

## Original Research Article

# Comparison of pre training and post training knowledge of hypertension among medical officers of Narmada district of Gujarat, India

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## ABSTRACT

**Background:** Hypertension is a major risk factor contributing to cardiovascular and cerebrovascular diseases and death. Medical officers play an important role in Indian public health care system. The objective of this study was to evaluate the impact of training program on knowledge about hypertension among medical officers working in government health centres in Gujarat, India.

**Methods:** A one day training program was conducted for medical officers of various Primary Health Centres (PHCs) and Community Health Centres (CHCs) in Narmada district of Gujarat. This training focussed on screening, diagnosis and management of hypertension, essential and secondary hypertension, lifestyle modifications, various anti-hypertensive drugs and practical aspects of examining a patient with hypertension. Impact of the training program was evaluated by a questionnaire consisting of 10 questions which was used as a pre-test and a post-test.

**Results:** A total of 30 medical officers (18 male and 12 female) attended the training. The mean age of participants was 37.4 years and average clinical experience was 11 years. The pre-test mean score of participants was 4.52 and post-test mean score was 8.44. This improvement in the post-test mean score was found to be statistically significant. On comparison of questions answered incorrectly in pre-test and post-test, we found that there was a significant reduction in the number of questions answered incorrectly in the post-test.

**Conclusion:** There was a significant improvement in the knowledge of medical officers regarding screening, diagnosis and management of hypertension as a result of their training.

**Keywords:** Hypertension, Knowledge, Medical officers, Non communicable diseases, The national programme for the prevention and control of cancer diabetes cardiovascular diseases and stroke, Training

## INTRODUCTION

Non communicable diseases (NCDs) are the leading cause of death in India. More than 60% of deaths in India can be attributed to NCDs.<sup>1</sup>

NCDs include diabetes mellitus, hypertension, ischemic heart disease, cerebrovascular stroke, cancer and chronic respiratory diseases.

Hypertension is one of the most common cardiovascular disorders and is an important community health problem in India.<sup>2</sup> The risk of coronary heart disease, congestive cardiac failure, ischemic and haemorrhagic stroke, renal failure and peripheral arterial disease is almost double in patients having hypertension. Presence of hypertension is associated with the presence of other cardiovascular risk factors like diabetes, obesity etc.<sup>3</sup>

The National Programme for the Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) was started in 100 districts in 2010 in India. It was integrated with the National Health Mission in 2013. Its main focus was opportunistic screening for common NCDs at various health care levels, through NCD clinics. It made efforts to systematically train medical officers so that timely diagnosis and cost effective treatment of non-communicable diseases is possible at primary, secondary and tertiary care centre.<sup>4</sup>

The objective of this study was to evaluate the impact of the training program on knowledge about hypertension among medical officers.

## METHODS

State Institute of Health and Family Welfare, Gujarat organised a training of trainers for non-communicable diseases in January 2017. Selected physicians of all government medical colleges of Gujarat, India including the authors of this article, were trained using a standard presentation designed at state level. These physicians were also given this presentation module in order to train various medical officers of Gujarat, India.

Then, Authors conducted a one day training program for medical officers of various Primary Health Centres (PHCs) and Community Health Centres (CHCs) in the Narmada district of Gujarat in April 2017. This training focussed on screening, diagnosis and management of hypertension, essential and secondary hypertension, lifestyle modifications, various anti-hypertensive drugs and practical aspects of examining a patient with hypertension.

### Inclusion criteria

All medical officers working in PHCs and CHCs in the Narmada district of Gujarat, India, who attended the training program.

Study was conducted for the period of January 2017 to April 2017.

A questionnaire containing 10 questions from topics included in the training module was prepared and validated. It comprised of questions about body mass index, waist circumference, lifestyle modification, etiology of secondary hypertension, important investigations for hypertension, management and treatment goals for prehypertension and hypertension and anti-hypertensive drugs.

This was used as a pre-test questionnaire to assess baseline knowledge of the participants. The same questionnaire was used as a post-test. This questionnaire collected basic details of participants like age, gender and their clinical experience. Authors did not include names and place of service in the questionnaire to ensure confidentiality. Every correct answer was given 1 mark. There was no negative marking for incorrect answers.

Data was entered in Microsoft Excel and was analysed using Epi-Info software. The average of pre-test scores and post-test scores was calculated and compared using paired 't' test. The number and type of questions answered incorrectly by participants in pre-test and post-test was compared using Chi-square test. A p-value of less than 0.05 is considered to be statistically significant.

## RESULTS

A total of 30 medical officers attended the training. The mean age of participants was 37.4 years.

**Table 1: Comparison of pre-test and post-test mean score of the training participants (N=30).**

Pre-Test mean score (out of 10)	Post-test mean score (out of 10)	Paired 't' test	p-value
4.52	8.44	10.74	<0.0001

**Table 2: Comparison of questions answered incorrectly by participants in pre-test and post-test (N=30).**

Questions	Pre-test	Post-test	p value
Normal body mass index	18 (60)	2 (6.6)	<0.0001
Normal waist circumference	17 (56.6)	7 (23.3)	0.01
Daily exercise for weight reduction	22 (73.3)	1 (3.3)	<0.0001
Causes of secondary hypertension	20 (66.6)	10 (33.3)	0.01
Essential investigations for hypertension	4 (13.3)	2 (6.6)	<0.0001
Management of pre- hypertension	4 (13.3)	1 (3.3)	<0.0001
Treatment goal Blood pressure	16 (53.3)	5 (16.6)	0.001
Contra indications of ACE I	14 (46.6)	6 (20)	0.01
Contra indications of Beta-blockers	6 (20)	1 (3.3)	<0.0001
Contra indications of thiazide	16 (53.3)	3 (10)	<0.0001

\*Figures in bracket indicate percentage #clinically significant improvement in all questions

There was almost equal gender distribution (18 males and 12 females) in the study participants. The average of years of clinical practice (experience) of the study participants was 11 years.

