



## SOURCES OF KNOWLEDGE, AND AWARENESS REGARDING HYPERTENSION AMONG MEDICAL STUDENTS- THE INFLUENCE OF GENDER

Ramaprabha P<sup>1\*</sup>, Dhandapany Senthil Pragash<sup>2</sup> and Aravindkumar R<sup>3</sup>

<sup>1</sup>Department of Physiology, DM WIMS Medical College, Wayanad, Kerala. 673577

<sup>2</sup>Department of Microbiology, Melmaruvathur Adhiparasakthi Institute of Medical Sciences and Research, Melmaruvathur, Tamilnadu - 603319.

<sup>3</sup>Department of Physiology, Rajah Muthiah Medical College, Annamalai University, Annamalai Nagar, Tamil Nadu 608002

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### ABSTRACT

**Background:** Hypertension is one of the major risk factors for development of cardiovascular diseases and Non-Communicable Diseases (NCDs). This study was conducted to ascertain if there is a difference in knowledge regarding diagnosis, risk factors and complications of hypertension between male and female first year MBBS students. **Methods:** This cross-sectional study was conducted in a private medical college in Tamil Nadu. After obtaining Institutional Ethical Committee approval and written informed consent from students, 150 first year medical students were recruited for the study. A structured, pre-tested questionnaire was administered to study subjects. Chi-square test was performed to determine statistical significance. **Results:** 149 respondents were included in the analyses. There were 75(50.3%) male and 74(49.6%) female respondents. While 55(73.3%) of male respondents, and 65(87.8%) of female respondents identified high salt diet as a risk factor, 20(26.7%) male and 9 (12.2%) female respondents did not. This difference was statistically significant, with a p value of 0.03. The top three sources of information regarding hypertension were friends, school and doctors, respectively. **Conclusions:** Significantly more male students were unaware of high salt diet as a risk factor for hypertension compared to female students. Most students obtained information about hypertension from their friends.

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### INTRODUCTION

Hypertension is one of the major risk factors for the development of Non-Communicable Diseases (NCDs) in general and cardiovascular disease in particular (WHO South-East Asia Region Office, 2013; World Health Organization, 2016a). It is a major public health problem, and was the World Health Day theme in 2013 (WHO South-East Asia Region Office, 2013b).

Contrary to popular perception, hypertension affects more people in low and middle-income countries than high-income countries (WHO South-East Asia Region Office, 2013; World Health Organization, 2016b). Although several investigators have examined the prevalence of hypertension and risk of developing NCDs among medical students, there is a paucity of literature regarding medical students' knowledge about hypertension (Chattopadhyay et al., 2014; Paul, Nayaki, Sen, & Isaac, 2015; Shaikh et al., 2011).

This study was conducted in a private medical college in south India to identify the sources of knowledge regarding hypertension among first year MBBS students; and determine if gender influences awareness of hypertension.

### MATERIALS AND METHODS

This cross-sectional study was conducted in Melmaruvathur Adhiparasakthi Institute of Medical Sciences and Research, a private medical college in Tamil Nadu, India. The annual intake of students for the MBBS course is 150, and we decided to include all 150 students in the study.

The study was restricted to first year MBBS students of the 2013 admission batch, who had completed six months' study, and had not been formally taught about hypertension.

After obtaining permission to conduct the study from the Institutional Ethics Committee (approval number 68(1-A) 2013), students were invited to participate in the study. Written informed consent was obtained from all students. No student refused to participate in the study. However, one student submitted an incomplete study tool, hence was excluded from analyses.

\*Corresponding author: Ramaprabha P

Department of Physiology, DM WIMS Medical College, Wayanad, Kerala. 673577

## Sources of knowledge, and awareness regarding hypertension among medical students- the influence of gender

A pre-tested, structured questionnaire was administered to the students. It included questions regarding diagnosis, risk factors, and complications of hypertension.

Data entry and transformation were performed using Microsoft Office Excel 2010. Data analyses were performed using EZR (version 1.34 (R Commander version 2.3-0))(Kanda, 2013). Descriptive statistics, and chi-square test were performed. Statistical significance was set at the 5% level.

### RESULTS

There were almost equal number of male (75[50.3%]) and female (74[49.6%]) students.

