PREVALENCE OF HYPERTENSION IN SOME OCCUPATIONAL GROUPS OF BIJAPUR CITY

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ABSTRACT

Objective: To know the prevalence of Hypertension and the risk factors associated with hypertension

Study Design: Cross Sectional study.

Study area: Medical Colleges, Nationalized Banks and Highschools of Bijapur city.

Participants: All Doctors working in two Medical Colleges, High school teachers and employees of Nationalized Banks.

Statistical analysis: Chi-square test, Percentages.

Study Variables: Age, Sex, Occupation, BMI, Diet, Physical Exercise, etc.

Method: Interview technique using pre tested performa.

Study period: One year. From April 2008 to Mar 2009.

Results: Study reveals that the overall prevalence of Hypertension among three occupational groups to be 25.95%. The relationship between hypertension and occupation (25.95%),Sex(Males 29.5%), Higher socio economic status (27.14%), Family history (32.78%), Mixed diet(28.76%), BMI, etc was found to be statistically significant.

Key words: Hypertension, Age, Occupation, Diet, BMI.

INTRODUCTION

"You protect it, you promote it, you extend it"

These are in fact the basic principles of preventive medicine. From the worldwide population perspective, the problem of excessive blood pressure level for optimal cardiovascular health is immense and growing. High blood pressure or Hypertension defined by WHO as systolic pressure equal to or greater than 140mmHg & / or diastolic pressure equal to or greater than 90mmHg, is an important world wide health disorder.

An iceberg disease, it remains hidden during most of its clinical course, but doing immense harm to body silently. Despite intensive studies, its pathogenesis is unclear. Many factors are thought to be involved in the pathogenesis of essential hypertension like –genetic factors, sodium intake, obesity, physical activity etc.

The present study is aimed to find out the prevalence of hypertension in some occupational groups with sedentary life style and to know the influence of various risk factors on prevalence of hypertension in these groups.

Aims and objectives:

1. To study the prevalence of hypertension in persons of 20-60 years age among some occupational groups of Bijapur city.

2. To find out the socio-demographic, economic and other factors influencing hypertension.

MATERIAL AND METHODS

The present study is a cross sectional study carried out in Bijapur city covering doctors of two Medical Colleges, namely Al Ameen Medical College & B.L.D.E.A's Shri B M Patil Medical College, Bank employees & High school teachers.

The study was undertaken for a period of one year from April 2008 to Mar 2009. The sample size was calculated to be 1162 by applying the formula $n=4pq/L^2$ among the three occupational groups.

At the time of study there were 425 doctors, 470 high school teachers & 400 bank employees, out of whom only 357 doctors, 402 high school teachers & 335 bank employees could be contacted even after repeated visits.

A detailed proforma was used for data collection. The information regarding demographic data, history of Diabetes, Hypertension, Smoking or Tobacco intake and Alcohol intake, regular Physical activity was collected. Physical examination was performed to assess Height, Weight and Blood Pressure was recorded as per WHO Expert Committee guidelines.

Parameters involved:

Age: was assessed as stated by the subject and was recorded to the nearest completed year as on last birthday. **Weight**: was measured in Kilograms using standardized portable weighing machine. **Height:** was measured in centimeters with the standard position of the subject using a measuring tape after marking the height of the subject against a wall with the ruler. **Body mass index** (BMI) was calculated as weight (kg) divided by squared height (mt). **Alcohol:** Alcohol consumers who were in the habit of drinking at the time of survey. **Tobacco consumers**: were those who were consuming tobacco in any form. **Physical exercise:** Respondents who were undertaking regular physical exercise of sufficient intensity to cause at least mild breathlessness and sweating was recorded. **Extra salt intake:** This was undertaken by asking the respondents regarding the regular use of those items in the daily diet, which contain high salt content and are usually included in the Indian diet like pickle, papad, sauce, cheese, etc. & the subject was also asked regarding adding additional table salt to his dishes on the dining table. **Extra Fat intake:** Extra fat group included those subjects, who were regularly consuming the food items having high fat content like oil, ghee, butter, cheese, etc. **Stress:** was elicited using Presumptive Stress ful life events scale (PSLES), as due to aging, due to finances/economic security, due to occupation/career, due to marital status, social status, health status and any other major stress in life. **Hypertension** was diagnosed when systolic blood pressure was ≥ 140 mm Hg and/ or diastolic blood pressure ≥ 90 mm Hg or a person was a known Hypertensive. A pilot study was undertaken in 50 subjects of each group of sample population, later on these 150 subjects were also included in the study.

Data was collected by the investigator using the standard pre tested questionnaire by interviewing & examining each respondent.

