International Journal of Community Medicine and Public Health
Kiran PK et al. Int J Community Med Public Health. 2019 Aug;6(8):3508-3519
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20193480

Original Research Article

A study on prevalence of risk factors for non-communicable diseases among allopathic doctors of Vijayawada city, Andhra Pradesh

Kiran Prakash K.[1], Venkata Suresh Anga[2]*

Department of Community Medicine, [1]Government Medical College, Mahbubnagar, Telengana, [2]NRI Institute of Medical Sciences, Visakhapatnam, Andhra Pradesh, India

Received: 27 May 2019
Revised: 15 July 2019
Accepted: 16 July 2019

***Correspondence:**
Dr. Venkata Suresh Anga,
E-mail: doctorsuresh2013@gmail.com

ABSTRACT

Background: Chronic non-communicable diseases (CNCDs) are the leading cause of death in the world. Accounting for around 60% of all deaths and 44% of premature deaths worldwide. The objective of the study was to assess the prevalence of risk factors for non-communicable diseases among allopathic doctors in Vijayawada.
Methods: A cross-sectional survey was conducted on allopathic practicing doctors who were working in the various Hospitals, clinics, Nursing Homes within the corporation limits of Vijayawada city.
Results: Out of the 720 study subjects, 498 doctors (69.2%) were males and 222 doctors (30.8%) were females. majority of the doctors 515 (71.5%) were with educational qualification of master degrees (MS/MD/MDS). Doctors in clinical specialty are more 565 (78.5%) compared with non-clinical 133 (18.4%) and dental 22 (3.1%). With regarding working sector, nearly one third of doctors were working in private sector 532 (73.9%).
Conclusions: Because of more exposure to unhealthy life styles like smoking, alcohol, unhealthy dietary habits like high intake of salt, inadequate use of fruits and vegetables, oil fries and by leading a sedentary life and high risk factors like overweight/obesity, hypertension and diabetes a large number of the doctor's population were at increased risk for chronic non-communicable diseases.

Keywords: Allopathic doctors, Non-communicable diseases, Smoking, Alcohol

INTRODUCTION

As we slowly advance into the 21st century, we find that the challenges posed by non-communicable diseases (NCDs) present an imminent threat to people worldwide. Globalization delivers the uniform cause for the spread of chronic diseases to every corner of the World.[1] The factors which aid progress and development in today's world such as globalization of trade, advanced technologies etc., act as a double edged sword as they lead to positive health outcomes on one hand and increased vulnerability to poor health on the other hand as these contribute to sedentary lifestyles and unhealthy dietary patterns. Chronic non-communicable diseases (CNCDs) are reaching epidemic proportions worldwide. NCDs refers to non-infectious diseases or illnesses that are caused by agents other than pathogens. The term is used to imply a variety of conditions including hypertension, diabetes mellitus, obesity, cardiovascular diseases chronic respiratory diseases, musculoskeletal disorders and other conditions. Behavioural risk factors such as tobacco use, alcohol consumption, low consumption of fruit and vegetables and a lack of physical activity leads to these type of diseases as discussed in the WHR (World health report), 2002.[2]

CNCDs are the leading cause of death in the World.[1] Accounting for around 60% of all deaths and 44% of premature deaths worldwide.[3] About 20% of deaths due to NCDs occur in developed countries, while about 80%

of deaths occurring in low and middle income countries, where most of the world population lives.[1]

The major behavioural risk factors identified in the World Health Report 2002 are tobacco use, harmful alcohol use, low fruit and vegetable consumption and physical inactivity. On the other hand, the major biological risk factors identified are overweight and obesity, raised blood pressure, raised blood glucose and raised total cholesterol.[4]

India too illustrates the phenomenon of "health transition" which positions NCDs as a major public health challenge of growing magnitude in the 21st century. The incidence of cardio vascular diseases (CVDs) and other NCDs are greater in urban areas when compare to rural areas in India.[5] NCDs account for 53 and 44% of all deaths and disability-adjusted life years (DALYs) respectively in India.[6] According to World Health Report 2002, cardiovascular diseases (CVDs) will be the largest cause of death and disability by 2020 in India.[7]

The importance of physician's well-being was probably first best articulated by prominent Greek physician Galen, who said, "That the physician will hardly be thought very careful of the health of his patients if he neglects his own." Doctors are unable to look after their own health despite being aware of adverse health outcomes in patients with increased cardio metabolic risk factors. Lack of time, sedentary lifestyle, and higher socio-economic status could explain the propensity for increased risk among doctors, resulting in lack of adequate health care.[8] Physicians confront the stresses of increasing government regulations, malpractice suits, the business aspects of medicine, increased clinical demands, a rapidly expanding knowledge base, rising student debt, and balancing their personal and professional lives.[9]

Recently, a study was undertaken to assess the health status of young Indian doctors engaged in clinical practice compared with the general population and that showed that there was a higher prevalence of cardiovascular risk factors in young physicians.[10]

As there is no cure for non-communicable disease, prevention is the only way of choice. With this scenario of the health situation, it is important to study the burden of non-communicable diseases risk factors using Indian data to know the real dimensions of the problem and work towards preventive measures.[11]

Earlier literature was limited to evaluating non-communicable disease risk factors among physicians in India. The current study was aimed to assess the prevalence of risk factors for non-communicable diseases (NCDs) among the allopathic doctors of Vijayawada city.

METHODS

Study design: A cross sectional study.

Study unit: Individual doctor.

Study population: Allopathic doctors who were practicing in Vijayawada city.

Study period: January 2013 to October 2015.

Inclusion criteria

- Doctors practicing in various branches of allopathic system of medicine including both private and government hospitals, with a minimum qualification of MBBS degree.
- All clinical and non-clinical doctors who are working and practicing in various government and private hospitals.

Exclusion criteria

- Doctors of Homeopathy, Ayurvedic, Unani and other types of Indian medicine.
- R.M.P, quacks like other non-qualified persons etc.
- Doctors in their study period (doing post-graduation and super specialty).
- Doctors not willing to participate in the study.