66 (44.3%) of respondents reported that their mother had completed graduation or post-graduation, while 22 (14.7%) and 21 (14.1%) reported maternal education as PUC/Higher Secondary and Professional/Honours respectively.

59 (39.6%) of respondents reported their father's educational qualification as graduate/ post-graduate, while 35 (23.5%) and 24 (16.1%) reported paternal education as PUC/Higher Secondary and Professional/Honours respectively.

There was no statistically significant difference in educational qualifications of parents between male and female respondents.

**Table 1** Gender-wise responses to questions

Item	Response	Male n(%)	Female n(%)	p value
What is hypertension?	Increase in BP	75 (100)	72 (97.3)	0.24
	Others	0 (0)	2 (2.7)	
Normal BP is	120/80 mm Hg	61 (81.3)	61 (82.4)	1
	Others	14 (18.7)	13 (17.6)	
Risk Factors for developing hypertension include:				
Stress	Yes	73 (97.3)	73 (98.6)	1
	No/ Don't know	2 (2.7)	1 (1.4)	
Alcohol	Yes	43 (57.3)	47 (63.5)	0.50
	No/ Don't know	32 (42.7)	27 (36.5)	
Diabetes Mellitus	Yes	49 (65.3)	51 (68.9)	0.72
	No/ Don't know	26 (34.7)	23 (31.1)	
Adrenal Disease	Yes	37 (49.3)	38 (51.4)	0.87
	No/ Don't know	38 (50.7)	36 (48.6)	
Family history	Yes	27 (36)	29 (39.2)	0.73
	No/ Don't know	48 (64)	45 (60.8)	
High fat diet	Yes	59 (78.7)	58 (78.4)	1
	No/ Don't know	16 (21.3)	16 (21.6)	
High salt diet	Yes	55 (73.3)	65 (87.8)	<b>0.03</b>
	No/ Don't know	20 (26.7)	9 (12.2)	
Malnutrition	Yes	7 (9.3)	8 (10.8)	0.79
	No/ Don't know	68 (90.7)	66 (89.2)	
Obesity	Yes	68 (90.7)	66 (89.2)	0.79
	No/ Don't know	7 (9.3)	8 (10.8)	
Old age	Yes	63 (84)	55 (74.3)	0.12
	No/ Don't know	12 (16)	19 (25.7)	
Sedentary lifestyle	Yes	32 (42.7)	31 (41.9)	1
	No/ Don't know	43 (57.3)	43 (58.1)	
Diagnosis				
Hypertension is detected	By regular BP monitoring	71 (94.7)	73 (98.6)	0.36
	Others	4 (5.3)	1 (1.4)	
Complications				
Complications of hypertension are	Heart failure, stroke, renal disease	70 (93.3)	72 (97.3)	0.44
	Others	5 (6.7)	2 (2.7)	

As can be seen from the table above, almost all students correctly described hypertension as an increase in blood pressure; and just over 80% correctly identified the normal Blood Pressure (BP) values.

Obesity, old age and a high fat diet were identified as risk factors by approximately 90%, 80%, and 78% of respondents, respectively. However, only around 42% of respondents considered sedentary lifestyle as a risk factor for hypertension. While 55(73.3%) of male respondents, and 65(87.8%) of female respondents identified high salt diet as a risk factor, 20(26.7%) male and 9 (12.2%) female respondents did not. This difference was statistically significant, with a p value of 0.03.

Although around 65% of students identified diabetes mellitus as a risk factor, 60% of female students and 65% male students did not identify family history as a risk factor for developing hypertension.

Similarly, almost all students identified stress as a risk factor for development of hypertension. However, around 40% of students did not consider alcohol consumption as a risk factor for hypertension. The proportion of respondents who did not consider adrenal disease as a risk factor for developing hypertension was about 50%.

Except for five respondents, all others correctly mentioned how hypertension is diagnosed.

Similarly, around 95% of respondents correctly identified the complications of hypertension.

Details regarding the source of information are provided in table 2.

