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Assessing The Need Of Training Of Blood Pressure Measurement In Under Graduate Medical Students.

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ABSTRACT

Blood pressure measurement is the basic clinical procedure and integral part of general examination, also it is one of the vital parameter and the most common procedure in clinical practice. The consequence of poor skill development lead to serious problem for patient and error will give high values for blood pressure and it will cost high risk for patient who is not hypertensive to prehypertensive and prehypertensive to stage I hypertensive. A total of 150 undergraduate medical students 50 each from Ist year, IInd year, and final year will be included in the study. Practical demonstration for BP measurement under 15 elements skillset based upon American medical association will be given to the first MBBS medical students during clinical practical. We will assess the students by giving scores according to the checklist. For satisfactory performance ---1, and unsatisfactory---0 will be given and feedback from student will be taken of five point likerts scale. We observed the students' performance on 15 skillset points for blood pressure measurement Their performance was not satisfactory oh some vital skills required for blood pressure measurement. Students of undergraduate agreed upon the need of retraining in second and third MBBS students and 73% want the need of incorporation of BP measurement in curriculum for all the phases' feedback. We conclude that medical student have not attained mastery of multiple skills required for BP measurement**.** The students should be retrained as they move on higher phases, so there is need of incorporation of BP measurement in their curriculum.

Keywords: Blood pressure, Skillset, Assessment, Retrain.

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INTRODUCTION

This topic has been chosen for research because; blood pressure measurement is the basic clinical procedure and integral part of general examination. Many errors are made by the medical students despite of proper demonstration of blood pressure measurement during clinical practical. It may be due to improper skills development by the students during measurement, and most important thing is that for BP measurement this is the only formal training the medical students ever get in their entire MBBS course without retraining in IInd and IIIrd MBBS. One requires mastery of multiple skills performed simultaneously during blood pressure measurement, so it is hard to maintain the skills [1,2].

Blood pressure is a vital parameter and a powerful indicator of cardiovascular health, as we know that elevated blood pressure is linked to a number of critical chronic diseases like heart, kidney and brain and therefore, accurate measurement of blood pressure is vital. Improper technique affects blood pressure reading and inaccurate readings can therefore cause errors in treatment, important clinical decisions are made based on those blood pressures reading [3,4].

Mistakenly low readings can lead to under treatment, which can allow an undiagnosed condition to increase, while an incorrect high blood pressure can cause overtreatment with blood pressure lowering medications. Faulty BP measurements usually lead to the latter scenario, and once someone gets started on a medication for blood pressure, very very rarely is the physician going to be willing to take them off .and the risks of stopping the blood pressure medication are really high. To avoid above scenario in fact, the American college of cardiologist recently developed clinical competencies for cardiovascular trainees as well as cardiologists. Some medical schools have already implemented clinical competency examinations that students must pass prior to graduation [5].

MATERIALS AND METHODS

The study will be conducted at Shri Vasantrao Naik Government Medical College, Yavatmal. A total of 150 undergraduate medical students of Ist year, IInd year, and finalyear will be included in the study. Practical demonstration for BP measurement under 15 elements skillset will be given to the first MBBS medical students during clinical practical. we will assess the students by giving scores according to the checklist. For satisfactory performance ---1, and unsatisfactory---0 will be given.

We will proceed with by assessing the Blood pressure measurement skills in undergraduate medical students based on 15 elements skillset, those are as follows: [AMA American medical association skillset].

[1] Give rest to the patient/subject in chair for 2-5 minutes, before taking Blood pressure measurement.
[2] Correct position.[legs not crossed or elevated, arm and back support]
[3] Wrapping the cuff around the arm correctly.
[4] Palpation of Radial and Brachial Artery.
[5] Arrangement of manometer at the heart level [Edge level] to prevent error.
[6] Close the valve on the cuff to inflate until the pulse get disappear.
[7] Release the valve slowly 2 to 3 mm/second till pulse reappear [systolic BP]
[8] Deflate the cuff completely and wait for 1-2 minute then inflate the cuff above the previous reading 30 mmHg.
[9] Position of the diaphragm of stethoscope over the brachial artery.
[10] Release the valve slowly 2 to 3 mm/second
[11] Note the sound changes, appearance[Systolic BP] and disappearance[Diastolic BP]
[12] If unsure about reading, completely deflate the cuff and wait for 1-2 minute and then inflate.
[13] Note the Blood pressure reading in journal or paper.
[14] Blood pressure reading should be in even numbers.
[15] Identify which arm is clinically appropriate for Blood pressure measurement.