Sample size

Sample of this study was population sample, all allopathic doctors who were presently practicing /working in various government and private institutions/ hospitals with in the corporation limits of Vijayawada city were included.

Study procedure

A cross-sectional survey was conducted on allopathic practicing doctors who were working in the various hospitals, clinics, nursing homes (both government and private practitioners) within the corporation limits of Vijayawada city. List of government hospitals and doctors obtained from District Medical and Health officer office, Indian Medical Association, Vijayawada branch and Andhra Pradesh Private Practitioners Association Vijayawada branch. A total of 889 allopathic doctors were listed and tried to take personal interviews from each and given extra two visits if the doctor was not available. Finally 720 doctors were included in this study, after excluding of non-available doctors after third visit and those who were not willing/interested for participate in this study.

Study tools: Proforma (pre structured and pretested questionnaire), stethoscope, sphygmomanometer, measuring tape, weighing machine and glucometer.

Proforma

Pre structured and pretested questionnaire which was based on the WHO STEPS instrument for NCD risk factors was used for data collection. It was a pretested, structured interview based tool, administered to one doctor at a time. The proforma contained questions regarding socio-demographic profile, use of tobacco and alcohol patterns, physical activity and diet. The proforma includes two sections as per the WHO steps 12 approach.

Section 1: Baseline information was collected which included age, sex, religion, educational status and occupation, type of family, social class (Modified Kuppuswamy classification).

Section 2: Included three parts.

Step1: Questions based on tobacco and alcohol use, physical activity and nutrition (diet pattern).

Step 2: Physical measurements of blood pressure, height, weight, waist and hip measurement.

Step 3: Random blood sugars.

Data collection

Step 1 and Step 2 of the STEPS approach were administered to all the individuals' doctors. Step 3 was conducted for only RBS in this study.

Ethical issues

Ethical clearance for the study was taken from ethical committee of Siddhartha Medical College before starting the study proper. Informed written consent was taken from each subject before interview. The nature and purpose of the survey were explained to them in their own language. Confidentiality was assured. Interviews were conducted in a non-judgmental manner. Local cultural values and ideas were respected.

Data analysis

Data was analyzed using the SPSS version 21 software. Data was analyzed for percentages, proportions and appropriate statistical tests like Chi square tests were applied to draw inferences.

RESULTS

Socio-demographic factors

The total population of study of subjects was 720. And out of them 498 doctors (69.2%) were males and 222 doctors (30.8%) were females. Mean age of participants was 48.4 years and most of the doctors 264 (36.7%) were in age group of 36 to 45.

Table 1: Socio demographic factors distribution among doctors (n=720).

Socio-demographic factors	Categories	N (%)
Gender	Male	498 (69.2)
	Female	222 (30.8)
Age	25-35	65 (9.0)
	36-45	264 (36.7)
	46-55	190 (26.4)
	56-65	154 (21.4)
	66-75	35 (4.8)
	76-85	12 (1.7)
Working sector	Government	188 (26.1)
	Private	532 (73.9)
Education	MBBS/ BDS	44 (6.1)
	Diploma	119 (16.5)
	MS/MD/MDS	515 (71.5)
	DM/Mch	42 (5.9)
Speciality	Clinical	565 (78.5)
	Non-clinical	133 (18.4)
	Dental	22 (3.1)

In this study majority of the doctors 515 (71.5%) were with educational qualification of master degrees (MS/MD/MDS). Doctors in clinical specialty are more 565 (78.5%) compared with non-clinical 133 (18.4%) and dental 22 (3.1). With regarding working sector, nearly one third of doctors were working in private sector 532 (73.9%).

Smoking and demographic factors

Overall prevalence of smoking among the doctors was found to be 14.2%, all of them being males. It was observed that the less than one fourth of doctors were smokers in all age groups but the higher (33.3%) prevalence was found in the age group of (76 to 85) when compared with other age groups. This was significant ($p<0.05$)

Prevalence of smoking among different working sectors like government (13.8%) and private (14.3%) were almost same in this study and was found to be not significant ($p>0.05$). In the present study with respect to the educational qualification of doctors the prevalence of smoking was more in MBBS/BDS doctors and DM/Mch doctors as (31.8%) and (30.0%) respectively when compared with others and was found to be highly significant ($p<0.01$).

When the doctors specialty categories were taken into consideration more smokers were found in clinical category (16.6%) compared with the non-clinical category (6.0%). None of the Dental doctors were found to be smokers in the present study. It was found to be highly significant ($p<0.01$).

Table 2: Relation between smoking and demographic factors.

Socio-demographic factor	Factor categories	Smokers (%)	Non-smokers (%)	Total (%)	Statistics and significance
Gender	Male	102 (20.5)	396 (79.5)	498 (100)	χ2= 52.975, df=1, p<0.01
	Female	0 (0)	222 (100)	222 (100)	
Age (in years)	25-35	12 (18.5)	53 (81.5)	65 (100)	χ2= 15.766 df= 5, p<0.05[a]
	36-45	41 (15.5)	223 (84.5)	264 (100)	
	46-55	21 (11.1)	169 (88.9)	190 (100)	
	56-65	14 (9.1)	140 (90.9)	154 (100)	
	66-75	10 (28.6)	25 (71.4)	35 (100)	
	76-85	4 (33.3)	8 (66.7)	12 (100)	
Working sector	Government	26 (13.8)	162 (86.2)	188 (100)	χ2= 0.024 df=1, p>0.05[b]
	Private	76 (14.3)	456 (85.7)	532 (100)	
Education	MBBS/ BDS	14 (31.8)	30 (68.2)	44 (100)	χ2= 25.163 df=3, p<0.01[c]
	Diploma	18 (15.1)	101 (84.9)	119 (100)	
	MS/MD/MDS	57 (11.1)	458 (88.9)	515 (100)	
	DM/Mch	13 (31.0)	29 (69.0)	42 (100)	
Speciality	Clinical	94 (16.6)	471 (83.4)	565 (100)	χ2= 13.735 df=2, p<0.01[c]
	Non-Clinical	8 (6.0)	125 (94.0)	133 (100)	
	Dental	0 (0)	22 (100)	22 (100)	

[a]Statistically significant, [b]Not significant, [c]Highly significant.

