

Original Research Article

Prevalence of hypertension and diabetes in health workers of Jabalpur and Dindori: a brief study

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ABSTRACT

Background: Hypertension and Diabetes comprises a major part as precursor of crucial diseases like cardiovascular diseases. Cardiovascular diseases are cause of death of around 17 million people per year globally, which includes 30% of total deaths.

Methods: The present study was conducted to observe the prevalence of hypertension and diabetes among health care worker groups, in different health care centres at Bajag block of Dindori district & Indian council of Medical Research- National Institute for research in Tribal Health (ICMR-NIRTH) Jabalpur during the study period from January 2022 to June 2022. The participants were subjected to anthropometric measurements, Blood pressure & blood glucose level measurements and they also responded to the detailed questionnaire.

Results: The 95 health care workers including nurses, technicians, ASHA workers, ANMs, which were assessed in the present study have shown 14.7% diabetes and 38% hypertension.

Conclusions: The present study is important step towards the wellbeing of health workers as very few efforts were made to observe the prevalence of NCDs in health workers of rural areas.

Keywords: Hypertension, Diabetes mellitus, Health workers, Non communicable diseases

INTRODUCTION

Non-communicable diseases have emerged as a big threat globally, more in the developing countries.¹ Hypertension and Diabetes comprises a major part as precursor of crucial diseases like cardiovascular diseases (CVD). Cardiovascular diseases act as cause of death of around 17 million people per year globally, which includes 30% of total deaths.² Health workers are playing a vital role in the wellbeing of any nation because they are the first line of defence against any health-related situation in a nation, whether it be a global pandemic or just a disease outburst in a small region so the wellbeing of health workers is equally important. Health workers perform their duties on excruciating work environment so they are rather prone to diseases. Studies has been conducted in the prevalence of

NCDs on health workers which showed alarming results including 15% prevalence of diabetes and 21% prevalence of hypertension in health workers.³ Knowledge and cognizance related to diabetes can also function as an associated risk factor for the non-communicable diseases, particularly in health workers because they also have to spread the word to the patients. There were various studies which has been conducted to assess the prevalence of hypertension & diabetes in health workers globally and nationally targets doctors & nurses, but very few studies has been conducted in bottom levels of health workers including ASHA workers, ANMs, technicians. Subsequently the studies which are conducted are based in urban health centres, negligible efforts are made to observe the prevalence of NCDs in rural community health centres (CHC) and primary health centres (PHC). The present

study is assessing the prevalence of diabetes and hypertension in health workers including ASHA, ANMs in CHCs & PHCs of Dindori district, also respondents from urban centre i.e., Indian council of Medical Research-National Institute for research in Tribal Health (ICMR-NIRTH) Jabalpur has been taken to study and comparative account of the prevalence.

METHODS

The present study is a quantitative study placed in selected Urban and Rural area of Madhya Pradesh on health care workers. The main purpose of this study was to observe the prevalence of hypertension and diabetes among health care worker groups, in different health care centres (Figure 1).

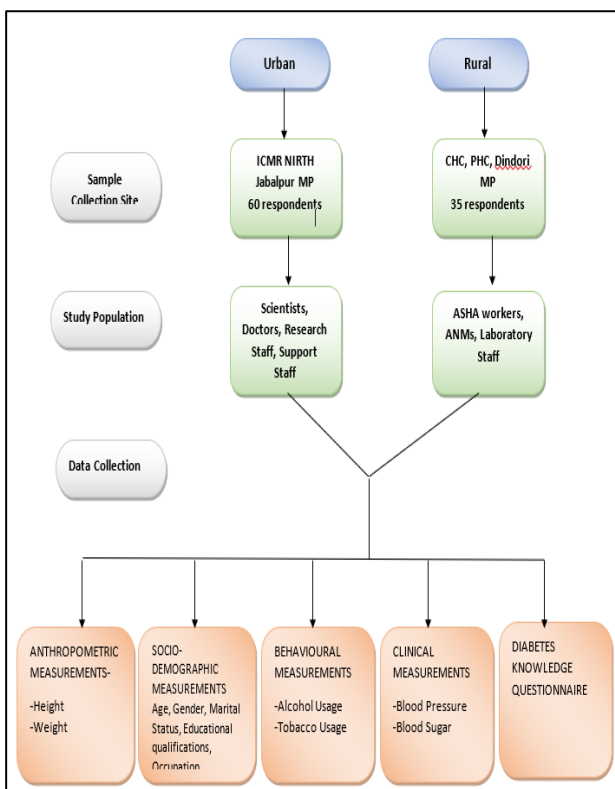


Figure 1: Detailed research methodology, ICMR-NIRTH= Indian council of medical research- national institute of research in tribal health, CHC=community health centre, PHC= primary health centre, ASHA=accredited social health activist, ANM=auxillary nurse and midwives.

