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Original Article

Office blood pressure measurement practices among community health providers (medical and paramedical) in northern district of India



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ABSTRACT

Introduction: Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India. Appropriate blood pressure measurement techniques are the cornerstone of clinical acumen. Despite the clear guidelines on BP measurement technique, there seems to be large inter-observer variations.

Aim & methods: A prospective, observational study was done to assess the knowledge and to study the current practices of office BP measurement among the 400 medical and paramedical staff working in various hospitals of a northern district of India. A single observer under the supervision of investigators observed all the participants and a proforma was filled based on AHA guidelines. After observing BP measurement technique scoring was done (≤ 8 question correct = inaccurate practices, > 9 questions correct = accurate practices). Similarly, the knowledge was assessed by giving a pretested questionnaire.

Results: 5.85 % of the medical staff had excellent knowledge and 80% of the doctors and 62% of the paramedical staff had good knowledge about BPM. Only 1.47% (3 doctors) and 0.5% (1 nurse) had accurate practices. There was no correlation between knowledge and practices. **Conclusions:** We conclude that the right technique and knowledge of blood pressure measurement among community health providers is inadequate and warrants further interventions to improve.

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1. Introduction

Cardiovascular diseases are a major cause of mortality in Indian subcontinent causing more than 25% of death. India is projected to have more death from cardiovascular diseases than any other country in the world over the next decade.^{1–3} Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India. Hypertension is a common condition that does not have specific clinical manifestations until target organ damage develops.^{4–6} It confers a substantial risk of cardiovascular disease much of which is at least partially reversible with treatment. Screening adults to detect hypertension early and initiate treatment before the onset of target organ damage occurs, is highly cost effective.^{6,7}

The American Heart Association⁸ recognizes three sources of error in the measurement of blood pressure; observer bias, faulty equipment and failure to standardize the technique of measurement. Despite the clear guidelines on BP measurement technique, there seems to be large inter-observer variations, both among nursing staff and physicians as well as between the two groups.⁹ The general belief amongst the researchers is that Physicians dealing with diagnosis and treatment of hypertension do not follow the international society guidelines.^{10,11} In a study by Perloff et al,¹² it was found that nursing staff abide by 40% of the recommended procedures while medicine teachers, physicians and residents abided by approximately 70%. Many technical errors might occur related to the equipment used in practice, and this should influence BP reading.^{13–16} International studies confirm that teaching, training and knowledge toward BP measurement and apparatus for healthcare professional are suboptimal.^{17–19} Also these gaps in training are continuing in medical education and among interns and practitioners.^{20–30} The present study was undertaken to notify and to evaluate the knowledge and practices of BP measurement amongst health professionals working in various hospitals in a Northern District of India.

2. Methods

2.1. Study sample

The sample size was calculated on the basis of assumption for an outcome of 35% error rate in BP measurement by health-care professional based on estimated number of 3270 doctors and paramedical staffs working in 48 hospitals of a Northern district in India. Study sample was selected by stratified random sampling. The sample size tuned out to be 364. A total of 600 people were asked for participation, out of which 428 agreed to participate and were interviewed. The complete data could be obtained in 400 professionals. The medical staff ($n = 204$) included interns, postgraduates and consultants. Paramedical workers ($n = 196$) included nursing staffs, technicians who were regularly involved in BP measurement.

2.2. Assessment of knowledge and evaluation of practices of blood pressure measurement

One Research Associate and Research Assistant each were appointed for collection of the data. The health professionals were observed by them while measuring BP of patients and their current practices were judged by using a check list prepared according to WHO guidelines for measuring BP and JNC VII guidelines for classification of patients as normotensives/hypertensive (≤ 8 question correct – inaccurate practices, > 9 questions correct – accurate practices). Then a pre-structured, pre-tested multiple choice questionnaire was given to the health professionals which included various aspects of correct BP measurement as suggested by WHO and AHA guidelines and grading of knowledge done depending upon number of correct answers given (knowledge excellent (11–15 correct answers), good (6–10 correct answers) poor (1–5)). The details are given in [Appendix 1](#) and [Appendix 2](#). Quality was also ensured by random visits of Principal investigator/Co-investigators.

2.3. Statistical analysis

Results have been recorded as percentages of health professionals giving correct answers and incorrect answers based on a multiple choice questionnaire given for assessment of knowledge and data for practice based on scoring scale has been recorded as percentage of health professionals checking the BP in right manner according to AHA guidelines. The data so generated was entered into the MS Excel sheet by data entry operator. The data was analyzed using SPSS statistics software and chi-square test was done and χ^2 values evaluated for determination of difference in knowledge and technique of BP assessment between the two groups and comparison of knowledge and practice in individual groups. p value < 0.05 was considered statistically significant.

3. Results

Out of 400 health professionals it was found that 5.85% of the medical staff had excellent knowledge, 74.5% (153) had good knowledge, 19.61% (51) had poor knowledge. Among paramedical staff only 1% (1) had excellent knowledge, 61% (120) had good knowledge 31% (73) had poor knowledge ($p < 0.001$ among both groups). After assessment of the technique, it was found that only 1.47% (3 doctors) had accurate practice and among paramedical staff only 0.5% (1 nurse) had accurate practice. After comparison of knowledge and practice of BPM, it was found that there was no correlation between knowledge and practices of BPM, the values was statistically insignificant ($p = 0.94$). So, the persons who had excellent knowledge were doing inaccurate practices. [Table 1](#) shows observations based on knowledge assessment of Blood pressure measurement amongst medical and paramedical staff based on the questionnaire given and [Table 2](#) shows the observations based on practice assessment of BPM.

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