To evaluate the standard of nurses' performance related to blood pressure measurement in a tertiary care hospital, Lahore.

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Abstract

Background: This study is done to evaluate the standard of nurses performance related to blood pressure measurement in Public Hospital Lahore. Blood pressure properly maintains plasma supply and functions of the vital organs of human body. During anesthesia and critical care of patients measurement of correct B.P is therefore a main part. In clinical practice monitoring of blood pressure is routine procedure for the examination of clients. Hospital public room, it becomes difficult to measure the blood pressure of a large number of patients in a limited time, as well as monitor it daily.

Method: A Descriptive observational study was conducted to Evaluate the standard of nurses' performance related to blood pressure measurement. Data collection through Observational checklist adopted from (Du Toit H. 2013) used to assess the practices of nurses during the monitoring of blood pressure.

Results: Overall, the mean score for correctly completing the skills on the observational checklist was 75.7%. Nurses' scored an average of 63.1% for knowledge of blood pressure measurement technique.

Conclusion: It conclude that insufficient BPM information leads to incorrect measurements and this can seriously affect the diagnosis and clinical management of this calm, common and potentially dangerous disease. . Therefore, hospital staff of all classes should do their best to develop BPM techniques and, most importantly, training programs related to BPM should be developed and implemented as part of the CME, as demonstrated previously that it improves performance, for a better diagnosis of high blood pressure.

Introduction

Blood pressure properly maintains plasma supply and functions of the vital organs of human body. During anesthesia and critical care of patients measurement of correct B.P is therefore a main part. In clinical practice monitoring of blood pressure is routine procedure for the examination of clients. Hospital public room, it becomes difficult to measure the blood pressure of a large number of patients in a limited time, as well as monitor it daily [1,2].

With the advancement of science and technology, the traditional method of measuring blood pressure and recording it is used today. Some cuff-based digital electronic screens are currently available on the market, but these meters are not very reliable because they do not always provide accurate readings. Orthostatic hypotension occurs in about 30% of the elderly who live in the community and 70% of the old people in nursing homes. Prevalence is higher when continuous BP is measured intermittently. It is defined as a reduction of at least 20 mm systolic mercury and/ or 10 mm diastolic Hg in BP 1 and 3 minutes after the position change. . Early OH with a Blood Pressure decrease of at least 40 mmHg systolic and/ or 20 mm diastolic Hg within 15 seconds after the status change as clinically proven [3].

The guidelines for North America, Europe, Japan, and China consistently recommend ambulatory monitoring to assess blood pressure. However, the high BP measure that can be drawn from conventional and emergency records is closely related to negative health outcomes. In some studies, the relationship between cardiovascular risk and BP was the strongest of the systolic readings taken at night, and therefore the observation was repeated among patients with hypertension or indicated by mobile Blood Pressure watching. Freshly, PA readings have begun to use office machinery as an alternative to outpatient checking, but the strength of their relationship to cardiovascular outcomes is unknown. Given the uncertainties left by previous results, the purpose of this study was to assess different measurements and assess the strength of their connection to mortality and negative cardiac results [4].

Clinically hypertension more than 25% of children worldwide. High blood pressure is also an important risk factor for switching to heart disease. It is highly recommended to monitor non-clinical BP, in the form of standard automated BP screens and mobile BP screens, to address this outbreak. It provides

patients and healthcare professionals with a representative picture of the patient during the day and reduces the cost and discomfort associated with clinical visits in diagnosing and treating high blood pressure. The force of blood circulation in the arterial walls. Blood pressure is measured using two measures: systolic (measured when the heart beats, when blood pressure is higher) and diastolic (measured between heart beats when blood pressure is low). Blood pressure is first written with systolic pressure followed by diastolic pressure like 120/80 [5].

Problem Statement

Blood pressure monitoring is one of the most important measurements in clinical practices but it is more inaccurately measured in the clinical area and that's why it will be hard for the doctors and other medical staff to diagnosis the patient disease and it leads to tachycardia, cardiovascular and many other diseases.

Purpose of the Study

The following objectives are set to answer research questions:

Determine nurses' ability to measure blood pressure using a sphygmomanometer and auscultation by using observational checklist.