Table 1 shows comparison of pre-test and post-test mean score of the 30 training participants. The pre-test mean score was 4.52 and post-test mean score was 8.44. This improvement in the post-test mean score was found to be statistically significant.

Table 2 shows a comparison of questions answered incorrectly in pre-test and post-test. There was a significant reduction in the number of questions answered incorrectly in the post-test.

## DISCUSSION

Non communicable diseases include diabetes mellitus, hypertension, ischemic heart disease, cerebrovascular stroke, cancer and chronic respiratory diseases.

Approximately 33% of urban and 25% of rural Indian population suffer from hypertension but less than 50% of them are diagnosed and adequately treated.<sup>5</sup>

Hypertension is responsible for 57% of all deaths due to cerebrovascular stroke and 24% of all deaths from coronary heart disease in India.<sup>6</sup>

The National Programme for the Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke was started in 2010. Its objectives are:<sup>4</sup>

- A. Health promotion through behaviour change with involvement of community, civil society, community based organizations, media etc.
- B. Population based screening and opportunistic screening at all levels in the health care delivery system from sub-centre and above for early detection of diabetes, hypertension and common cancers
- C. To prevent and control chronic NCDs
- D. To build capacity at various levels of health care for prevention, early diagnosis, treatment, rehabilitation, Information, Education & Communication / Behaviour Change Communication and operational research
- E. To support for diagnosis and cost effective treatment at primary, secondary and tertiary levels of health care
- F. To support for development of database of NCD through surveillance system and to monitor NCD morbidity and mortality and risk factors.

A medical officer plays an important role in this program as he is the program manager, clinician and trainer of healthcare personnel at his health centre.

Thus, training of medical officers will help in effectively implementing this program and will enable them to detect and treat common uncomplicated NCDs at their level and also give best possible initial treatment in medical emergencies like myocardial infarction and stroke, before referring to higher level of care.

Hypertension can be easily diagnosed even at sub centre level by proper training of health care personnel. Medical officers at PHCs and CHCs can manage patients with prehypertension by educating them about lifestyle modification. Treatment of uncomplicated cases of hypertension can be started at PHCs and complicated cases can be referred for management to higher centres like CHCs or district hospitals or medical colleges.

Accordingly, training program for medical officers was started in Gujarat, India.

In our study, we trained 30 medical officers from Narmada district of Gujarat. The mean age of participants was 37.4 years. There were 18 male and 12 female study participants. Their average clinical experience was 11 years.

Authors found that there was an improvement in the pre-test mean score (4.52) and post-test mean score (8.44) of participants. This improvement was statistically significant. This signifies that there was a positive impact of our training on the knowledge of medical officers, regarding hypertension.

When authors compared the number of questions answered incorrectly by participants in the pre-test and the post-test, we found that there was a statistically significant reduction in the number of questions answered incorrectly in the post-test. Thus, the knowledge of all participants regarding hypertension had improved post training.

However, there were three questions in which the improvement seen was not as much as in the other questions. These included questions regarding use and contraindications of angiotensin converting enzyme inhibitors (ACE-I), causes of secondary hypertension and normal waist circumference.

ACE-I are commonly available and frequently used antihypertensive agents. They are one of the first line antihypertensive agents and are made available for use under this program.<sup>7</sup> So it is imperative that medical officers should be aware of its use, side effects, dosages and contraindications.

Secondary hypertension is seen in 5-20% of all hypertensive patients.<sup>3</sup> Secondary hypertension should be suspected when the hypertension is drug resistant, sudden in onset, age of the patients is less than 30 years or if there is presence of target organ damage.<sup>8</sup> The causes of secondary hypertension are often curable. So, it is

important that medical officers should be able to identify patients with signs of secondary hypertension as early as possible and then refer them to higher centres for the confirmation of their diagnosis and further treatment.

Increased waist circumference is a sign of central obesity, which is a risk factor for cardiovascular diseases. It is preferable to use waist circumference with Asian Indian specific cut-offs, rather than waist hip ratio, as a measure of abdominal obesity.<sup>9</sup> Waist circumference can easily be measured even by paramedical staff, if adequately trained for the same. Measuring waist circumference is an important part of physical examination of hypertensive patients. So, it is vital that medical officers should know how to measure waist circumference and their normal and abnormal values.

Considering this, future training programs should focus more on these topics also apart from the routine training module.

## CONCLUSION

From this study we concluded that there was a significant improvement in the knowledge of medical officers regarding screening, diagnosis and management of hypertension as a result of their training.

## Recommendation

Medical officers should be regularly trained in the diagnosis and management of prehypertension, hypertension and other NCDs. This training should be done frequently so as to reinforce the knowledge of already trained medical officers and to train newly appointed medical officers.

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