Table 3: Relation between alcohol and demographic factors.

Socio-demographic factor	Factor categories	Alcoholics (%)	Non- alcoholics (%)	Total (%)	Statistics and significance
Gender	Male	153 (30.7)	345 (69.3)	498 (100)	χ2 = 86.609 df =1, p<0.01
	Female	0 (0)	222 (100)	222 (100)	
Age (in years)	25-35	8 (12.3)	57 (87.7)	65 (100)	χ2 = 69.378 df =5, p<0.01[c]
	36-45	59 (22.3)	205 (77.7)	264 (100)	
	46-55	26 (13.7)	164 (86.3)	190 (100)	
	56-65	29 (18.8)	125 (81.2)	154 (100)	
	66-75	21 (60.0)	14 (40.0)	35 (100)	
	76-85	10 (83.3)	2 (16.7)	12 (100)	
Working sector	Government	322 (17.0)	156 (83.0)	188 (100)	χ2 = 2.719 df =1, p>0.05[b]
	Private	121 (22.7)	411 (77.3)	532 (100)	
Education	MBBS/ BDS	3 (6.8)	41 (93.2)	44 (100)	χ2 = 6.621 df =3, p>0.05[b]
	Diploma	30 (25.2)	89 (74.8)	119 (100)	
	MS/MD/MDS	111(21.6)	404 (78.4)	515 (100)	
	DM/Mch	9 (21.4)	33 (78.6)	42 (100)	
Speciality	Clinical	131 (23.2)	434 (76.8)	565 (100)	χ2 = 8.964 df =2, p<0.01[c]
	Non-clinical	22(16.5)	111 (83.5)	133 (100)	
	Dental	0 (0)	22 (100)	22 (100)	

[a]Statistically significant, [b]Not significant, [c]Highly significant.

Alcohol and demographic factors

The prevalence of alcohol consumption was found to be 21.3%. Based on the gender 30.7% male doctors were alcoholics and no female doctor was found to be alcoholic.

Prevalence of alcohol was more in the age groups of (76 to 85) and (66 to 75) with (83.3%) and (60.0%) respectively than the other age groups and was found to be statistically highly significant (p<0.01).

With respect to the working sector of doctors prevalence of alcohol consumption government and private were

17.0% and 22.7% respectively, it was found to be not significant (p>0.05).

In the present study the prevalence of alcohol was more in the clinical doctors (23.2%) when compared with non-clinical doctors with (16.5%) and none of the dental doctor was found be as alcoholic in this study. This was highly significant (p<0.01).

Physical activity and demographic factors

The prevalence of physical inactivity was 60.1%. About 36.1% were moderately active, while few (3.5%) of the subjects were involved in vigorous exercise in their leisure time.

Female doctors (68.9%) were more sedentary than male doctors (56.2%). It was found to be statistically highly significant (p<0.01). In all age groups nearly half of the subjects were found to be sedentary and high prevalence of physical inactivity found was 70.1% in the age group of 56 to 65, it was significant (p<0.05).

In the present study doctors in private sector (64.5%) were more sedentary than Government doctors (47.9%) and it was highly significant (p<0.01).

Table 4: Relation between physical activity and demographic factors.

Socio-demographic factor	Factor categories	Exercise	Sedentary	Total (n=720)	Statistics and significance
		N (%)	N (%)	N (%)	
Gender	Male	218 (43.8)	280 (56.2)	498 (100)	$\chi2$ = 10.322 df =1, p<0.01[c]
	Female	68(31.1)	153 (68.9)	222 (100)	
Age (in years)	25-35	21 (32.3)	44 (67.7)	65 (100)	$\chi2$ = 12.169 df =5, p<0.05[a]
	36-45	117 (44.3)	147 (55.7)	264 (100)	
	46-55	80 (42.1)	110 (57.9)	190 (100)	
	56-65	46 (29.9)	108 (70.1)	154 (100)	
	66-75	17 (48.6)	18 (51.4)	35 (100)	
	76-85	6 (50.0)	6 (50.0)	12 (100)	
Working sector	Government	98 (52.1)	90 (47.9)	188 (100)	$\chi2$ = 15.971 df =1, p<0.01[c]
	Private	189 (35.5)	343 (64.5)	532 (100)	
Education	MBBS/BDS	15 (34.1)	29 (65.9)	44 (100)	$\chi2$ = 18.607 df =3, p<0.01[c]
	Diploma	68 (57.1)	51 (42.9)	119 (100)	
	MS/MD/MDS	186 (36.1)	329 (63.9)	515 (100)	
	DM/Mch	18 (42.9)	24 (57.1)	42 (100)	
Specialty	Clinical	216 (38.2)	349 (61.8)	565 (100)	$\chi2$ = 2.914 df =2, p>0.05[b]
	Non-clinical	61 (45.9)	72 (54.1)	133 (100)	
	Dental	10 (45.5)	12 (54.5)	22 (100)	

[a]Statistically significant, [b]Not significant, [c]Highly significant.

With the respect to educational qualifications, physical inactivity was found more prevalent in MBBS/ BDS doctors (65.9%) followed by doctors with MS/MD/MDS qualifications (63.9%), which was highly significant (p<0.01).

When the specialty of doctors was considered, physical inactivity was found in more than half of the subjects in every category with highest among clinical doctors (61.8%). It was not significant statistically (p>0.05).

Diet (nutrition)

Vegetable and fruit intake and demographic factors

In this study vegetable and fruit intake among doctors was found to be inadequate in 41.9% of study subjects. With respect to the gender of the doctors there was no much difference in intake of vegetables and fruits between male and female doctors as (58.0%) and (58.1%) respectively, and were taking adequately. This was not significant (p>0.05).

In the age group of 66 to 75, most (48.6%) of the doctors were inadequately consuming vegetables and fruits which was not significant (p.0.05).

