Original Research Paper

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General Medicine

A HOSPITAL BASED STUDY OF PREVALENCE OF HYPERTENSION AND DIABETES AMONG TRIBAL POPULATION IN DUNGARPUR DISTRICT RAJASTHAN,

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ABSTRACT **Background:** Diabetes and hypertension are among the most common chronic non communicable disease and multifactorial disorder affecting all groups of population including tribal population. **Objective:** To determine the prevalence rate of type 2 diabetes mellitus and hypertension and its associated risk factors among tribal population in Dungarpur District in Rajasthan. **Materials and Methods:** A total about 600 tribal population above 30 years of age from medicine outdoor in GMC Dungarpur. All of them were screened for diabetes, by measure RBS level and blood pressure level were also recorded. **Results:** Among the study population, people who had RBS >200 was 49(male=22 and female=27) and between 140 and 200 were 69(male=33 and female=36) and people whose were in prehypertensive stage were 209(male=102 and female =107) and people in the stage 1 hypertension was 122(male=57 and female=65) and in stage 2 hypertension was 76(male=37and female=39). The comorbidity diabetes and hypertension was present in 52 (male=30 and female=22).Among the study population only 7 obese and 49 were overweight. Among the various risk factors smoking, alcohol, and positive family history were found to have statistically significant association for both diabetes and hypertension. **Conclusion:** The study documented that the prevalence of both diseases is high in the tribal population in DungarpurRajasthan.

KEYWORDS : tribal, hypertension, diabetes, population.

INTRODUCTION

The worldwide prevalence of diabetes has risen dramatically over the past two decades[1]. Based on current trends, the IDF projects that 642 millions individuals will have diabetes by the year 2040[2]. Hypertension is one of the leading causes of the global burden of disease and the prevalence of hypertension vary among countries and among subpopulations within country[3]. In spite of incredible progress in the field of medicine, there is still a huge number of population living in isolation in natural and unpolluted surrounding far away from civilization with there traditional values, custom, beliefs and myths intact. They are known as “tribals”. As per censuses 2011 out of total population 6.4% people live in urban area while 93.6% live in rural area in Dungarpur. Schedule cast constitute 3.8% while schedule tribe were 70.8% of total population in Dungarpur district of Rajasthan[4].

Theetiologies of both diseases are multifactorial in nature and hypertension and diabetes are important risk factor for cardiovascular disease. The increasing rate of coronary artery disease among tribal Indian in younger age, understanding and successfully managing hypertension and diabetes may hold the key to reduce cardiovascular comorbidity in india[5]. The prevalence of hypertension is more in those with diabetes than in those without diabetes, where's almost one third of the patients with hypertension develop diabetes later.

Screening of pre-diabetes and pre-hypertension through Health camps and periodic screening in rural area can allow for early intervention and treatment with reduce complications like cardiovascular and retinopathy. Aim of our study to access the prevalence and risk factors of diabetes and hypertension in tribal population in Dungarpur Rajasthan .

MATERIALANDMETHODS

It is a prospective observational study over a period of 13 month. A total study population was made to 600 from out door patients and admitted in medicine ward with sign and symptoms suggestive of hypertension and diabetes. All the study tribal population from the Dungarpur district by applying a simple random technique for the people aged 40 years and above. Among them 350 were female and 250 were males. All of them were screened for diabetes, by random blood glucose levels. Along with random blood sugar(RBS), their blood pressure by spagnomenometer, body mass index, dietary patterns and physical activity level were also recorded. RBS cut off values were > 200mg/dl are consider as diabetic and blood sugar levels between 140 to 200 are considered to be pre-diabetes and random blood sugar <140 is normal. Blood pressure was based on JNC eight classification[6]

Inclusion Criteria:

Patients admitted and medicine out door visit suggestive of hypertension and diabetes with age more then 30 years.

Exclusion Criteria

- Patients age less then 30 years
- Patients with covid 19 infection
- Patients on chronic steroid treatment.

Purpose of the study will be explained to the study subject and written informed consent will b taken prior to their participation in the study. Pre structured proforma will be used to record the relevant information and history from individual cases selected for study.

Descriptive statics was analysed with SPSS software and student t test was used and p value <0.05 was taken to indicate a significant difference.

RESULTS

7600 patients were studied in department of medicine in Dungarpur over period of 13 month.

Table 1: Age And Sex Wise Distribution Of The Study Population.