Further we will find out on which skillset the students were performed better and on which skillset they were lacking, further we will find out is there any need of incorporation of retraining in curriculum for all the phases by taking students feedback on 5 point Likert's scale.

Data collection method: Five point Likert scale & 15 point checklist.

Inclusion criteria: Those students who have given informed consent to participate voluntarily.

Exclusion criteria: Those students who have not given informed consent.

Study Design: Educational interventional study.

Study site: At Shri VNGMC Yavatmal.

Selection criteria: Age -17 to 23 Years. Male/female undergraduate medical students.

Sample size: 150 First, Second and Third year MBBS medical students 50 from each year.

Data analysis plan: analysed by software Epi Info 7.

Ethical consideration

Proper written informed consent: of students will be taken before starting study.

Right to withdraw from the study: Students may choose not to participate or may leave the study at any time, we will assure him/her that both participation in this study or refusal to participate will not have any adverse effects.

Compensation for study related injury: NA.

Confidentiality: All study records will be kept confidential at all times. Student's identity will not be revealed. The results of this study may be published for scientific purpose. Student's identity will not be revealed in these publications.

Funding: None funded.

Insurance: not required.

Conflict of interest: No conflict of interest

Implication/Importance for society: At the end of this research, we will be able to know the status of 15 point elements skillset checklist for blood pressure measurement. Whether it is useful for all the phases as it gives feedback from the students and provides integration in teaching and learning.

OBSERVATIONS AND RESULTS

150 students of Ist, IInd, IIIrd MBBS were participated in the study as the participation was voluntary.

Performance of the students for blood pressure measurement

We observed the students' performance on 15 skillset points for blood pressure measurement. Their performance was satisfactory on following points as shown in table I.

Wrapping the cuff around the arm correctly.2.Palpation of Radial and Brachial Artery 3.Close the valve on the cuff to inflate until the pulse get disappear.4.Release the valve slowly 2 to 3 mm/second till pulse reappear [systolic BP] 5.Position of the diaphragm of stethoscope over the brachial artery.6.Release the valve slowly 2 to 3 mm/second 7.Note the sound changes, appearance [Systolic BP] and disappearance [Diastolic BP]8.Note the Blood pressure reading in journal or paper.

Students' performance was unsatisfactory on following points of 15 skillset for blood pressure measurement as shown in table I

Give rest to the patient/subject in chair for 2-5 minutes, before taking Blood pressure measurement.2.Correct position.[legs not crossed or elevated, arm and back support] 3.Arrangement of manometer at the heart level [Edge level] to prevent error.4.Deflate the cuff completely and wait for 1-2

minute then inflate the cuff above the previous reading 30 mmHg.5.If unsure about reading, completely deflate the cuff and wait for 1-2 minute and then inflate.6.Blood pressure reading should be in even numbers7.Identify which arm is clinically appropriate for Blood pressure measurement.

Feedback from the students for blood pressure measurement

As shown in table II majority of the students 76% found 15 points skillset checklist as a better method of assessment as compared to traditional methods, 81% found it prepares them better for the task, 87% found its better stimulus for learning as compared to traditional method 85% found it covers knowledge area with learning objectives87% agreed upon checklist cover all important and relevant practical skills as compare to conventional curriculum 92% found the checklist highlights the students aware of areas of weaknesses,60% agreed upon checklist decreases the chances of failing compared to conventional examination for first MBBS students, 47% found the checklist less stressful as compared to the traditional examination for first MBBS,57% of the students of undergraduate agreed upon the need of retraining in second and third MBBS students and 73% want the need of incorporation of BP measurement in curriculum for all the phases.

Table I: Scores on performance of I/II, II, IIIrd MBBS Student. Satisfactory-1 Unsatisfactory-0