In the present study consumption of fruit and vegetables was observed slightly higher in Government doctors (62.2%) than private doctors (56.6%). This was statistically not significant.

Vegetable and fruit intake in doctors was not significant statistically (p>0.05) when compared with their educational qualification and specialty.

Table 5: Diet (nutrition): vegetable and fruit intake and demographic factors.

Socio-demographic factors	Factor categories	Adequate	Inadequate	Total	Statistics and significance
		N (%)	N (%)	N (%)	
Gender	Male	289 (58.0)	209 (42.0)	498 (100)	$\chi2 = 0.000$, df =1, p>0.05[b]
	Female	129 (58.1)	93 (41.9)	222 (100)	
Age (in years)	25-35	42 (64.6)	23 (35.4)	65 (100)	$\chi2 = 4.823$ df =5, p>0.05[b]
	36-45	145 (54.9)	119 (45.1)	264 (100)	
	46-55	110 (57.9)	80 (42.1)	190 (100)	
	56-65	94 (61.0)	60 (39.0)	154 (100)	
	66-75	18 (51.4)	17 (48.6)	35 (100)	
	76-85	9 (75.0)	3(25.0)	12 (100)	
Working sector	Government	117 (62.2)	71 (37.8)	188 (100)	$\chi2 = 1.824$ df =1, p>0.05[b]
	Private	301(56.6)	231(43.4)	532 (100)	
Education	MBBS/ BDS	25(56.8)	19 (43.2)	44 (100)	$\chi2 = 0.775$ df =3, p>0.05[b]
	Diploma	73 (61.3)	46 (38.7)	119 (100)	
	MS/MD/MDS	297 (57.7)	218 (42.3)	515 (100)	
	DM/Mch	23 (54.8)	19 (45.2)	42 (100)	
Speciality	Clinical	327 (57.9)	238(42.1)	565 (100)	$\chi2 = 0.036$ df =2, p>0.05[b]
	Non-clinical	78 (58.6)	55 (41.4)	133 (100)	
	Dental	13(59.1)	9 (40.9)	22 (100)	

[a]Statistically significant, [b]Not significant, [c]Highly significant.

Table 6: Relation between salt intake and demographic factors.

Socio-demographic factor	Factor categories	High intake	Normal intake	Total	Statistics & Significance
		N (%)	N (%)	N (%)	
Gender	Male	364 (73.1)	134 (26.9)	498 (100)	$\chi2 = 2.295$ df =1, p>0.05[b]
	Female	150 (67.6)	72 (32.4)	222 (100)	
Age (in years)	25-35	36 (55.4)	29 (44.6)	65 (100)	$\chi2 = 20.134$ df =5, p<0.01[c]
	36-45	189 (71.6)	75 (28.4)	264 (100)	
	46-55	139 (73.2)	51 (26.8)	190 (100)	
	56-65	119 (77.3)	35 (22.7)	154 (100)	
	66-75	27 (77.1)	8 (22.9)	35 (100)	
	76-85	4 (33.3)	8 (66.7)	12 (100)	
Working Sector	Government	120 (63.8)	68 (36.2)	188 (100)	$\chi2 = 7.118$ df =1, p<0.05[a]
	Private	394 (74.1)	138 (25.9)	532 (100)	
Education	MBBS/ BDS	31 (70.5)	13 (29.5)	44 (100)	$\chi2 = 0.221$ df =3, p>0.05[b]
	Diploma	84 (70.6)	35 (29.4)	119 (100)	
	MS/MD/MDS	370 (71.8)	145 (28.2)	51 (100)	
	DM/Mch	29 (69.0)	13 (31.0)	42 (100)	
Speciality	Clinical	420 (74.3)	145 (25.7)	565(100)	$\chi2 = 11.630$ df =2 p<0.01[c]
	Non-clinical	82 (61.7)	51 (38.3)	133 (100)	
	Dental	12 (54.5)	10 (45.5)	22 (100)	

[a]Statistically significant, [b]Not significant, [c]Highly significant.

Salt intake and demographic factors

With respect to the gender of study population, high risk consumption of salt was noted in male doctors (73.1%) and female doctors (67.6%) which was not significant (p>0.05).

In the present study, 66.7% of the doctors in the age group of 76 to 85 were observed to consume normal intake of dietary salt when compared with other age groups, and it was highly significant (p<0.01).

As per the working sector of doctors, most of private doctors (74.1%) were consuming salt in high quantity when compared with government doctors (63.8%) which is significant statistically (p<0.05).

In this study most of clinical specialty doctors (74.3%) were observed to be consuming salt with high risk quantity compared with the non-clinical and dental doctors which was highly significant (p<0.01).

Relation between consumption salt with the educational qualifications of doctors was not significant (p>0.05).

Table 7: Relation between overweight and demographic factors.

Socio-demographic factor	Factor categories	Normal weight (%)	Over weight (%)	Total (%)	Statistics and significance
Gender	Male	223 (44.8)	275 (55.2)	498 (100)	$\chi 2 = 20.284$ df =1, p<0.01[c]
	Female	60 (27.0)	162 (73.0)	222 (100)	
Age (in years)	25-35	36 (55.4)	29 (44.6)	65 (100)	$\chi 2 = 38.636$ df =5, p<0.01[c]
	36-45	99 (37.5)	165 (62.5)	264 (100)	
	46-55	65 (34.2)	125 (65.8)	190 (100)	
	56-65	48 (31.2)	106 (68.8)	154 (100)	
	66-75	25 (71.4)	10 (28.6)	35 (100)	
	76-85	10 (83.3)	2 (16.7)	12 (100)	
Working sector	Government	61 (32.4)	127 (67.6)	188 (100)	$\chi 2 = 5.017$ df =1, p<0.05[a]
	Private	222 (41.7)	310 (58.3)	532 (100)	
Education	MBBS/ BDS	21 (47.7)	23 (52.3)	44 (100)	$\chi 2 = 2.747$ df =3, p>0.05[b]
	Diploma	42 (35.3)	77 (64.7)	119 (100)	
	MS/MD/MDS	201 (39.0)	314 (61.0)	515 (100)	
	DM/Mch	19 (45.2)	23 (54.8)	42 (100)	
Speciality	Clinical	222 (39.3)	343 (60.7)	565(100)	$\chi 2 = 6.337$ df =2 p<0.05[a]
	Non-clinical	47 (35.3)	86 (64.7)	133(100)	
	Dental	14 (63.6)	8 (36.4)	22 (100)	

[a]Statistically significant, [b]Not significant, [c]Highly significant.