Age group	Male (%)	Female(%)	Total(%)
31-35	43(39.4)	66(60.5)	109(100)
36-40	50(47.1)	56(52.83)	106(100)
41-45	39(42.39)	53(57.60)	92(100)
46-50	18(33.3)	36(66.60)	54(100)
51-55	32(40.5)	47(59.49)	79(100)
56-60	27(44.26)	34(55.73)	61(100)
61-65	18(40.9)	26(59)	44(100)
66-70	15(42.85)	20(57.14)	35(100)
>70	8(40)	12(60)	20(100)
Total	250(41.66)	350(58.33)	600(100)

Table 1 shows the distribution of the study population based on the age and gender. Of the total 600 study population 350 were females and 250 are male. Majority of them were in the age group of between 30 and 60 years. Table 2 shows the distribution of the study population based on their RBS level.

Table 2: Distribution Of RBS Values Among The Study Population:

Age	Sex	RBS<140 (%)	RBS 140-200(%)	RBS >200(%)	Total (%)
30-35	M	42(97.6)	1(2.32)	0	43(100)
	F	66(100)	0	0	66(100)
36-40	M	44(88)	6(12)	0	50(100)
	F	50(89.20)	6(10.7)	0	56(100)
41-45	M	30(76)	6(15.3)	3(7.6)	39(100)
	F	50(94.3)	3(5.6)	0	53(100)
46-50	M	10(55)	3(16.66)	5(27)	18(100)
	F	23(63.88)	7(19.44)	6(16.66)	36(100)

51-55	M F	20(62.5) 35(74.46)	8(25) 5(10.6)	4(12.5) 7(14.89)	47(100) 27(100)
56-60	M F	21(77.7) 20(58.82)	3(11.11) 6(17.64)	3(11.11) 8(23.5)	27(100) 34(100)
61-65	M F	12(66.6) 19(73.07)	3(16.66) 5(19.2)	3(16.66) 2(7.6)	18(100) 26(100)
66-70	M F	10(66.66) 15(75)	2(13.3) 2(10)	3(20) 3(15)	15(100) 20(100)
>70	M F	6(75) 9(75)	1(12.5) 2(16.6)	1(12.5) 1(8.3)	8(100) 12(100)
Total	M F	195(78) 287(87)	33(13.2) 36(10.2)	22(8.8) 27(7.7)	250(100) 350(100)

It is seen from Table that about 33(13.2%) male and 36(10.2%) Female are in the stage of pre-diabetes and 22(8.8%) male and 27(7.7%) females were diagnosed as diabetes. Majority of pre-diabetes and diabetes were in 40 to 60 years age groups.Table 3 shows the classification of hypertension among the study population.

Table 3: Classification Of Hypertension Among The Study Population.

Age	Sex	Normal pressure (%)	Pre-HTN (%)	Stage 1 HTN(%)	Stage 2 HTN (%)	Total
30-35	M F	18(41.8) 55(83.3)	21(48.83) 8(12.12)	3(6.9) 3(4.5)	1(2.32) 0	43 66
36-40	M F	5(10) 36(64.28)	34(68) 11(19.6)	8(16) 4(7)	3(6) 5(8.9)	50 56
41-45	M F	5(12.82) 20(37.7)	17(43.58) 20(37.7)	12(30.7) 9(16.9)	5(12.8) 4(7.5)	39 53
46-50	M F	4(22.2) 2(5.55)	5(27.7) 20(55.5)	4(22.2) 8(22.22)	5(27.7) 6(16.6)	18 36
51-55	M F	3(9.3) 9(19.14)	14(43.7) 18(38.29)	10(31.2) 11(23.4)	5(15.6) 9(19.14)	32 47
56-60	M F	9(33.3) 3(8.82)	4(14.81) 11(32.35)	8(29.6) 14(41.17)	6(22.2) 6(17.64)	27 34
61-65	M F	3(16.66) 3(11.53)	4(22.22) 10(38.46)	7(38.88) 9(34.61)	4(22.22) 4(15.3)	18 26
66-70	M F	4(26.66) 7(35)	2(13.33) 6(30)	4(26.6) 4(20)	5(33.3) 3(15)	15 20
>70	M F	3(37.5) 4(33.3)	1(12.5) 3(25)	1(12.5) 3(25)	3(37.5) 2(16.6)	8 12
Total	M F	54(21.6) 139(39.71)	102(40.8) 107(30.57)	57(22.8) 65(18.57)	37(14.8) 39(11.4)	250 350

It is seen from the table that about 102(40.8%) males and 107(30.57%) were females in the stage of prehypertension and 94(37.6%) males and 104(29.71%)females were diagnosed as hypertensive. Similar to the diabetes, prevalence of hypertension also found to be more among age group between 40 and 60 years. And table 4 shows that 30(12%) males and 22(6.28%) females had comorbidity diabetes and hypertension.