RESULTS AND DISCUSSION

A total of 1094 respondents were included in the study of which 357 (32.63%) were doctors, 402 (36.75%) and 335 (30.62%) were high school teachers and bank employees respectively.

Maximum number of respondents in all three groups belonged to age group of 31 to 50 years (67.91%), Majority of the respondents were males in all the three occupational

groups(74.95%). Overall , prevalence of Hypertension in all three groups was found to be 25.95% (284), the corresponding figures being 23.52% (84) in doctors, 26.11% (105) in teachers and 28.35% (95) among bank employees.(Table 1)

Hypertension was found more after the fourth decade of age in all three groups, the overall prevalence being maximum 44.28% (62) between the age group of 51 to 60 years being 36% (9) in doctors, 49.05% (26) in teachers & 43.54% (27) in bank employees. Association of hypertension with age was found to be statistically significant among all the three groups.

284 hypertensive cases were further distributed on the basis of their blood pressure. Majority 94.72%(269) were found to have mild hypertension, 3.87%(11) had moderate to severe hypertension and 1.1% (4) had isolated systolic hypertension.

The prevalence was found to be more with per capita income of Rs. 2000/- or more per month among all three groups. Similar observations were found by Gilbert et al[1] in a study in south India(1994).Among doctors & teachers hypertension was found to be more in those who were engaged in both administrative and technical work being 32.14% (36) & 56.52% (13) respectively.

In majority of hypertensive cases among all the groups history of Stress was present, the corresponding percentages being 29.82%(34),34.48% (10),and 30.45% (67) among doctors, teachers and bank employees respectively.(Table 2)

Higher prevalence of hypertension was found among those who had family history of hypertension in all the three groups being 31.53%(35),35% (21) and 32.85%(23) in doctors, teachers and bank employees respectively. However this association was found to be statistically significant among doctors only.

The R.R of developing hypertension was 1.54 times more among those who had family history of hypertension than those who did not have. Scheuch. K. et al[2] in his study found higher prevalence of hypertension due to occupational strain.

Higher percentage of hypertensive cases were seen in those who consumed mixed diet among doctors 27.14% (60) and bank employees 39.81% (43) which was found to be statistically significant, however among teachers hypertension was more prevalent among vegetarians being 27.98% (82). Sciarrone et al[3] (1993) noted that vegetarians tend to have low blood pressure as compared to non vegetarians.

Higher prevalence of hypertension i.e, 54.29% (19) was seen among those who were consuming extra salt in their diet in the form of papad / pickles etc. The prevalence being 44.44% (4), 58.33% (7) and 57.14% (8) in doctors, teachers and bank employees respectively.(Table 3)

This association was found to be statistically significant among teachers and bank employees only. A study done by Kawasaki T[4] shows that hypertension and salt intake had correlation only in salt sensitive individuals.(1978). As reported by majority of the hypertensive cases, the average daily consumption of salt exceeded 20 grams in all the three groups. Which is in contrast to the recommendation made by WHO expert committee[5] (1996) to restrict the intake of salt (less than 6 grams/day) from the point of view of prevention and control of hypertension.

Consumption of extra fat in the form of Cheese, Butter, Ghee etc. was found to be more 30.68%(54) among bank employees as compared to other two groups, however this was not found to be statistically significant.(Table 4)

A recent WHO Expert group[6] has also mentioned that though, the role of certain macronutrients has been suggested by many workers there is as yet no causal relationship with hypertension has been proved.

Although there was no statistically significant association between alcohol consumption and hypertension, but higher percentage of hypertensive cases were seen among those who had history of alcohol consumption being 30% (30), 39.28% (11), 34.83%(31) in doctors, teachers and bank employees respectively. Dyer A R. et al[7], Paul K Whelton[8] also observed similar findings in their studies.(Table 5)

Higher percentage of hypertensive cases were found in those who were consuming tobacco among doctors 33% (33), teachers 29.31% (17) and bank employees 30.23% (13).This association was found to be statistically significant among doctors only (P<0.02). (Table 6)

The R.R of developing hypertension was 1.39 times more in tobacco consumers than non consumers. A study by Gupte et al[9] revealed that smoking is an independent risk factor associated with higher prevalence of hypertension among both males & females.

Statistically significant association was found between hypertension and physical exercise among doctors. Though higher percentage of hypertensive cases were seen among teachers 28.14%(56) and bank employees 31.57%(48) who were not doing physical exercise regularly, but the association was not statistically significant.(Table 7)

The R.R of developing hypertension was 1.54 times more in those who were not doing physical exercise regularly than those who were doing exercise regularly.

A study by Paul K. Whelton[8] showed inverse relationship of physical activity and hypertension. Similar observations were alsonoted by B S Deswal, in a study at Pune[10].