Study location and duration

The study was conducted at Jabalpur ICMR NIRTH in the state of Madhya Pradesh. The sample from different districts of Madhya Pradesh were Bajag block of Dindori district & Indian council of Medical Research- National Institute for research in Tribal Health (ICMR-NIRTH) Jabalpur collected during the study period from January 2022 to June 2022.

Study population

The study was carried out with different health care workers including, nurses, laboratory technicians, ASHA workers, ANM in different health care centres. There were total 95 respondents which were interviewed for this cross-sectional study. The participants went through a detailed questionnaire, anthropometric and blood pressure measurements, also glucose levels of each participants was measured by finger pricking method with glucometer.

Sample size

Total 95 respondents were included in the study. As the study was for limited period of time, the samples were collected as per the availability of health care staff, in two months period of time.

Inclusion and exclusion criteria

Respondents of either gender belonging to age between more than 20 and less than 60. Also, unknown case of type 2 diabetes mellitus & hypertension were included in the study while pregnant females, type 1 diabetics, and participants who showed inability or unwillingness to participate in the study or sign the informed consent form were excluded.

Data collection

The participants were subjected to anthropometric measurements, Blood pressure & Glucose level measurements and also responded to the detailed questionnaire (Table 1). The structure questionnaire included socio demographic factors such as age, gender, marital status, educational qualification, and occupation. Behavioural measurement including alcohol and tobacco usage were also recorded. This study also included the knowledge questionnaire for high blood glucose level. For anthropometric measurements, weight & height of the respondents were measured following the standard protocols by WHO. Also the BMI was determined using the standard formula. Estimation of random blood sugar was done, using a standardized digital glucometer (SD CODEFREE minimum blood sample 0.5 micolitre. Estimation of blood pressure was done by using a standardized digital sphygmomanometer (Omron hem). The readings were observed and noted.

Table 1: List of independent and dependent variables.

Independent variables	Dependent variables
Age	Blood Glucose
Sex	Blood Pressure
Marital status	Height
Educational qualifications	Weight
Occupation	
Tobacco consumption	
Alcohol consumption	

Knowledge questionnaire

A detailed questionnaire was used to apply basic data of knowledge of health workers regarding diabetes. Educational status was graded as primary, secondary, high school, intermediate, graduate & post graduate or other professional.

Composite score for knowledge of diabetes; For closed question, 1, 2, 3, 5 correct answers were scored as 1 & incorrect answers were scored '0'. For question no 4 which was connective factors of diabetes, highest score of 4 was grant for put through who ticked physical activity, obesity or family history of diabetes, mental stress was scored 2, consuming sweets & other high calorie foods was scored 3 & any answer which was made sense related to diabetes was given 1, while other answers were scored 0, Thus, the maximum score was 8 where all answers were correct & least score was 0 were all answers were incorrect. A composite score in percentage was then derived by dividing each individual's score by the maximum & minimum of their knowledge. Those scoring 50% (4/8) considered as good and those scoring less than 50% (4/0) were considered as poor knowledge.

Data analysis

The data was entered and analysed in Microsoft Excel by entering different variables. The chi-square test was done to analyse different variables and the p value was calculated accordingly.

Risk factors analysis

For risk factor analysis of diabetes & hypertension, different independent and dependent variables were analysed in this study including.

Counselling of the respondents

If any respondent was observed with high blood glucose or blood pressure readings, they were counselled thoroughly on their dietary habits and advised to consult a physician immediately.

RESULTS

For the present study, total 95 healthcare workers from different levels of health care centres were considered. The following are the observations for the study.

Demographic characteristics

The present study compromised a total of 95 samples 35 were females and 60 were males, which were classified in four age groups, which were 20-30 years (24.2%), 30-40 years (27.3%), 40-50 years (14.7%), and 50-60 years (33.6%) shows respectively. The maximum respondent was of group 4 (33.6%) minimum group 3 (14.7%) sample population according to age group and gender (Table 2).

Behavioural observations

The respondents were also studied for their behavioural aspects which included consumption of alcohol, smoking tobacco, consumption of smokeless tobacco and use of both alcohol and tobacco in any form. Out of 95 participants, 24 (25.2%) respondents were found to be using alcohol, 10 (10.5%) respondents were smoking tobacco daily, 31 (36.8%) respondents were using smokeless tobacco and 18 (18.9%) respondents were using both alcohol and tobacco (in any form).