Determine the knowledge of the nurses 'blood pressure measurement technique with a questionnaire.

Research Question

What is the knowledge and skills of a blood pressure measurement technique for nurses?

This study will enhance my knowledge regarding to evaluate the standard performance of nurses related to blood pressure measurement. Through this study results will contribute to the nurses' clinical practices and development of future research in nursing professions.

Operational Definition

Real practice or the use of an idea, belief, or method versus relevant theories. The actual application or use of an idea, belief, or method, as opposed to theories relating to it. Through observational checklist, assess the nurses' practices during blood pressure monitoring [6].

Conceptual Definition

The following concepts are considered important in this study and a conceptual definition of each follows:

Blood pressure

The force from blood pumping to the heart that blood exerts on the walls of blood vessels, tension, and subsequent vascular contractions in response to this force is important to maintain blood flow from the vascular system [7].

Knowledge

In the context of this research study, knowledge is defined as the understanding and skill necessary to apply knowledge to improving, maintaining and improving health [8].

Blood pressure measurement

The instrument used for measurement of the BP in millimeters is called mercury manometer but in health care setting the professionals uses auscultatory method for monitoring of blood pressure. The cuff connected to sphygmomanometer is wrapped around the patients arm above the elbow and stethoscope is placed over the brachial artery. The inflation of the cuff is to continue until the brachial artery is occluded and then pressure of the cuff is lowered for the return of blood. Vibrations were produced and can be heard through stethoscope when the blood flows and this sound is called Korotkoff [9].

Nurse

A person specially trained to look for illnesses or disabilities in the hospital [10].

Skill

The ability to do something special, especially through learning and practice [11].

Literature Review

An observational study was conducted in 2019 by Song and Li at China to assess the measurement skills of blood pressure among nursing students they observed that if the position of the patient during B.P measurement is comfortable than readings of the B.P will be accurate and the accuracy rate will 85% due to comfortable position [12].

Similarly Myanganbayar et al. 2019 assess the practices of nurses for monitoring the B.P techniques at Ulaanbaatar Mongolia Tertiary Hospital. Data were collected through an observational checklist they observed that light in the wards will be adequate then staff will read number on the device and measure the blood pressure accurately. The results of their study revealed that 70% of proper light in the rooms will help to check the B.P more perfectly [13].

In 2020, A pre and post study was conducted by Patil et al. in a public Hospital In pre assessment nurses monitor blood pressure without inform the patients and in post patients were prepared before checked the B.P. The researcher compare the pre and post results, they were excellent about 90% in post procedure because the patients were relaxed and nervous when they were not informed about the blood pressure [14].

Another observational study was done by Gordon and Buckley in Australian university. Participants were nurses students and trained in blood pressure measurement techniques. The researcher observes them on their duties. They checked the blood pressure of different patients in a skillful manner and told about the cause of the high blood pressure. They told that

coffee, exercise and anxiety affect the B.P. The result of this study was 65%.

Roerecke et al. in 2019 conducted a quasi-experimental study to assess the nurses' skills about B.P at Bangkok and Thailand. This study performed in two health centers and participants were nurses. They had different cuff size and measured blood pressure of every type of patients. In this way monitoring will be accurate. The result of this research was 75% [15].

This study was done by Mengand Yang in 2019 at Marshfield Clinic, Wisconcin United States. The aim of this study to checked the practices of nurses about the use of apparatus which column was started from zero mercury. It was a good practice to start the B.P apparatus from zero when checked the blood pressure. Only 50% nurses follow it [16].

A cross-sectional study with the permission of ethical clearance committee was carry out in Ethiopia at University of Gondar Hospital to establish the level of knowledge and practices in nurses from March to April 2018 by Muntner et al. In the office setting, BP is measured noninvasively in 2 ways.

The traditional method involves auscultation of the brachial artery with a stethoscope, device should be at eye level, and resting the feet on floor no crossed legs and wrap the cuff well then the measurement of blood pressure will be more accurate then another method. In their study the results after this method will be 80% more accurate [17].

Stergiou et al. conduct the cross sectional study in 2018 to examine the nurses knowledge and behavior in 1st year and 3rd year nursing students at the university of Sichuan in Chengdu, China. Chi square test used to analyze data, in the period of September- December 2017.