In relation to BMI the prevalence of hypertension was found more among those who had BMI of more than 25, the corresponding percentages being 28.49%(53) in doctors, 30.35%(34) in teachers and 31.72% (46) in bank employees, however the association was found to be statistically significant among doctors only.

Chiang B N[11] observed that most of the population studies tend to show a increase of blood pressure with increase in body weight. Chandrashekaran et al[12] found in a study in south India 38.1% of all hypertensives having BMI more than 25.

In a study conducted in rural community by Lt. Col V K Agrawal et al, the main risk factors for hypertension were Smoking /tobacco use, physical inactivity, saturated fat intake , BMI $\geq$ 25, truncal /abdominal obesity consumption of alcohol .[13]

CONCLUSION

This study demonstrates that there is higher prevalence of hypertension in these occupational groups. It is also evident that hypertension is more prevalent in our study groups as compared to the findings of other studies conducted in different parts of India.

Sedentary life style, unhealthy dietary habits (extra salt & fat consumption), lack of physical exercise, tobacco & alcohol consumption, and increased stress due to change in life style because of rapid urbanization, appear to exert great influence on the prevalence of hypertension, besides, non modifiable risk factors like age, family history, genetic factors in our study groups. This emphasis the need to create awareness among the general population to bring about changes in their life style and dietary habits besides avoiding other risk factors.

RECOMMENDATIONS

As evident from this study & other valid studies, it is proved that hypertension is associated with wide spectra of life style of mankind. Based on the observations & conclusions of the present study following strategies are recommended to achieve the goal of reducing the prevalence of hypertension & associated complications.

- Regular BP check ups- a must after fourth decade.
- Dietary changes like avoiding excessive use of salt, fats & restriction of energy intake appropriate to body needs.
- Avoiding alcohol consumption, cigarette smoking, tobacco chewing, as these are definite risk factors in the development of Hypertension as observed in the present study.
- Regular exercise should be encouraged as a part of strategy for risk factor control.
- To avoid stress- yoga, meditation & recreational activities should be undertaken.
- Self motivation & active participation on the part of the patient in drug, diet & physical activities.
- As prevalence of hypertension in the present study was more , this emphasizes further research to define more precisely the factors causing sustained BP elevation.

REFERENCES

1. Gilberts E C.,Arnold M J.,Gorbee D E. 1994."Hypertension & Determinants of blood pressure with special reference to socio economic status in rural south Indian Community". *J.Epidemiol. Community Health (Eng),* 48:258-61.
2. Scheuch-K *et al. European Journal of Applied Physiology* 2000 Feb; 81(3);245-51.
3. Sciarrone S.E.G.,Strahan M T.,Belin I J., et al. 1993."Ambulatory blood pressure and heart rate response to vegetarian meals".*J.Hypertension*, 11;277-85.
4. Kawasaki T.,Delea C S.,*et al.,* The effect of high sodium and low sodium intake on blood pressure and other related variables in human subjects with idiopathic hypertension. *Am.Jou.Med.*1978,64,93-198.
5. Page L B.,Epidemiological evidence on the etiology of human hypertension and its possible prevention. *Am.Heart Jou*. 1976,91-4.527-534.
6. WHO. Hypertension Control. Report of a WHO Expert Committee. *TRS No.862 Geneva: WHO,*1996. Pp83.
7. Dyer AR *et al*. Alcohol intake & Blood pressure in young adults – The CARDIA study. *Jou,Cli.Epidemiol.*,1990, 43/1, 1-13.
8. Whelton Paul K.1994. "Epidemiology of Hypertension". *Lancet*, 344: 101-6.
9. Gupta R., *et al*. Prevalence and determinants of hypertension in the urban population of Jaipur in Western India, *Jou. Hypertension*.1995. Oct.13, 1193-1200
10. Deswal B S *et al*. 1991. "An epidemiological study of hypertension among residents in Pune" *Indian Journal of Community Medicine*, Vol.16,1, Jan-Mar 1991.,pp21-28.
11. Chiang B N., Perlman L V., Epstein F H. "Overweight and Hypertension", *Circulation.* 1969, 39, 403-21.
12. Chandrashekharan N., Dutta M., Sankaran J.R. *et al*. 1995."Association between Obesity and Hypertension in South Indian patients", *Indian Heart Journal.*,46; 21-4.
13. Lt Col VK Agrawal, Col R Bhalwar, DR Basannar : "Prevalence and Determinants of Hypertension in a Rural Community" :MJAFI, Vol.64. No.1, 2008.