	MBBS Students of batch	I/IIst		IInd		IIIrd	
Sr.no	Skillset Points	S	US	S	UN	S	UN
1	Give rest to the patient/subject in chair for 2-5 minutes, before taking Blood pressure measurement.		0		0	1	0
2	Correct position.[legs not crossed or elevated, arm and back support]		0		0		0
3	Wrapping the cuff around the arm correctly.	1		1		1	
4	Palpation of Radial and Brachial Artery.	1		1		1	
5	Arrangement of manometer at the heart level [Edge level] to prevent error.		0		0	1	0
6	Close the valve on the cuff to inflate until the pulse get disappear.	1		1		1	
7	Release the valve slowly 2 to 3 mm/second till pulse reappear [systolic BP]	1		1		1	
8	Deflate the cuff completely and wait for 1-2 minute then inflate the cuff above the previous reading 30 mmHg.		0		0		0
9	Position of the diaphragm of stethoscope over the brachial artery.	1		1		1	
10	Release the valve slowly 2 to 3 mm/second	1		1		1	
11	Note the sound changes, appearance[Systolic BP] and disappearance[Diastolic BP]	1		1		1	
12	If unsure about reading, completely deflate the cuff and wait for 1-2 minute and then inflate.		0		0		0
13	Note the Blood pressure reading in journal or paper.	1		1		1	
14	Blood pressure reading should be in even numbers.		0		0		0
15	Identify which arm is clinically appropriate for Blood pressure measurement.		0		0		0

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Table II: Analysis of Feedback questionnaire in percentage.

SD (Strongly Disagree) D: (Disagree) CS: (Can't Say) A: (Agree) SA: (Strongly Agree)

MBBS Batch Students response		I/II = 50			II = 50			III = 50		
No.	**Analysis of Feedback questionnaire.**	**SA/ A**	**CS**	**SD/ D**	**SA/ A**	**CS**	**SD/ D**	**SA/ A**	**CS**	**SD/ D**
1	Can the 15 elements skillset checklist for BP measurement better option as compare to traditional curriculum.	46	4	0	40	10	0	38	10	2
2	Is the checklist prepares the students thoroughly for the task.	45	5	0	42	8	0	35	10	5
3	Is a checklist a better stimulus for learning than the traditional examination	48	2	0	38	12	0	45	5	0
4	Is the checklist covers appropriate knowledge area consistent with learning objectives?	45	5	0	42	8	0	40	10	0
5	Is a Checklist cover all important and relevant practical skills as compare to conventional curriculum?	40	10	0	45	5	0	45	5	0
6	Is the checklist highlights the students aware of areas of weaknesses	45	5	0	45	2	3	48	2	0
7	Is the checklist decreases the chances of failing compared to conventional examination for first MBBS students?	20	30	0	35	10	5	35	15	2
8	Is the checklist less stressful as compared to the traditional examination for first MBBS?	10	40	0	15	30	5	30	18	2
9	Is there any need of retraining in second and third MBBS students?	35	15	0	20	18	12	30	15	5
10	Is there any need of incorporation of BP measurement in curriculum for all the phases?	40	10	0	10	35	5	15	35	0

DISCUSSION

Blood pressure is one of the vital parameter and the most common procedure in clinical practice, skill development for accurate measurement is a key identification to label the patient as hypertensive. The consequence of poor skill development lead to serious problem for patient and error will give high values for blood pressure and it will cost high risk for patient who is prehyertensive [6-10] In our study we found that the students were lacking on following skill development. Second year students performed better than first year and third year students performed better than second year. On following skill elements.

Give rest to the patient/subject in chair for 2-5 minutes, before taking Blood pressure measurement.2.Correct position.[legs not crossed or elevated, arm and back support] 3.Arrangement of manometer at the heart level [Edge level] to prevent error.4.Deflate the cuff completely and wait for 1-2 minute then inflate the cuff above the previous reading 30 mmHg.5.If unsure about reading, completely deflate the cuff and wait for 1-2 minute and then inflate.6.Blood pressure reading should be in even numbers 7.Identify which arm is clinically appropriate for Blood pressure measurement 6 to 10 mm of Hg error can result in incorrect classification of blood pressure from prehypertensive category to stage I hypertension and it can cause serious problems. Poor technique can cause patient with hypertension that is controlled can appear uncontrolled, which can cause potential harm to patients. So one need to master the skills required to measure BP accurately [13 14]. Grim CMet al in their study have suggested that use of automated BP devices would reduce the error but it is not possible everywhere to happen, so skill development is must [15]. Gonzalez-Lopez JJ et al in their study concluded that medical school should revise, redesign the skills development in all the phases of education and ensure that the output should come out positively. Some study suggested that physicians to undergo competency testing every six

months throughout their medical careers. Sebo P et al suhhested that medical colleges must improve ,revise ,retrain the students in their budding phases of medical education to master the skills required for accuracy for BP measurement as they move in higher phases [14].

CONCLUSION

From the present study we conclude that medical student have not attained mastery of skills required for BP measurement .we prompt further study in this regard and the students should be retrain as they move on higher phases. So there is need of incorporation of BP measurement in their curriculum.

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