They used observational checklist to assess the practices of nurses during the blood pressure measuring techniques. The arm of the patient should be at heart level, lower edge is 2 cm above fossa, used bell of the stethoscope and put on the brachial pulse during recording the blood pressure. 75% nurses used these techniques and the results were good [18].

Methodology

Study design

Descriptive observational study will be conducted to evaluate the standard of nurses performance related to blood pressure measurement.

Setting

This study will be conducted in a public Hospital, Lahore, Pakistan.

Study duration

The study duration will be 3 month from Febuarary2020 to April 2020.

Target population

The target population will be 200 nurses in public Hospital.

Sample size

Sample technique

A purposive sampling technique will be used in this research study.

Sample selection

Inclusion criteria: The inclusion criteria of the study were:

Staff nurses who was willing to participate in study.

Participants present at a time of data collection.

Exclusion criteria: The following people will be excluded from this study:

Para medical staff will be excluded in the study.

Doctors will be excluded in the study.

Ethical consideration

Formal approval will be taken from the concerned authorities. Informed verbal and written consent will be taken from the participants before giving the knowledge questionnaire and observing the practices of nurses.

Equipment's

Observational checklist adopted from (Du ToitH. 2013) will be used to assess the practices of nurses during the monitoring of blood pressure.

Section A:

Section A consists of demographic data such as age, education, and gender.

Section B:

Section B consists of an observational checklist. They were used in 2013 to evaluate the standard of nurses performance related to blood pressure measurement.

Data analysis method

The data will be analyzed by using SPSS version 25. Statistical analysis of the study will be descriptive.

Results

Table 1 Shows that 14.9% (30) participants belong to age group 20-30 years.

Table 1. Socio-demographic variables.

Age group		
20-30 Year	30	14.90%

31-40 year	55	27.40%
41-50 year	70	34.80%
51-60 year	46	22.90%
Educational status		
General Nursing	57	28.40%
Post RN	109	54.20%
MSN	35	17.40%

27.4%(55) belongs to age group of 31-40 years, 34.8% (70) belongs to age group 41-50 years, and 22.9 (46) belongs to age

group 51-60 and 28.4% (57) belongs to General Nursing, 54.2% (109) belongs to Post RN and 17.0% (35) belongs to MSN.

Table 2 shows the observational checklist to evaluate the standard of nurses' performance related to blood pressure measurement.

Table 2. Observational checklist to evaluate the standard of nurses' performance related to blood pressure measurement.

Question	Correct Frequency%	Incorrect Frequency%
Comfortable position	46.8%	53.20%
Adequate lighting for the room (can read numbers on device when at a distance)	50.20%	49.80%
Level of noise in the room (can hear whispers)	46.30%	53.70%
Inform patient that B.P is going to be measured	50.70%	49.30%
Rest at least 5 minutes prior to reading B.P	43.80%	56.20%
Use of appropriate cuff size	45.30%	54.70%
Feet resting on floor, no crossed legs	46.80%	54.50%
Mercury column starting at zero	60.70%	39.30%
Palpate brachial artery at base	55.20%	44.80%
Total deflation after palpable B.P	57.70%	42.30%
Measure in comfortable position	61.20%	38.10%
Place midline of bladder over brachial artery	51.20%	48.80%
Wrap cuff well	35.50%	64.20%
Tourniquet effect	34.30%	65.70%
Arm at heart level during recording B.P	53.70%	44.80%
Lower edge is at least 2 cm above fossa	56.20%	34.80%
Palpate SBP	31.30%	68.70%
Total deflation after palpable B.P	57.70%	42.30%
Use bell of stethoscope	27.90%	72.10%
Ear peace towards patient	48.30%	51.70%
Put stethoscope on the brachial pulse	53.20%	46.80%
Inflate to 20-30>palpable SBP	44.80%	55.20%
Deflate at 2 mm/sec	57.70%	42.30%
Record arm used for measurement	41.80%	58.20%
Device at eye sight level	40.80%	59.20%

Discussion

This study reveals that the practices of staff nurses regarding BP measurement techniques the observation reveals that

patient in comfortable position, 53.2% charge nurses have bad practices and 46.8% have good practices and other study in South Africa shows that 70.5% nurses have good practices and 29.5% have bad practices [15].