Obesity and demographic factors

In the present study, prevalence of overweight was observed to be high among female doctors (73.0%) when compared with the male doctors (55.2%) which was found to be highly significant (p<0.01).

Prevalence of overweight was found to be low in the age groups of 66 t0 75 and 76 to 85 as 28.6% and 16.7% respectively and it was statistically highly significant (p<0.01).

In this study prevalence of overweight was observed to be high in government doctors (67.6%) when compared with private doctors (58.3%) and it was significant statistically (p<0.05).

With respect to the educational qualification of doctors, more than half of the subjects in each category were found to be overweight, which was not significant (p>0.05)

In the present study with consideration of specialty category of doctors, clinical (60.7%) and non-clinical (64.7%) were found to be overweight when compared with dental doctors (36.4%) and was significant statistically (p<0.05).

Hypertension and demographic factors

In the present study the prevalence of hypertension was found to be 18.6%. The prevalence of hypertension was among doctors in this study was more in the males (21.1%) when compared with females (13.1%), it was highly significant (p<0.01).

In this study with respect to the age, hypertension was found to be increasing as age advances and more prevalent in elderly age groups like 37.1% in 66 to 75 age group and 66.0% in 76 to 85 age group, it was highly significant (p<0.01).

With respect to the working sector of doctors it was observed that the prevalence of hypertension was more in government doctors (27.1%) when compared with private (15.6%), and was statistically highly significant (p<0.01).

The prevalence of hypertension was found to be high in doctors with qualifications of MBBS/BDS (36.4%) and DM/MCH doctors (38.1%), which was highly significant (p<0.01).

When specialty of doctors taken in to consideration hypertension prevalence found to be more in the dental doctors (27.3%) when compared with clinical (18.2%) and non-clinical (18.8%), it was highly significant (p<0.01).

Table 8: Relation between hypertension and demographic factors.

Socio-demographic factor	Factor categories	Yes (%)	No (%)	Total (%)	Statistics and significance
Gender	Male	105 (21.1)	393 (78.9)	498 (100)	$\chi 2$ = 6.522 df =1, p<0.01[c]
	Female	29 (13.1)	193 (86.9)	222 (100)	
Age (in years)	25-35	8 (12.3)	57 (87.7)	65 (100)	$\chi 2$ = 38.167 df =5, p<0.01[c]
	36-45	31 (11.7)	233 (88.3)	264 (100)	
	46-55	42 (22.1)	148 (77.9)	190 (100)	
	56-65	32 (20.8)	122 (79.2)	154 (100)	
	66-75	13 (37.1)	22 (62.9)	35 (100)	
	76-85	8 (66.7)	4 (33.3)	12 (100)	
Working sector	Government	51 (27.1)	137 (72.9)	188 (100)	$\chi 2$ = 12.183 df =1, p<0.01[c]
	Private	83 (15.6)	449 (84.4)	532 (100)	
Education	MBBS/ BDS	16 (36.4)	28 (63.6)	44 (100)	$\chi 2$ = 22.434 df =3, p<0.01[c]
	Diploma	18 (15.1)	101 (84.9)	119 (100)	
	MS/MD/MDS	84 (16.3)	431 (83.7)	515 (100)	
	DM/Mch	16 (38.1)	26 (61.9)	42 (100)	
Speciality	Clinical	103 (18.2)	462 (81.8)	565 (100)	$\chi 2$ = 1.147 df =2 , p>0.05[b]
	Non-clinical	25 (18.8)	108 (81.2)	133 (100)	
	Dental	6 (27.3)	16 (72.7)	22 (100)	

[a]Statistically significant, [b]Not significant, [c]Highly significant.

Table 9: Relation between diabetes and demographic factors.

Socio-demographic factor	Factor categories	Yes (%)	No (%)	Total (%)	Statistics and significance
Gender	Male	69 (13.9)	429 (86.1)	498 (100)	$\chi 2$ = 0.453 df =1, p>0.05[b]
	Female	35 (15.8)	187 (84.2)	222 (100)	
Age (in years)	25-35	2 (3.1)	63 (96.9)	65 (100)	$\chi 2$ = 74.025 df =5, p<0.01[c]
	36-45	22 (8.3)	242 (91.9)	264 (100)	
	46-55	30 (15.8)	160 (84.2)	190 (100)	
	56-65	28 (18.2)	126 (81.8)	154 (100)	
	66-75	12 (34.3)	23 (65.7)	35 (100)	
	76-85	10 (83.3)	2 (16.7)	12 (100)	
Working sector	Government	57 (30.3)	131 (69.7)	188 (100)	$\chi 2$ = 51.885 df =1, p<0.01[c]
	Private	47 (8.8)	485 (91.2)	532 (100)	
Education	MBBS/ BDS	2 (4.5)	42 (95.5)	44(100)	$\chi 2$ = 7.713 df =3, p>0.05[b]
	Diploma	11 (9.2)	108 (90.8)	119 (100)	
	MS/MD/MDS	84 (16.3)	431 (83.7)	515 (100)	
	DM/Mch	7 (16.7)	35 (83.3)	42 (100)	
Speciality	Clinical	71 (12.6)	494 (87.4)	565 (100)	$\chi 2$ = 8.706 df =2 , p<0.05[a]
	Non-clinical	30 (22.6)	103 (77.4)	133 (100)	
	Dental	3 (13.6)	19 (86.4)	22 (100)	

[a]Statistically significant, [b]Not significant, [c]Highly significant.