Table 2: Demographic characteristics of the participants.

Parameters	N (%)
Gender	
Male	35 (38.4)
Female	60 (63.1)
Age groups (years)	
20-30	23 (24.2)
31-40	26 (27.3)
41- 50	14 (14.7)
51- 60	32 (33.6)
Educational qualification	
Less than primary school	3 (3.15)
Primary School	9 (9.47)
Intermediate School	8 (8.42)
Higher Secondary School	14 (14.73)
Graduation	35 (36.84)
Post Graduation	24 (25.26)
PhD	2 (2.10)

Prevalence of hypertension, diabetes mellitus and obesity

The prevalence of diabetes mellitus was found to be 14.7%. Whereas, the prevalence of Pre-Hypertension & hypertension was 37.8%, out of those with hypertensive were 20% and known hypertensive were 6.3%. According to the Asian Indian classification of BMI, the prevalence of overweight was found to be 17.8% in overall study population and the prevalence of obesity was found to be 44.2% in the overall study participants among CHC/PHC/NIRTH. This difference in the prevalence of PHC/CHC/NIRTH between diseases was found to be statistically significant (Table 3). In reference to the body mass index (BMI), for the females, 36% respondents were observed to be in normal category, 47% was overweight and 17% respondents were underweight. For male respondents, 43% respondents were observed to have normal body mass index, 18% were overweight, whereas 39% were found to be obese. The morbid obesity was observed in only 2 (3.3%) male respondents & 2 (5.7%) female respondents. As per the knowledge assessment of respondents, 60 (66.66%) of the population had good/ fair knowledge regarding various aspects of Diabetes mellitus and 40 (33.33%) had poor or basic knowledge regarding it.

Table 3: Prevalence of diabetes mellitus, hypertension & obesity in the respondents.

Total		CSC/PHC N=35 frequency (%)	NIRTH N=60 frequency (%)	Total N=95 frequency (%)	P value
Diabetes mellitus		2 (5.7)	12 (20)	14 (14.7)	0.327
Hypertension	Pre- Hypertension	13 (37.1)	23 (38.3)	36 (37.8)	0.095
	Stage 1 Hypertension	7 (20)	12 (20)	19 (20)	0.171
	Stage 2 Hypertension	3 (8.5)	3 (5)	6 (6.3)	0.317
Body weight	Overweight	6 (2.1)	11 (18.3)	17 (17.8)	0.031
	Obesity	10 (28.5)	32 (53.3)	42 (44.2)	0.110

DISCUSSION

This study was conducted for prevalence of diabetes & hypertension, and its risk factors among health care workers in Jabalpur & Dindori, MP. For the study, 95 health care workers were measured for their height, weight, blood pressure, blood glucose and answered the questionnaire regarding demographic data, habits and dietary assessment. The prevalence of diabetes was found to be 14.7% and of hypertension 38% in present study. A Saudi Arabian study in 2013 revealed that the prevalence of hypertension was 28% among the health professionals.⁴ According to a study done by Ghosh et al among health care workers of different specialties in a tertiary-care teaching hospital in Eastern India, where 14.82% of the health care workers showed hypertension.⁵ Sharma et al in their study among tertiary hospital employees reported a prevalence of diabetes of only 5.8% which was much lesser than the present study.⁶ The prevalence of hypertension was higher among the male subjects i.e. 25% than among the female subjects which were observed to be 13%. Several studies support the finding that indicates that males were more likely to be hypertensive than females including Ramachandran et al.⁷ There is a significant association between the prevalence of hypertension & diabetes both and advancing age in this study, as the highest percentage was observed in the age group 50-60 years, similar observations were made by Thabit & Abdullah 2019, while studying prevalence of hypertension in a health centre of Malaysia.⁸ The possible reason for this observation could be as the increasing age, the blood vessels start to constrict, so this observation was expected which was observed.

