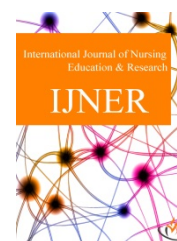




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### EARLY TRAINING FOR TACKLING PATIENT HYPERTENSION - A SYSTEMATIC REVIEW OF NURSING EDUCATION

\*<sup>1</sup>Nnodim Johnkennedy,<sup>1</sup> Uduji Helen Ifeoma and <sup>2</sup>Udujih Godwin Obinna

<sup>1</sup>Department of Medical Laboratory Science, Faculty of Health Science, Imo State University owerri, Imo State, Nigeria.

<sup>2</sup>Department of Public Health Technology, Federal University of Technology Owerri, Imo State Nigeria.

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#### ABSTRACT

The aim of this review was to examine studies on nursing in hypertension care to find out the nurse's role and skills. The role of the nurse in programs was described as that of a team member, an educator in non-pharmacological treatment, and a translator for the physician with a holistic and psychosocial approach. A nurse participating in hypertension care promoted blood pressure reductions as the patients decreased their weight and sodium intake, stopped smoking, increased their physical activity, took their medication more correctly, and returned for follow-up visits more frequently, and the cost of drugs and visits to the physician decreased. The nurse can educate and support the patient, but what precisely are her role and her skills in hypertensive care.

#### INTRODUCTION

People in developed countries are at over 90% risk of developing hypertension at some point in their lives. It is predicted that the number of adults with the condition worldwide will increase to 1.56 billion by 2025 compared with around 972 million in 2000 [1,2]. Nurses clearly have a main role in detection, management, monitoring and prevention of hypertension. Giving guidance about diet and exercise, to avoid alcohol consumption, consumption of coffee, to reduce the salt intake and smoking should be trained in taking blood pressures according to a standard process. The entire on-site team should, through training, be aware of the importance of hypertension management and target blood pressures.

- Knowledge of proper technique and different types of observer bias.
- Process to properly maintain and calibrate equipment.
- Interpretation of measurements including an

- Understanding of the variability of blood pressure depending on time of day, exercise, and timing of medications.
- Demonstration of accurate technique of patient positioning, selection of cuff size, obtaining a valid blood pressure measurement, recording it accurately, and reporting abnormal results.

#### Tips for Obtaining Accurate Blood Pressure Measurement

Ask if the patient avoided caffeinated beverages and smoking for at least 30 minutes before the examination. 2. Have the patient sit calmly for five minutes with back supported and feet flat on the floor. 3. Patient's arm should be bare. Cuff may be applied over a smoothly rolled-up sleeve, provided there is no tourniquet effect. 4. Support the patient's arm on a firm surface at heart level, slightly flexed at elbow. 5. Both the healthcare team member and the patient should refrain from talking while BP is measured. 6. Use appropriate cuff size. The inflatable part should be long enough to encircle at least 80% of arm and wide enough to encircle 40% of arm at midpoint. When in doubt, select the larger size.

Corresponding Author

**NnodimJohnkennedy**

Email:-johnkennedy23@yahoo.com



Recommended cuff sizes Arm Circumference Adult Cuff Size 22 to 26 cm Small adult (12X22 cm) 27 to 34 cm Adult (16X30 cm) 35 to 44 cm Large adult (16X36 cm) 45 to 52 cm Adult thigh (16X42 cm).

7. Wrap the cuff snugly around bare upper arm. The lower edge should be centered two finger widths above the bend of the elbow, and the midline of the bladder should be over the brachial artery pulsation. 8. The aneroid dial or mercury column should be clearly visible and facing you. 9. Using light pressure, position stethoscope over brachial artery and not touching the cuff. 10. "Round numbers" are not acceptable : measure and record to the nearest 2 mm Hg [3].

A key contributor to both heart disease and stroke is high blood pressure – also known medically as hypertension. It's estimated that about 74.5 million people in the U.S. suffer from hypertension and many don't even know it. In addition to stroke and heart disease, this one condition is a major risk factor for other health problems such as congestive heart failure, kidney disease, blindness and even sexual impotence. As blood pressure goes up, life expectancy comes down [3,4].

### Pre-hypertension Is An Early Warning Sign

Pre-hypertension is the term that describes blood pressure levels that place you at risk of developing hypertension in the future. Normal healthy blood pressure is 80 or below for diastolic and 120 or below for systolic. But they vary between 80-89 diastolic and 120-139 systolic signals that you have pre-hypertension. This means that unless you take preventive action now, you are likely to gradually progress towards the tipping points of hypertension 90 for diastolic and/or 140 for systolic. One can't control all risks for high blood pressure, such as family medical history, age, race, and certain medical conditions among other things. But there are risks you can control with sensible diet and lifestyle actions. Don't be fooled into thinking it is too late to do anything about your blood pressure especially women who are equally at risk for high blood pressure as men.