Similarly this study indicate that the 50.2% participants have well practices towards "Adequate lighting for the room (can read numbers on device when at a distance)" and 49.8% have not well performances but in other study which was conducted in United State the 59% learners have high quality and 41% have poor quality skills[19].

Likewise in this study charge nurses have brilliant skills regarding "Level of noise in the room (can hear whispers)" 46.3.5% and poor skills 53.7% and in other study which was conducted in Saudi Arabia by Pyko, Pyko et al. 2020 shows that the participants have 72.6% good and 27.4% have bad practices [20].

In current study that "Inform patient that B.P is going to be measured" the 50.7% staff have good and 49.3% have poor practices on the other hand in China a study shows that 62.6% volunteers have good and 37.4% have poor practices [21].

This study show that about 43.8% participants have high quality performance about "Rest at least 5 minutes prior to reading B.P" and 56.2% have poor quality performance as compared to the study in Kuwait 65% have brilliant and 35% have bad practices [22].

In present study the volunteers have 45.3% sufficient and 54.7% have insufficient practices regarding "Use of appropriate cuff size" and another study which was conducted by Meidert, Throll et al. 2019 in Korea shows that the participants have 77% satisfactory and 33% have unsatisfactory performances [23].

This study shows that the charge nurses have 46.8% adequate skills to inform the patients that "Feet resting on floor, no crossed legs" and 54.5% inadequate skills likewise another study conducted in 2019 by Eley, Christensen et al. in rehabilitation centers of Greek Hospitals in which the staff have 65.6% good performance and 34.4% have poor practices [24].

In current study that "Mercury column starting at zero" the 60.7% staff has well and 39.3% have poor practices on the other hand in Isfahan University of Medical Sciences a study shows that 75.6% volunteers have good and 24.4% have poor practices [25].

Similarly the participants have excellent performance during "Palpate brachial artery at base" 55.2% and 44.8% have poor performances and in Norway the 69.7% volunteers have high quality practices and .30.4% has low quality [26].

Similarly the participants have excellent performance during "Total deflation after palpable B.P" 57.7% and 42.3% have poor performances and in Norway the 70.6% volunteers have high quality practices and 29.4% have low quality practices[27].

Limitation

Study limitations included small sample size (n=200), which limits the generalizability. However, while the results cannot be generalized outside this group, international literature indicates similar problems. All nurses participating in the study are expected to be trained in South Africa and suggest that the results be repeated elsewhere in it [28-31].

It is important to note JiangJiang et al. 2019 that many of the authors' short training programs do not improve the blood pressure measurement technique, but reflect this ongoing effort and are updated every two years through in-service training[32]. Achieve a high average score in the blood pressure information. In accumulation, Armstrong points out those healthcare facilities provide employees with a comprehensive and reliable reference on standard blood pressure techniques. Poulter et al. 2019 Support student education on blood pressure in accordance with existing guidelines and provide additional blood pressure assessments and corrections if needed [33]. However, when Vos et al.2019 continue, only when nurses allow knowledge to increase experience and accompany it, skill development through thinking practice is the assistance that can be achieved at a level that contributes to high-quality nursing care [34].

Conclusion

Nurses must be trained to measure blood pressure according to current guidelines. Additional training and evaluation is needed with six-month updates and regular in-service training programs to ensure proper use of the blood pressure technology. The practice of thinking about knowledge and developing skills should be encouraged to ensure that nurses safely and accurately exceed the performance of skills in order to effectively integrate cognitive, emotional and psychomotor areas to provide high quality nursing care.

We conclude that insufficient BPM information leads to incorrect measurements and this can seriously affect the diagnosis and clinical management of this calm, common and potentially dangerous disease. Therefore, hospital staff of all classes should do their best to develop BPM techniques and, most importantly, training programs related to BPM should be developed and implemented as part of the CME, as demonstrated previously that it improves performance, for a better diagnosis of high blood pressure.

Conflict of Interest

This work is from a self-founded Post RN (BSCN) study. No existing or potential conflict of interest has been identified.

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