held to the level of the heart. The mercury must be descended by 2 to 3mmHg speed, and the first and the last sound, ought to be considered as systolic and diastolic blood pressure. The scale must be exactly read up to 2mmHg. Neither the patient, nor the explorer should speak during the measuring (Pickering et al., 2005).

A specific interval for screening blood pressure is not recommended, although it's suggested that its checkup should be done every two years among people with normal blood pressure (Sheridan, Pignone & Donahue, 2003).

Training interventions used by the nurse for improving hypertension. The independent management of hypertension is proven in the improved control of systolic pressure, but more long-term economical and clinical influences are not known. G. Katende introduced a research, having to do with three telephone-based interventions by a nurse- promotion of health, corrections of the medical therapy, and directions to treat hypertension, or a combination of the two.

In comparison to the usual care, the patients who had been randomized on the combined intervention, had had a great improvement in blood pressure control. The conclusions made, are that the behavioral changes and medicaments can generate improvements in systolic blood pressure, which have been kept 18 months after the intervention was finished (Maciejewski ML., et al., 2014).

The patients with high blood pressure frequently do not succeed in fulfilling the goals of treatment - a state defined as an “uncontrolled” hypertension. A majority of randomized and controlled researches have assessed the following interventions: own monitoring; educational interventions directed to the patient; educational interventions directed to professional health; care led by a health care specialist; organizational interventions who are aimed at improving the providing of care; reminding.

The results show that care, led by a nurse may be quite hopeful in long-term, and it's connected to control and improvement of SBP and DBP, but those interventions require upcoming appointments and systems for reminding. During

most researches, the per cent of those, who arrive for studying and have a better blood pressure, increases. The authors conclude that private practices and clinics, based in the municipality, must have an organized system for regular study and checkup of patients with hypertension (Glynn LG., et al., 2010).

A 2009 Bosworth research shows results of 588 hypertensive patients on a middle age of 63, from a clinic for primary aid, have been observed for a period of 2 years, have been distributed in three groups, and exposed to different types of intervention: a computer study of blood pressure, reminding during every visit, and two-month intervention, controlled by a nurse through phone. The short behavioral intervention shows improved results for a long term (Bosworth HB., et al., 2008; Jackson GL., et al., 2016).

A behavioral intervention by a nurse, or usual care is being applied to elderly hypertensive patients from two units of primary health care, randomly distributed. The patients are being exposed to an adequate intervention every two months for a period of two years, through the phone. The goal is to encourage them to stick to the intervention, and to improve health concerning their behavior (control of weight, exercises, smoking, diet, stress, use of alcohol). The phone conversation lasted for an average of 18 min. From the baseline to the sixth month the adherence to the medicated therapy had raised to 9% in the behavioral group, and to 1% in the other group (Bosworth HB., et al., 2008). A pilot program, aiming to find the disadvantages of managing hypertensives (Guatemala from 2007-2009), includes an assessment of the clinical risk and the components of treatment, and it's done mainly by nurses. A secondary goal is also determined - a change on patient level. To do this, two nurses and one doctor, establish a hypertension clinic. Twenty nine health workers are additionally trained in reducing the cardiovascular risk and health promotion, who would hold educational sessions with the patients. As a result from the interventions within a six-month period, a significant improvement in both the behavior and knowledge of the patients, as well as reduction of the average value of SBP, DBP, BMI and girth of waist are observed (Mendoza Montano C., et al., 2016).

According to Canadian Medical Association data (1999), researches have determined a significant reduction of blood pressure in just about 4-5 weeks of training. The anti-hypertensive effect lasts as long as the program of training, and it's not seen in a period of 10 weeks after the training process, i.e. the effect is reversible.

The support of strict control over hypertension requires not only a continuous narrow co-operation between the medical personnel and the patient, emphasizing on curative goals, but also

systematic control visitations (Overgaard Andersen U, 2016).

Conclusion

We could jump to the following conclusions, by the performed summary of scientific publications, which concern the interventions applied by the nurses:

Interventions, which are accomplished by the nurse and directed to lifestyle and physical activity of the patients, would lead to change in blood pressure rates.

The combining of a strategy for limiting alcohol consumption with other strategies for change in lifestyle, lead to a subsequent reduction of blood pressure.

The advices and support given by the nurses, could advance the stop of smoking, in both the clinical environment and the preventive activities.

Patient - centered care is a key moment in the relationship nurse-patient.

Interventions performed by nurses via brief appointments, studying through the phone, or visiting a clinic, have an equal positive effect on the behavior, attitudes and keeping the envisaged medical and behavioral regime for a long-term period.

The documentation in a health diary of nurse care and the patients' response during the assessment, reassessment or intervention is an important component of quality, and management of the risk.

The nurses are capable of performing initial management of hypertension in a long-term period, which is connected to improvement and control of both SBP and DBP via interventions, which require upcoming appointments and systems of reminding.

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