Ain Shams University
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FACTORS AFFECTING NURSES' PERFORMANCE IN BLOOD PRESSURE MEASUREMENT TECHNIQUE

Thesis

Submitted for Partial Fulfillment of the Master science in nursing Degree

(Medical- Surgical Nursing)

By

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(B.Sc. Nursing. Zagazig University)

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Ain Shams University

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Dedicated to:

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** My family.*

** My sons* ***Aya, Ahmed and Ibrahem***

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ABPM	: Ambulatory Blood Pressure Measurement
AHA	: American Heart Association
ANS	: American National Slandared
ASH	: American Society Hypertension
BHS	: British Hypertension Society
BPr	:Blood Pressure
CD R	:CD ROM
CHD	:Chronic Heart Disease
DBP	:Diastolic Blood pressure
ISH	:International Society Hypertension
NIBP	:Non Invasive Blood Pressure
SBP	: Systolic Blood Pressure
SBPM	:Self Blood Pressure Measurement
US	:United States
VA	:Veterans Administration
WHO	:World Health Organization

INTRODUCTION

Blood pressure measurement is perhaps the most frequently performed clinical procedure, and important therapeutic decisions rely on its result. However, the accuracy of the procedure strongly depends both on the number of measurements and the circumstances during the procedure. Efforts have continuously been made to standardize the procedure, but it remains difficult to reach an agreement between different official guidelines for blood pressure measurement ***(Bailey & Bauer ١٩٩٣, Veiga et al., ٢٠٠٣; and Ye ٢٠٠٧).***

Several critical steps in measuring blood pressure are selection of an appropriately sized cuff, cuff placement, proper placement of the bell of the stethoscope, appropriate cuff deflation rate, and auscultation of appropriate Korotkoff sounds. Sources of error in blood pressure measurement include improper technique, observer bias, and faulty equipment. In addition, the presence of clinical conditions such as atrial fibrillation can lead to a high degree of inter-observer variability ***(Burr et al., ٢٠٠٨)***.

A number of factors related to the subject (patient) can cause significant deviations in measured blood pressure. These include room temperature, exercise, alcohol or nicotine consumption, positioning of the arm, muscle tension, bladder

distension, talking, and background noise. The patient should be asked to remove all clothing that covers the location of cuff placement. The individual should be comfortably seated, with the legs uncrossed, and the back and arm supported, such that the middle of the cuff on the upper arm is at the level of the right atrium (the mid-point of the sternum). Measurements made while the patient is on an examining table do not fulfill these criteria and should preferably be made while the patient is seated in a chair. At the initial visit, blood pressure should be measured in both arms. The patient should be instructed to relax as much as possible and to not talk during the measurement procedure; ideally, ٥ minutes should elapse before the first reading is taken ***(Pickering et al., ٢٠٠٥b).***

For accurate blood pressure measurement, the nurse must be properly trained in the techniques of blood pressure measurement; use an accurate and properly maintained device; recognize subject factors, such as anxiety and recent nicotine use, that would adversely affect blood pressure measurements; position the subject appropriately; select the correct cuff and position it correctly; and perform the measurement using the auscultatory or automated oscillometric method and accurately record the values obtained ***(MacMahon et al., ١٩٩٠; and Pickering et al., ٢٠٠٥b).***

Nurses error is a major limitation of the auscultatory method. Systematic errors lead to both intraobserver and interobserver error. It may be caused by lack of concentration, poor hearing, confusion of auditory and visual cues. The most

important factor is failure to interpret the Korotkoff sounds accurately, especially for diastolic pressure ***(Keary et al., ١٩٩٨)***. Terminal digit (zero) preference is perhaps the most common manifestation of suboptimal blood pressure determination. It is generally recommended that the observer should read the blood pressure to the nearest ٢ mmHg, but an inappropriate excess in the recording of "zero" as the last digit in auscultatory blood pressure determinations has been reported by multiple investigators in clinical and research settings. Digit bias or digit prejudice is particularly common when the observer recognizes a specific threshold value for blood pressure and, depending on the circumstances, records a pressure just above or below that number ***(Pickering et al., ٢٠٠٥a).***

Adding considerably to the degree of "human error" in the area of blood pressure measurement is the universally poor state of the measurement devices available, their inaccuracy and the unreliability of the measurement results generated. The mercury sphygmomanometer is generally regarded as the gold standard against which all other devices for blood pressure measurement should be compared ***(Jones et al., ٢٠٠١).*** Unfortunately, due to the widespread concern that the mercury contaminates the environment, the mercury sphygmomanometer-meters are about to be replaced largely with alternative equipment ***(O'Brien et al., ٢٠٠١).***

In contrast to the mercury sphygmomanometer that is least dependent on calibration and maintenance, the aneroid devices need calibration against a known standard (mercury manometer

or non-mercury pressure meters) at six months interval. Failed calibration test implies the need to return the device to the manufacturer ***(Canzanello, ٢٠٠١).***

High blood pressure is one of the most important modifiable risk factors for cardiovascular disease. It is an extremely common finding in the community and a risk factor for myocardial infarction, stroke, congestive heart failure, end-stage renal disease, and peripheral vascular disease ***(Fiebach et al., ١٩٨٩; Whelton et al., ١٩٩٢; Stamler et al., ١٩٩٣; and Whelton, ١٩٩٤).***

Proper diagnosis of hypertension is of paramount importance for successful implementation in the clinical practice of current treatment guidelines. Consequently, failure to do so by the prescribing physician community suggests that there might be difficulties with accurately diagnosing hypertension, a fact, ultimately resulting in poor control of hypertension, also blood pressure is usually lowered (in persons with orthostasis) by upright posture, food, infection, hyperventilation, hot weather, and lifting of heavy objects. General anesthesia may be unusually dangerous due to blood pressure fluctuations, in this cases the hypotension occurs if the blood pressure measurement drops ٣٠ mmHg below usual blood pressure ***(Veiga et al., ٢٠٠٣)***

Significance of the Study:

Measurement of blood pressure is a simple and painless procedure that gives a lot of useful information about the heart and the condition of the blood vessels and can help the physician decide whether there is an abnormal obtained blood pressure relating to the patient's condition and can be used by nurse and physician to choose the most appropriate interventions.

Accurate measuring of blood pressure can prevent a lot of complication which is a silent but dangerous disease affecting many peoples as stroke, heart disease, heart failure, and kidney failure. These diseases cause untold suffering and lead to major social impacts, economic losses, and reduced productivity. From other hand the nurses playing a serious role in measuring blood pressure so the study aims to identify factors affecting nurses' performance in blood pressure measurement technique.