Table 4: Diabetes And Hypertension Among The Study Population.

Age	Sex	Diabetes and hypertension	Percentage
30-35	M(n=43) F(n=66)	1 0	2.38 0
36-40	M(n=50) F(n=56)	2 1	4 1.7
41-45	M(n=39) F(n=53)	5 1	12.8 1.8
46-50	M(n=18) F(n=36)	6 5	33.3 13.88
51-55	M(n=32) F(n=47)	7 4	21.80 8.51
56-60	M(n=27) F(n=34)	3 4	11.11 11.76
61-65	M(n=18) F(n=26)	3 3	16.66 11.53
66-70	M(n=15) F(n=20)	1 3	6.66 15
>70	M(n=8) F(n=12)	2 1	25 8.3
Total	M(n=250) F(n=350)	30 22	12 6.28

Table 5 shows the various risk factors for diabetes among the study population and from the table it is seen that for males smoking, alcohol consumption and family history of diabetes were found significant.

Table 5: Risk Factor For Diabetes Among The Study Population

Risk Factor	Male		P value	Female		P value
	Diabetic	Non Diabetic		Diabetic	Non Diabetic	
Smoking						
Yes	49	137	p<0.001	3	11	p>0.50
No	6	58		60	276	
Alcohol						
Yes	37	88	P<0.005	1	1	p>0.50
No	18	107		62	286	
BMI						
<18.5	0	2	p<0.10	6	25	p<0.10
18.5-23.9	49	163		47	250	
24.9-29.9	3	30		8	10	
30-34.9	3	0		2	0	
>35	0	0		0	0	
Family history of diabetes	`					
Yes	20	10	p<0.0001	24	12	p<0.0001
No	35	185		39	275	
Lack of physical activity	`					
Yes	4	21	p>0.50	3	19	p>0.50
No	25	169		35	249	

Table 6 shows the various risk factors fir hypertension in males smoking, BMI,family history of hypertension was found statistically significant association for developing hypertension.

Table 6 Risk Factors For Hypertension

Risk Factor	Male		P value	Female		P value
	Prehypertensive hypertensive	Normal BP		Prehypertensive hypertensive	Normal BP	
Smoking						
Yes	144	20	p<0.001	10	5	p>0.50
No	52	34		201	134	
Alcohol						
Yes	109	10	P<0.005	3	0	p>0.50
No	87	44		208	139	
BMI						
<18.5	0	4	p<0.10	21	6	p<0.10
18.5-23.9	165	42		178	128	
24.9-29.9	24	8		12	5	
30-34.9	7	0		0	0	
>35	0	0		0	0	
Family history of diabetes	`					
Yes	60	6	p<0.005	70	10	p<0.001
No	136	48		141	129	
Lack of physical activity	`					
Yes	10	5	p>0.50	20	6	p>0.50
No	186	49		191	133	

DISCUSSION

In our study, 250 cases(38.46%) were males and 350 cases(62.6%) were females and male to female ratio was 0.7. Mean age of presentation 40-60 year age. In a study done by Radhakrishnan s et al [7]. Female sex specific (1.6% in females and 0.8% in males) prevalence of diabetes has been noticed in a study done by Murugan and Beula [5] in the tribal areas of Kanyakumari and a study by SachdevB [8] among the tribal population shows that the prevalence was 9.8% and12.5% respectively with higher prevalence among female population when compared with male population, Where in our study the prevalence of

diabetes was 8.8% and 7.7% among male and females respectively, which shown no gender specificity among the diabetes prevalence.

Obesity is a major risk factor for T2DM. The relationship between BMI and diabetes mellitus is reported by many studies Holbrook TLet al [9]whereas in our study obesity was not a factor to be associated with diabetes and most of our study population were having normal BMI some were even undernourished because of high physical activity.

The association of alcohol and smoking an diabetes have been discussed by Barnard ND et al [10] and Robbins JM et al [11] and it was found to be same in our study. Family history of diabetes was found to be strong factor in both males and females[12], and family history is significant in our study.