Table 1. Distribution of Hypertension According to Occupation

Hypertension	Doctors No. (%)	Teachers No. (%)	Bank employees No.(%)	Total No. (%)
Present	84 (23.52)	105 (26.11)	95 (28.35)	284 (25.95)
Absent	273 (76.48)	297 (73.89)	240 (71.65)	810 (74.05)
Total	357 (100)	402 (100)	335 (100)	1094(100)
Non significant, x^2 =4.5, P = 0.05				

Table 2.Distribution of Hypertension According to Stress

Stress	Doctors		Teachers		Bank employees		Total	
	No.(%)	Total	No.(%)	Total	No.(%)	Total	Hypertensives	Total
Present	34(29.82)	114	10(34.48)	29	67(30.45)	220	111(30.57)	363
Absent	50(20.57)	243	95(25.46)	373	28(24.34)	115	173(23.66)	731
Total	84(23.52)	357	105(26.11)	402	95(28.35)	335	284(25.95)	1094
	Non Significant		Non Significant		Non Significant		Significant	
	x^2=3.5,P=0.05		x^2=0.75,P=0.05		x^2=,P=0.05		x^2=6.03,P<0.01,RR=1.42, ARP=29.58	

Table 3.Distribution of Hypertension According to Extra Salt Intake

Extra salt intake	Doctors		Teachers		Bank employees		Total	
	No.(%)	Total	No.(%)	Total	No.(%)	Total	Hypertensives	Total
Present	04(44.44)	09	07(58.33)	12	08(57.14)	14	19(54.28)	35
Absent	80(22.98)	348	98(25.12)	390	87(27.10)	321	265(25.01)	1059
Total	84(23.52)	357	105(26.11)	402	95(28.35)	335	284(25.95)	1094
	Significant		Significant		Significant		Significant	
	x^2=2.36,P=0.05		x^2=6.65,P<0.01		x^2=5.96,P<0.02		x^2=15.09,P<0.01	

Table 4.Distribution of Hypertension According to Extra Fat Intake

Extra Fat intake	Doctors		Teachers		Bank employees		Total	
	No.(%)	Total	No.(%)	Total	No.(%)	Total	Hypertensives	Total
Present	29(22.83)	127	37(24.66)	150	54(30.68)	176	120(26.49)	453
Absent	55(23.91)	230	68(26.98)	252	41(25.78)	159	164(25.58)	641
Total	84(23.52)	357	105(26.11)	402	95(28.35)	335	284(25.95)	1094
	Significant		Non Significant		Non Significant		Non Significant	
	x^2=0.05,P=0.05		x^2=0.26,P=0.05		x^2=0.99,P=0.05		x^2=0.11,P=0.05	

Table 5. Distribution of Hypertension According to Alcohol Consumption

Alcohol consumption	Doctors		Teachers		Bank employees		Total	
	No.(%)	Total	No.(%)	Total	No.(%)	Total	Hypertensives	Total
Present	30(30.00)	110	11(39.28)	28	31(34.83)	89	75(33.03)	227
Absent	51(20.64)	247	94(25.13)	374	64(26.01)	246	209(24.10)	867
Total	84(23.52)	357	105(26.11)	402	95(28.35)	335	284(25.95)	1094
	Non Significant		Non Significant		Non Significant		Significant	
	x^2=3.6,P=0.05		x^2=3.3,P=0.05		x^2=2.72,P=0.05		x^2=7.47, P=0.01, RR=1.55, ARP=35.48	

Table 6. Distribution of Hypertension According to Tobacco Consumption

Tobacco consumption	Doctors		Teachers		Bank employees		Total	
	No.(%)	Total	No.(%)	Total	No.(%)	Total	Hypertensives	Total
Present	33(33.00)	100	17(29.31)	58	13(30.23)	43	63(31.34)	201
Absent	51(19.84)	257	88(25.58)	344	82(28.08)	292	221(24.74)	893
Total	84(23.52)	357	105(26.11)	402	95(28.35)	335	284(25.95)	1094
	Significant		Non Significant		Non Significant		Significant	
	x^2=6.2,P<0.02		x^2=0.42,P=0.05		x^2=0.13,P=0.05		x^2=3.71, P<0.05, RR=1.39, ARP=28.05	

Table7.Distribution of Hypertension According To Exercise

Exercise	Doctors		Teachers		Bank employees		Total	
	No.(%)	Total	No.(%)	Total	No.(%)	Total	Hypertensives	Total
Present	23(14.46)	159	49(24.13)	203	47(25.68)	183	119(21.83)	545
Absent	61(30.80)	198	56(28.14)	199	48(31.57)	152	165(30.05)	549
Total	84(23.52)	357	105(26.11)	402	95(28.35)	335	284(25.95)	1094
	Significant		Non Significant		Non Significant		Significant	
	x^2=12.37,P<0.01		x^2=0.83,P=0.05		x^2=1.48,P=0.05		x^2=9.61, P<0.01, RR=1.54, ARP=35.06	