### Hypertension

Hypertension is a common co-existing condition with diabetes in the aged population. Antihypertensive treatment has been shown to reduce coronary artery events by 23%, strokes by 30%, cardiovascular deaths by 18% and total deaths by 13% among the elderly, with the greatest benefit seen in those older than 70 years of age [5]. With only two to four years of treatment needed to realize a mortality benefit, control of this cardiovascular risk factor is appropriate in nearly all people of advanced age [6]. Although most agree that hypertension should be treated in the aged person with diabetes, debate exists on the level of control that should be targeted. The AGS recommends treatment targets of 140/80 mmHg; the ADA does not provide any specific guidelines for aged adults.

Although some may advocate for less aggressive hypertension treatment in the elderly because of the increased risk of adverse effects (falls, hypotension and syncope, for example), recent evidence suggests that intensive blood pressure control has added benefit in the elderly population [7]. Regardless of treatment targets, blood pressure should be lowered gradually to avoid complications. Similar to guidelines for younger populations, angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers should be strongly considered on the basis of their renal protective effects. Baseline renal function studies and electrolytes should be performed as well as follow-up labs one to two weeks after starting the medication regimen and after any dosage increase [8,9].

### Blood pressure

Blood pressure is the product of the amount of blood pumped by the heart each minute (cardiac output) and the degree of dilation or constriction of the arterioles (systemic vascular resistance). It is a complex variable involving mechanisms that influence cardiac output, systemic vascular resistance, and blood volume. Hypertension is caused by one or several abnormalities in the function of these mechanisms or the failure of other factors to compensate for these malfunctioning mechanisms [10].

### Systolic Pressure

Systolic pressure represents the pressure when the heart contracts and forces blood into the blood vessels. This is the higher of the two numbers and is usually expressed first (HSFO, 2005a).

### Diastolic Pressure

Diastolic pressure represents the pressure when the heart is relaxed. This is the lower of the two numbers and is usually expressed second [11].

### Hypertension- Cardiovascular and Cerebrovascular Disease

Data from numerous observational epidemiological studies have provided persuasive evidence of a direct relationship between high blood pressure and cardiovascular disease. High blood pressure increases the risk of ischemic heart disease 3-to-4 fold and of overall cardiovascular risk by 2-to-3 fold. The incidence of stroke increases approximately 8-fold in persons with definite hypertension. It has been estimated that 40% of cases of acute myocardial infarction or stroke are attributable to hypertension. Hypertension accelerates atherosclerosis and blood vessel injury, increasing the risk of vascular disease and subsequent end organ damage (heart, brain, kidney, eye or limbs). Atherosclerosis is a complex, diffuse, and progressive process with a variable distribution and clinical presentation that is dependent on the regional circulation



involved. Factors that may influence these differences include the size and structure of the affected artery, local and regional flow, changes in microcirculatory alterations and end-organ damage. Risk factors play an important role in initiating and accelerating the process [12]. Clients develop their perception of treatment based on their implicit model of their illness, as well as their appraisal of the effect of the treatment relative to their expectations/prior experiences. Clients' model of illness comprises beliefs about the etiology, perception of the symptoms, likely duration, and personal consequences. The necessity of a treatment can be influenced by these beliefs.

### Decisional Balance Model

"The existing research on patients' beliefs about illness and medications suggests the value of an integrated approach, which addresses patients' perceptions of the treatment as well as the practicalities of using it. The necessity-concerns construct offers a method for conceptualizing the salient beliefs that need to be addressed. Patients should be provided with a clear rationale for the necessity of a particular treatment that is consonant with their own model of illness. Moreover, their specific concerns should be elicited and addressed" [13].

### Self-Efficacy Model

Self-efficacy is an individual's belief that she or he is capable of dealing with a specific problem. Low self-efficacy results in avoiding changing behaviour, whereas, high self-efficacy promotes change in behavior [14]. Bandura (1977) specified four sources of information through which self-efficacy expectations are learned and by which they can be modified. These sources of information include: 1. performance accomplishments, that is, experiences of successfully performing the behaviours in question; 2. vicarious learning or modeling; 3. verbal persuasion, for example, encouragement and support from others; and 4. physiological arousal, for example, anxiety in connection with the behaviour [15].

### Self-Care/Self-management Model

Self-care/self-management is situation and culture specific; involves the capacity to act and make choices; is influenced by knowledge, skills, values, motivation, locus of control and efficacy; and focuses on aspects of healthcare under the control of the individual. Orem's Self-Care Deficit Theory of Nursing (1991) delineates three main roles for nurses: 1. to compensate for a person's inability to perform self-care by doing it for him/her; 2. to work together with the client to meet his/her healthcare needs; and 3. to support and educate the client who is learning to perform his/her own self-care in the face of illness or injury. This is the key role in facilitating clients' adherence to maintaining self-care.