Diabetes mellitus and demographic factors

In the present study the prevalence of diabetes mellitus was found to be 14.4%. In the present study the prevalence of diabetes was found to be 13.9% in the male doctors and 15.8% in the female doctors, it was not significant statistically (p>0.05).

With respect to the age of doctors prevalence of diabetes was observed to be increased gradually as age advances, it was least as 3.1% in age group of 25 to 35 and highest in age group of 76 to 85 with 83.3%. It was highly significant (p<0.01). When working sector of the doctors taken into consideration the prevalence of diabetes was found to be more in government doctors (30.3%) when compared to private (8.8%), which was highly significant (p<0.01).Prevalence of diabetes was found to be more in non- clinical doctors (22.6%) compared with clinical (12.6%) and dental (13.6%) with respect to their specialty, it was significant (p<0.05).

However relation between educational qualification of doctors and diabetes was not significant (p>0.05).

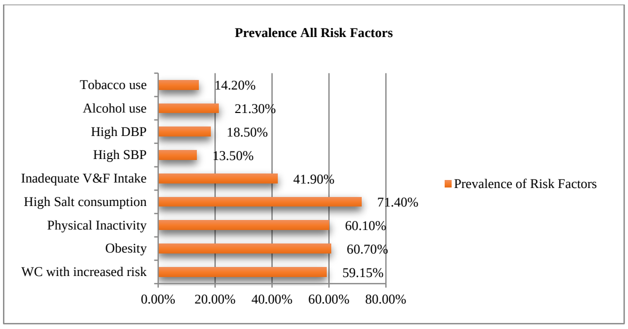

Figure 1: Summary of all risk factors among doctors.

Overall prevalence of risk factors for NCDs among all doctors:

Total summary of prevalence of risk factors for NCDs among allopathic doctors practicing in Vijayawada corporation limits in ascending order were, prevalence of high systolic blood pressures was least in number with 13.5%, followed by smoking of tobacco (14.2%), high diastolic blood pressures (18.5%), alcohol use (21.3%), inadequate intake of vegetables and fruits (41.9%), average prevalence of WC with increased risk (59.15), physical inactivity (60.1%), obesity (60.7%) and high salt consumption was the highest prevalent risk factor among all with 71.4%.

DISCUSSION

Demographic profile

Present study was conducted on doctors in the corporation limits of Vijayawada city, Andhra Pradesh. A total of 900 allopathic doctors were estimated in the city and out of them 720 (80.0%) were available and willing to participate in the study.

Tobacco use

Prevalence of smoking among doctors in present study was 14.2%. This finding was almost equal and supported by Global Adult Tobacco Survey (GATS), fact sheet India: 2009-10 conducted by the international institute for population sciences, Mumbai figures in India are like current tobacco smokers are 14% of adults.[13] No female doctor in present study was observed as tobacco smokers, habit of tobacco smoking only observed in male doctors. This can be attributed to the fact that in the Indian population mostly men indulge in this unhealthy practice.

A cross sectional study evaluates the prevalence of smoking, knowledge, and tobacco intervention among Argentine physicians. The overall prevalence of smokers was 47%, with the prevalence significantly higher in males (52%) than females (40%) ($p<0.001$).[14] Very high prevalence of smoking which is observed as compared to present study may be due to their cultural and regional differences.

Some studies like Gupta AK, Sarkar D, and Pravin N et al which were conducted on medical students reported high prevalence of tobacco smoking like 38.2%, 31.6%, and 39.1% respectively when compared to the present study, it may be attributed to the fact that they were conducted on young student doctors who were enthusiastic about smoking in their college life, where as in the present study only practicing doctors were considered, which might have contributed to low prevalence (14.2%).[15-17]

Alcohol

In the present study alcohol consumption was considered for only male doctors because no female doctors in this study were alcoholics. Supported by a study in which an increased risk was positively related to male doctors.[18] The prevalence of alcohol use among doctors of this study was found to be 21.3%, which was observed to be equal to other studies like Murthy P et al conducted on general population of different parts of India with 21.4%, Sethi, Trivedi in Uttar Pradesh with 21.4% and National Household Survey on Drug Abuse (2000-01) with 21.4% of prevalence, hence it was observed that alcohol consumption among doctors in this study was almost equal to that of general population.[19-21]

Prevalence of alcohol consumption was observed in studies like Sugathan conducted in Kerala with 45.0%, Bela Shah (45.1%) reported from Trivandrum, Ghulam from Raipur with 37.0% were very high compared with present study may be because of the geographic and cultural differences among subjects.[22-24]

Physical activity (inactivity)

Regular physical activity has important health benefits. It can reduce the risk of heart disease, stroke, diabetes, breast cancer, colon cancer and osteoporosis. It can also help in weight loss and weight maintenance and reduce the risk of falls in the elderly.

Studies like Anand (male 14.8% and female 55.0%), Joseph (male 20.0% and female 14.6%), Anitha et al (47.5%), which were conducted on urban populations of various parts of India showed lower prevalence of physical inactivity when compared with present study prevalence of 60.1%, which could be attributed to the sedentary life style of the doctors.[25-27]

Food habits (diet)

In the present study 41.9% of doctors were observed to be consuming fruit and vegetables in inadequate quantity which was lower than studies like World Health Survey, 2003 in Uttar Pradesh (74.0%), Sugathan et al with 87.0%, may be due to socio-economical and educational level variations between subjects.[22,28] This indicates the better consumption of fruit and vegetables among the doctors.

A study conducted in Maldives the most common type of oil used for preparations of meals was vegetable oils (79.8%), which was almost equal and supporting our present study in which most of the doctors (78.4%) were using sunflower oil for daily cooking.[29]

Intake of salt

Regarding consumption of salt, majority of doctors (71.4%) were found to be taking high amount of salt in their diet which is high risk for NCDs and 87.1% of the study subjects were observed that adding extra salt in their diet.

In the present study most of the doctors (66.7%) in the age group of 76 to 85 was observed to be consuming normal intake of dietary salt when compared with other age groups, and it was highly significant ($p<0.01$).