The study carried out by Kopitar and Gupta[13] using JNC seven criteria for assessment of hypertension among the age group 30 years and above found the prevalence of hypertension was 19.04% in the rural population of Central India. Although Gupta et al [14] reported a prevalence of 24% in males and 17% in females in the age group of 20 years and above from Rajasthan. Gilbert's et al [15]study in rural Tamil Nadu in the age group of 20 years and above found a prevalence of 12.5% whereas in our study about 40.8% males and 30.57% females were in the prehypertensive stage and 37.6% males and 29.71% females are hypertensive. The prevalence of population having both diabetes and hypertension as comorbid disease was 12% in males and 6.28% among females.

Prevalence of hypertension was significantly higher in males then females. Similar findings were reported by Gupta et al[14]and Dong et al[16]. All the study agree with the fact that prevalence of hypertension increases with age which also according to our study.

A study done by Bansal et al[17]had shown that both male and female, age and high BMI were significant predictors of hypertension and similar results were also quoted by Gupta et al. Where's in our study smoking, BMI and family history had significant association with hypertension in both males and females.

CONCLUSION

The prevalence of diabetes and hypertension is on the rise in tribal population in Dungarpur district of Rajasthan. The two giant chronic morbidity diabetes and hypertension now a pandemic is a new challenge to the modern world. The prevalence usually vary from nation to nation, area to area, and same group people. A low level of prevalence of T2DM in the present tribe may be due to their lifestyle changes and genetic constitution, where's the prevalence of hypertension did not show much difference when compared with urban or rural population. There is a need for strengthening health education programs to promote chronic diseases awareness and emphasize preventive measures among this tribal population.

REFERENCES

1. Harrison's principles of internal medicine 20th edition chapter 396. Pg.2850-2859.
2. http://www.idf.org/Harrison's principles of internal medicine 20th edition chapter 396. Pg.2850-2859.
3. Harrison's principles of internal medicine 20th edition chapter 271 Hypertensive vascular disease. Pg.1890- 1906.
4. http://www.census2011 Co.in.
5. Murugan A, Beula. Epidemiological studies on type-2 diabetes mellitus in kaani tribes of Kanyakumari districts, Tamilnadu, India. Int J Res Rev PharmAppl Sci 2012;2:651-61.
6. James PA, Ortiz E et al. 2014 evidence based guidelines for management of high blood pressure in adults (JNC8). JAMA 2014 Feb 5;311(5):507-520.
7. Radhakrishnan S , Ekambaram M. Prevalence of diabetes and hypertension among a tribal population in Tamil Nadu. Arch Med Health Sci 2015;3:66-71.
8. Sachdev B. Screening of type 2 diabetes mellitus and its associated risk factors among select tribes of Rajasthan. Internal J Health Sci Res 2012;2:33-44.
9. Hartz Aj, Rupley DC Jr, Kalkhoff RD, RimmAa. Relationship of obesity to diabetes: Influence of obesity level and body fat distribution. Prev Med 1983;12:351-3/7.
10. Barnard ND, Cohen J, Jenkins DJ, Turner-McGrievy G, Golden L, Jaster B et al. A low fat vegan diet improves glycemic control and cardiovascular risk factors in a randomized clinical trial in individuals with type 2 diabetes. Diabetes Care 2006;29:1777-83.
11. Robbins JM, Vaccarino V,Zhang H, Kasl SV. Socioeconomic status and type 2 diabetes in African American and non Hispanic white women and men: Evidence from the Third national health and nutrition examination Survey. AM J Public Health 2001;91:76-83.
12. Joshi SR, Sabo B, Vadivale M, Dani SI, Michal A, Kaul Uet al. Prevelence of diagnosed and undiagnosed diabetes and hypertension in India – results from the screening India's Twin Epidemic study. Diabetes Technol Ther 2012;2:950-3.
13. Kopitar PR, Gupta SS. Prevalence of hypertension in a rural community of Central India. Int J Biol Med Res 2011;2:950-3.
14. Gupta R, Prakash H, Gupta VP, Gupta KD. Prevalence and determinants of coronary heart disease in a rural population of India. J Clin Epidemiol 1997;50:203-9.
15. Gilbert's EC, Arnold MJ, Gobbler DE. Hypertension and determinants of blood pressure with special reference to socioeconomic status in a rural South Indian community. J Epidemiological community Health 1194;48:258-61.
16. Dong GH, sun ZQ Zhang XZ, Li JJ, Zheng LQ Li J et al. Pr, awareness, treatment and control of hypertension in rural Liaoning province, China . Indian j med Res 2008;128:122-7.
17. Bansal SK, Saxena V, Kansas SD, Gray WK, Walker RW, Golden D. The prevalence of hypertension and hypertension risk factors in a rural Indian community: A prospective door to door study. J cardiovascular Disease Res 2012;3:117-23.