**Table 2** Sources of information regarding hypertension by gender

Item	Response	Male n(%)	Female n(%)	p value
Friends	Yes	66 (88)	67 (90.5)	0.79
	No	9 (12)	7 (9.5)	
School	Yes	60 (80)	62 (83.8)	0.67
	No	15 (20)	12 (16.2)	
Doctors	Yes	57 (76)	61 (82.4)	0.42
	No	18 (24)	13 (17.6)	
Television	Yes	42 (56)	48 (64.9)	0.31
	No	33 (44)	26 (35.1)	
Internet	Yes	41 (54.7)	38 (51.4)	0.74
	No	34 (45.3)	36 (48.6)	
Health workers	Yes	24 (32)	26 (35.1)	0.73
	No	51 (68)	48 (64.9)	
News	Yes	23 (30.7)	17 (23)	0.35
	No	52 (69.3)	57 (77)	
Others	Yes	13 (17.3)	6 (8.1)	0.13
	No	62 (82.7)	68 (91.9)	
Radio	Yes	8 (10.7)	8 (10.8)	1
	No	67 (89.3)	66 (89.2)	

As depicted in table 2, the top three sources of information regarding hypertension were friends (~90%); school (~81%); and doctors (~78%).

13 (17.3%) male respondents reported obtaining information from other sources. This was over twice the number of female respondents reporting the same, but did not reach statistical significance.

### DISCUSSION

From the results, it is clear that even before they are formally taught about hypertension, most medical students know the basics of the condition- what it is, and what normal blood pressure values are.

However, there are significant gaps in their knowledge, as they fail to recognize several risk factors as important in disease causation.

Although obesity and high fat diet were identified as risk factors for hypertension, less than 50% respondents associated sedentary lifestyle with it. This is ironic, considering the relationship between sedentary lifestyle, high fat high sugar diet, and development of obesity. However, this is consistent with the findings of Shaikh *et al.*, who reported that only 47% students mentioned physical inactivity as a risk factor for hypertension (Shaikh *et al.*, 2011)

A significantly higher proportion of male respondents failed to identify high salt diet as a risk factor for the development of hypertension. Perhaps this reflects greater awareness regarding the role of dietary factors, especially sodium (Adroque & Madias, 2014) among female students. Shaikh *et al.* reported that 69.1% of students in their study identified high salt intake as a risk factor for hypertension (Shaikh *et al.*, 2011). The awareness of students in this study regarding high salt is considerably higher, with over 73% male and 87% female students indicating it as a risk factor.

Contrary to expectations, most (60-65%) students failed to mention family history as a risk factor for hypertension. This was surprising as popular perceptions about hypertension include familial tendency. However, the result is similar to that reported by Shaikh *et al.*, who found that 50% of respondents in their study did not identify family history of cardiovascular disease as a risk factor for hypertension (Shaikh *et al.*, 2011)

Less than 10% of respondents identified malnutrition as a risk factor for hypertension. This could be on account of the assumption that malnutrition (protein energy malnutrition) is on the opposite end of the spectrum from obesity, hence must not be associated with hypertension. Moreover, the mechanisms by which malnutrition result in hypertension have been described only recently (Tennant *et al.*, 2014).

Perhaps due to depictions in mass media, almost all students identified stress and advancing age as risk factors for hypertension. Shaikh and colleagues reported similar findings from their study, with 75.5% respondents mentioning it as a risk factor for hypertension (Shaikh *et al.*, 2011).

However, adrenal disease was considered a factor by only 50% of respondents. This is interesting on account of the relationship between the adrenal hormones and stress.

Most students reported that the source of their knowledge regarding hypertension were friends, followed by school and doctors. This highlights the importance of peer groups- if the peers have correct knowledge about the condition, it may benefit all within the peer group. However, the reverse could also be true.

It was interesting to note that more students gained information about hypertension from school than doctors, underscoring the importance of schools in health education and awareness creation.

Although we did not find a statistically significant difference between the sexes in terms of source of information, many more (over twice as many female students) male respondents reported obtaining information from other sources.

Other sources that were expected to rank higher in the list included internet and radio. However, these were not as popular as the top three sources mentioned above.

## CONCLUSIONS

From this study we found that there was a statistically significant difference in knowledge regarding high salt diet as a risk factor for hypertension between male and female first year medical students. The commonest sources of information regarding hypertension were friends, followed by school.

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