In the present study, consumption of alcohol and tobacco of the participants were also analysed, which was 25.2% for alcohol consumption, 10.5% were smokers, 32.6% participants used tobacco in smokeless form and 18.9% participants were using both alcohol and tobacco in any form. When the data was correlated with the prevalence of hypertension and diabetes, a significant figure was observed for the smokers and alcohol consumers. 66.6% diabetic respondents, consumed alcohol regularly and 16.6% were smoking regularly. Whereas 15.6% hypertensive respondents were smoking regularly and only

13.3% were consuming alcohol regularly. More or less similar observations were made by Hegde et al.³ Prevalence of obesity in health workers was also estimated in the present study, in females, 36% respondents were observed to be in normal category, 47% was overweight and 17% respondents were underweight. For male respondents, 43% respondents were observed to have normal body mass index, 18% were overweight, whereas 39% were found to be obese. The morbid obesity was observed in only 2 (3.3%) male respondents & 2 (5.7%) female respondents.⁸ While Hegde et al observed the prevalence of overweight to be 24.8% and the prevalence of obesity to be 15.1% in his study on health workers. Gupta A et al in their study found the prevalence of obesity to be 48.6% among males and 51.4% among females.⁹

The respondents (N=95) were assessed on their knowledge for diabetes mellitus. According to an overall knowledge section, 60 (63.1%) of the population had good/ fair knowledge regarding various aspects of diabetes mellitus and 35 (36.8%) had poor or basic knowledge regarding it, as the respondents which were interviewed included ASHA workers and ANMs which had primary level educational qualifications. Gharsanghi et al observed 59.8% knowledge in health workers in her study in a health centre of North India, whereas Ahmed et al 2012, observed 50% knowledge for diabetes among health worker in his study in Karachi, Pakistan.⁹⁻¹¹ As the study was done to fulfil the dissertation work, it was time bounded and the samples included were as per the availability of the healthcare staff, so it was limited to certain number of respondents only. The present study can be replicated to higher number of respondents and larger number of different levels of healthcare sites to know the actual prevalence of the hypertension and diabetes mellitus in healthcare staff of different levels of healthcare facilities.

CONCLUSION

The 95 health care workers, including nurses, technicians, ASHA workers, ANMs, assessed in the present study have shown 16% diabetes and 38% hypertension. The prevalence percentage observed in the present study is alarming because in scenarios like COVID-19 outbreak, health workers come under frontline of defence, and

patients rely on them for the betterment of their health conditions. Furthermore, with co-morbidities like hypertension and diabetes mellitus, conditions like COVID-19 can be fatal and can cause more harm as compared to a person who does not suffers from these comorbidities. The real picture of prevalence is necessary to study because it can help the policy makers and concerned authorities to actively participate in the policies for the healthcare professionals.

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REFERENCES

1. Global status report on Non Communicable Diseases. Available at: <https://www.who.int>. Accessed on 20 November 2022.
2. Atlas of Heart Diseases and Stroke Part two, Risk factors. Available at: <https://www.who.int>. Accessed on 20 November 2022.
3. Hegde SB, Sathiyarayanan V, Sanjana S, Parasuraman A, Ramraj G. Prevalence of diabetes, hypertension and obesity among doctors and nurses in a medical college Hospital in Tamil Nadu, India. *Nat J Res Commu Med.* 2015;4:235-9.
4. Ahmed A, Jabbar A, Zuberi L, Islam M, Shamim K. Diabetes related knowledge among residents and nurses: a multicenter study in Karachi, Pakistan. *BMC Endocr Disord.* 2012;12:18.
5. Ghosh S, Kumar M. Prevalence and associated risk factors of hypertension among persons aged 15-49 in India: a cross-sectional study. *BMJ Open.* 2019;9(12):e029714.
6. Sharma D, Vatsa M, Lakshmy R, Narang R, Bahl VK, Gupta SK. Study of cardiovascular risk factors among tertiary hospital employees and their families. *Indian Heart J.* 2011;63(5):418-24.
7. Ramachandran A, Snehalata C, Kapur A, Vijay V, Mohan V, Das AK, et al. High prevalence of Diabetes and Impaired Glucose Tolerance in India: National Urban Diabetes Survey. *Diabetologia.* 2001;44(9):1094-101.
8. Thabit HA, Abdullah MA. Prevalence of hypertension among doctors and risk factors in Al-Thawra Hospital, Sanaa in 2019. *Biomed J Sci Tech Res.* 2019;36(2):23-9.
9. Gupta R, Gupta S, Sharma KK, Gupta A, Deedwania P. Regional variations in Cardiovascular Risk Factors in India: India Heart Watch. *World J Cardiol.* 2012;4(4):112-20.
10. Gharsangi K, Himral P, Vishwachander R. Knowledge, attitude and practices regarding diabetes and its complications among health care workers in medical college of North India. *Int J Collab Res Int Med Public Health.* 2019;13(6):23-9.
11. Ahmed A, Jabbar A, Zuberi L, Islam M, Shamim K. Diabetes related knowledge among residents and nurses: a multicenter study in Karachi, Pakistan. *BMC Endocr Disord.* 2012;12:18.

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