Overweight/ obesity

In the present study 60.7% were found to be obese with BMI greater than 25 but no doctor was observed in obese II and III classes of WHO classification of BMI. In an Indian study which was conducted on physicians it was observed high risk BMI was 69.0%, higher than the present study which could be due to small sample size.[30] The prevalence of obesity among doctors was observed to be very high when compared with urban populations in other studies like Tanakappan et al, Rajan et al, Mahajan et al.[31-33] This may be due to prolonged sitting hours of the job, intake of high calorie diet, low physical activity in the leisure time among doctors when compared to general population.

In this study prevalence of overweight was observed to be high among female doctors (73.0%) when compared to the male doctors (55.2%) which was found to be highly significant ($p<0.01$). The prevalence of obesity in male doctors of our study was nearest to the study conducted by Meenakshi et al among urban population of Baroda in which prevalence male obesity was 57.1%.[34]

Hypertension

In the present study the prevalence of hypertension was found to be 18.6% and which finding was supported by a study in which BP measured in a sample of 864 individuals among employees of a University General Hospital, and the prevalence was found to be 17% and 23%, in physicians and nursing staff respectively.[38]

In the present study the prevalence high systolic blood pressures among doctors was found to be 13.5% and the prevalence of high diastolic blood pressures among doctors was found to be 18.5% which was very low when compared with an Indian study claims that 46.0% physicians had a higher normal range of systolic BP and 43.0% had a higher normal range of diastolic BP.[30] The higher values in later study could be because of smaller sample size of 100 physicians when compared to our study (n=720).

Diabetes

In the present study, diabetes prevalence among doctors was found to be 14.4% and the prevalence of diabetes was found to be 13.9% in male doctors and 15.8% in female doctors with respect of the gender, it was not significant statistically ($p>0.05$). However in a study male doctors suffer at low rate i.e. 6% when compared 12% of general population of same age.[39] Very low prevalence of diabetes among male doctors in later study may be due to geographical and genetic changes among subjects as it was conducted on United States doctors.

But in some studies (Prabhakaran et al in 2005 at Delhi with 15.0%, Gupta et al in 2004 at Jaipur with 16.8%, and Ramachandran et al in 2001 at Hyderabad with 16.6%) the prevalence of diabetes among urban general populations were found to be very close to the overall prevalence of diabetes among doctors in the present study with 14.4%.[40,41] Which indicates that there is no much difference between doctors and general population regarding prevalence of diabetes mellitus.

CONCLUSION

Because of more exposure to unhealthy life styles like smoking, alcohol, unhealthy dietary habits like high intake of salt, inadequate use of fruits and vegetables, oil fries and by leading a sedentary life and high risk factors like overweight/obesity, hypertension and diabetes a large number of the doctor's population were at increased risk for chronic non-communicable diseases.

Recommendations

Based on the findings in the present study following recommendations were being suggested to control the risk factors for NCDs among doctors.

- Findings of the study should be shared with doctors and prevalence of various risk factors should be highlighted.
- Refreshing the knowledge among the doctors regarding seriousness of risk factors for NCDs and motivate them to adopt healthy life style practices and implementation of lifestyle intervention programmes were suggested.
- Severity of risk factors should be discussed with doctors in their scientific sessions and conferences.
- The attitude of doctors towards their own health has a direct impact upon the population, i.e. doctors play an important part as role models for a healthy way-of-life and as experts for finding solutions concerning health-problems. Hence special attention and help for the medical profession are generally needed.

- Multicenter surveys to be conducted to address the global level of risk factors among physicians.
- Studies evaluating the effectiveness of structured physical activity program on non-communicable disease and their risk factors among physicians should be performed.
- Although, the present study has identified important risk factors that contribute to NCDs in doctors, there is a strong need to study these factors in details.