### Detection and Diagnosis

Nurses have an important role to play in the detection and diagnosis of hypertension. Often, nurses are responsible for obtaining, recording and reporting a client's blood pressure. They also play an important role in the provision of education to their clients, which include sharing blood pressure results with the client and other members of the healthcare team.

### Preventive measures

Hypertension is often referred to as the "silent killer." Regular blood pressure checks are a means to assess the need for antihypertensive treatment and to monitor a client's vascular risk [16]. As the largest group of healthcare professionals, nurses work with clients in a wide range of settings and are in a key position to facilitate early detection of elevated blood pressure. recommends assessing all adult blood pressures at all appropriate visits. A specific interval for screening is not recommended, however it is suggested that checking a blood pressure in a normotensive client every 2 years and every year in the client with borderline blood pressure would be prudent [17]. Lifestyle modifications are the cornerstone of both antihypertensive and anti-atherosclerotic therapy today. A combination of lifestyle interventions is often needed to achieve optimal blood pressure values to reduce the risk of heart attack and stroke. Their effectiveness, in conjunction with pharmacological therapies in the prevention and initial management of hypertension has been well documented in the literature[18]. Diet, weight, exercise, smoking, alcohol consumption and stress are all important lifestyle factors that can have an impact on blood pressure and cardiovascular health. Assessment and modification of these risk factors, where appropriate, is effective in reducing hypertension. In appropriately selected individuals, some lifestyle interventions have the potential to decrease blood pressure levels to the equivalent of a half to one standard dose of an antihypertensive drug.

Adoption of healthy lifestyle behaviours is an important factor in prevention of high blood pressure and lowering blood pressure in those known to be hypertensive. By limiting the use of alcohol individuals may delay/prevent the incidence of hypertension and decrease systolic blood pressure by 2-4 mmHg. Adherence to low alcohol consumption guidelines will enhance drug efficacy. It has been recognized that excessive use can increase resistance to the effects of antihypertensive medications. This resistance may be a result of poor adherence to the medication regime and/or a change in pharmacokinetics of the antihypertensive agent metabolized by the liver that is under the influence of acute or chronic alcohol ingestion<sup>[19]</sup>. Alcohol has a high caloric count with no noted nutritional value. Limiting its use will aid in weight reduction, another strongly recommended strategy to decrease blood pressure, and may lower triglyceride levels[20]. Combining this strategy with other



lifestyle modification strategies results in further reduction of blood pressure [21, 22].

### Tips for prevention

- Have your blood pressure checked regularly.
- Maintain a healthy body weight – obesity and a high BMI (body mass index) can heighten your risk.
- Eat a well-balanced diet – load up on fruits and veggies.
- Beware of high sodium intake – it's hidden everywhere from bread, processed foods to medicinal products!
- Make sure to exercise – a good goal is 150 minutes of aerobic exercise each week making sure each muscle group gets attention
- Quit smoking
- If you drink alcohol, only do so in moderation
- If you are prescribed medication to control your blood pressure, be sure to take it!

### Healthcare team and system-related factors

Healthcare system variables include the availability and accessibility of services, support for education of clients, data collection and information management, provision of feedback to client and healthcare providers, community supports available to clients, and the training provided to health service providers. The healthcare system influences clients' behaviour as it directs provider's schedules, dictates appointment lengths, allocates resources, sets fee structures

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and establishes organizational priorities. Relatively little research has been conducted on the effects of the healthcare team and other system related factors on clients' adherence. A WHO review found five major barriers to adherence that were linked to the health system and team:[23]1. Lack of awareness and knowledge about adherence; 2.Lack of clinical tools to assist health professionals in evaluating and intervening in adherence problems; 3.Lack of behavioural tools to help clients develop or change health behaviours; 4.Gaps in the provision of care for chronic conditions; and 5.Suboptimal communication between clients and health professionals.Organizations implementing this guideline should adopt a range of self-learning, group learning, mentorship and reinforcement strategies that will over time, build the knowledge and confidence of nurses in implementing this guideline[24-39].

### CONCLUSION

Beyond skilled nurses, the infrastructure required to implement this guideline includes access to specialized equipment and treatment materials. Orientation of the staff to the use of specific products and technologies must be provided and regular refresher training planned. Teamwork, collaborative assessment and treatment planning with the client and family and interdisciplinary team are beneficial in implementing guidelines successfully. Referral should be made as necessary to services or resources in the community or within the organization.





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