Limitations

- As there were very few studies on the doctors, so comparisons of factors for NCDs with similar groups could not be done.
- In the present study only selected non communicable diseases and selected factors for that have been studied, but could not be studied all due to lack of resources.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. World Health Organization. Preventing chronic diseases a vital investment. Geneva: World Health Organization, 2005. Available at https://www.who. Int/chpchronic_disease_report/full_report.pdf. Accessed 20 March 2019.
2. World Health Organization. World Health Report.Geneva: World Health Organization, 2002. Available at: https://www.who.int/whr /2002/en/ whr02_en.pdf. Accessed on 12 February 2019.
3. Daar AS, Singer PA. Grand challenges in chronic non-communicable diseases. Nature. 2017;450:494-6.
4. Non-communicable disease risk factors survey: Integrated Disease Surveillance Project (IDSP), Phase-I States, Ministry of Health & Family Welfare, Government of India; 2009:1-2.
5. Reddy, Srinath K. Prevention and control of non-communicable diseases: status and strategies. New Delhi: Indian Council for Research on International Economic Relations, 2003. Available at: https//:www.icrier.org/pdf/WP104.pdf. Accessed on 21 August 2018.
6. Mehan MB, Srivatsav N, Panday H. Profile of non-communicable disease risk factors in an industrial setting. J Postgrad Med. 2006;52(3):167-71.
7. Ischemic Heart Diseases-Acute Myocardial Infarction Standard Treatment Guidelines. India; Ministry of Health and family Welfare. Available at: URL:https://www.mohfw.nic.in/nrhm/stg/PDF%20 Content/STG%20Select%20Conditions/Acute%20 Myocardial% 20Infarction.pdf. Accessed on 24 August 2018.
8. Ghosh AK, Joshi SR. Physician's Health: Time to take care. JAPI. 2008;56:13-4.
9. Shanafelt TD, Sloan JA, Habermann TM. The well being of physicians. Am J Med. 2003;114(6):513-9.
10. Ramachandran A, Snehalatha C, Yamuna A, Murugesan N. High prevalence of cardio metabolic risk factors among young physicians in India. J Assoc Physicians India. 2008;56:17-20.
11. WHO. Assessment of burden of non-communicable diseases Geneva: World Health Organization Available at: https://www.who.int/nmh/public-ations/ncd_report_full_en.pdf. Accessed on 21 August 2018.
12. WHO. Part 1: Introduction and Roles Overview, WHO STEPS Surveillance, 2008. Available at: https://www.who.int/ncds/surveillance/steps/Part1. pdf. Accessed on 24 October 2018.
13. Roy A. Suicide in doctors. Psychiatr Clin North Am. 1985;8(2):377-87.
14. Minervini MC, Zabert GE, Rondell MPP, Gomez M, Castalios C, Buist AS, et al. Tobacco use among Argentine Physicians: Personal behaviour and attitudes. Revista Argentina de Medicina Respiratoria. 2006;3:100-5.
15. Gupta AK, Mazta SR, Kumar S, Joshi I. Prevalence of use of tobacco among male medical students in IGMC Shimla, Himachal Pradesh, India. JIMSA. 2012;25(4):241.
16. Sarkar D, Dhand R, Malhotra A, Malhotra S, Sharma BK. Perceptions and attitude towards tobacco smoking among doctors in Chandigarh. Indian J Chest Dis Allied Sci. 1990;32(1):1-9.
17. Yerpude PN, Jogdand KS. Study of determinants of smoking habit among medical student. Pravara Med Rev. 2011;3(2).
18. Rosta J. Prevalence of problem-related drinking among doctors: a review on representative samples. Ger Med Sci. 2005;3:1612-3174.
19. Murthy P, Manjunatha N, Subodh BN, Chand PK, Benegal V. Substance use and addiction research in India. Indian J Psychiatry 2010;52(7):189-99.
20. NIMHANS. Available at: http://nimhans.ac.in/cam/ sites/default/ files/Publications/25.3.pdf. Accessed on 25 May 2019.
21. Benegal. Alcohol related harm Implications for Public Health and Policy in India. NIMHANS. 2011: 23.
22. Sugathan TN. Behavioural risk factors for non communicable diseases among adults in Kerala, India. Indian J Med Res. 2008;127:555-63.
23. Shah B, Amthur P. Risk factor surveillance for non communicable diseases (NCDs): The Multi-site ICMR-WHO Collaborative Initiative. Mumbai, India; 2005.
24. Ghulam DS. An epidemiological study of drug abuse in urban population of Madhya Pradesh. Indian J Pathol Microbiol. 1996;38(3):160-5.
25. Anand K, Shah B, Yadav K, Singh R. Are the urban poor vulnerable to non-communicable diseases? A survey of risk factors for non-communicable

diseases in urban slums of Faridabad. Natl Med J India. 2007;20(3):115-20.
26. Joseph A, Kutty VR, Soman CR. High risk of coronary heart disease in Thiruvananthapuram city: A study of serum lipids and other risk factors. Indian Heart J. 2000;52(1):29-35.
27. Anitha N, Sunil G, Sila D, Anannya R, Ravneeth K. A study of the profile of behavioral risk factors of non-communicable diseases in an urban setting using the WHO STEP1 approach. Ann Trop Med Public Health. 2009;2(1):15-9.
28. World Health Organization. Obesity and overweight. Geneva; WHO. Available at: https://www.who.int/news-room/fact-sheets/detail/ obesity-and-overweight. Accessed on 12 November 2018.
29. Abubakar M, Latifa A, Mohammed AJ. Surveillance for non-communicable disease risk factors in Maldives: results from the first STEPS survey in male. Int J Public Health. 2010;55(5):489-96.
30. Gandhi H, Vaishali K, Prem V, Vijayakumar K, Adikari P, UnniKrishnan B et al. A survey on physical activity and noncommunicable disease risk factors among physicians in tertiary care hospitals, Mangalore. Natl J of Community Med. 2012;3(1).
31. Tanakappan KR. Risk factors for chronic non-communicable diseases: results of a community-based study in Kerala, India. Indian J Med Res. 2010;131(1):53-63.
32. Chadha SL, Gopinath N, Shekhawat S. Urban rural differences in the prevalence of coronary heart disease and its risk factors in Delhi. WHO Bull Health Organ. 1997;75(1):31-8.
33. Mahajan DC, Birari SS, Khairnar GS, Patil YP. Prevalence of non-communicable diseases risk factors in two groups of urban populations. Asian J Epidemiol. 2009;2:1-8.
34. Meenakshi. Risk factors profile of non-communicable diseases among middle-income (18-65 years) free living urban population of India. Int J Diab Der Crres. 2006;26(4):169-76.
35. Janghorbani M. First nationwide survey of prevalence of overweight, underweight, and abdominal obesity in Iranian adults: obesity. 2007;15:2797-808.
36. Kaur S, Walia I. Body mass index, waist circumference and waist hip ratio among nursing students. Nurs Midwifery Res J. 2007;3(2).
37. Gupta R, Gupta VP, Sarna M, Bhatnagar S, Thanvi J, Sharma V. Prevalence of coronary heart disease and coronary risk factors in an urban Indian population: Jaipur Heart Watch 2. Indian Heart J. 2002;54(1):59-66.
38. Prabakaran J, Vijayalakshmi N, VenkataRao E. Prevalence of hypertension among urban adult population (25-64 years) of Nellore, India. Int J Res Dev Health. 2013;1(2).
39. Ministry of Health & Quality of Life, Mauritius. Non-communicable Diseases Survey 2004. Available at: www.who.int/chp/steps/ STEPS ReportMauritius.pdf. Accessed on February 2019.
40. Waist Circumference and Waist–Hip Ratio: Report of a WHO Expert Consultation Geneva, 2008.
41. WHO, world database on Body Mass, Geneva: World Health Organization. Available at: https://www.who.int/nutrition/databases/bmi/en/. Accessed on 2 August 2018.

Cite this article as: Kiran PK, Anga VS. A study on prevalence of risk factors for non-communicable diseases among allopathic doctors of Vijayawada city, Andhra Pradesh. Int J Community Med Public Health 2019;6:3508-19.