Original Research Article

Study on prevalence of hypertension, diabetes mellitus and their few risk factors among rural women in Ghaziabad

Narendra Singh*

Department of Community Medicine, Santosh Medical College, Ghaziabad, Uttar Pradesh, India

*Correspondence:
Dr. Narendra Singh,
E-mail: narendra.singhv@gmail.com

ABSTRACT

Background: With rapid urbanisation in National Capital Region, Ghaziabad, associated life style diseases like hypertension, diabetes mellitus are also increasing. For an effective preventive program, it is mandatory to know prevalence and relevant risk factors. Many studies among men have been conducted, this study was undertaken to find out prevalence, and associated factors solely among rural women in Ghaziabad.

Methods: A pretested Performa was administered to all non-pregnant women coming to a health centre. Information on medical and family history, dietary habits, physical activity, blood pressure, blood sugar, height, weight etc. was recorded. For statistical analyses, SPSS-16 software was used.

Results: Out of total 569 participants, 59 were having hypertension, showing a prevalence of 10.36 %, 44 were having family history of hypertension with a prevalence of 7.73%. 93 were found to be Diabetics, with a prevalence of 16.34% and family history of diabetes among 57, i.e. 10.36% in study group. Overall 134, (23.55%) had abnormally higher BMI, age group with highest prevalence of BMI was also having highest diabetes and hypertension cases. This age group was found to be doing just mild physical activity.

Conclusions: This study gives insight in heavy burden of hypertension, diabetes, and associated risk factors in rural women folks in a rural health centre of Ghaziabad. Life style modifications, more physical activities, dietary modifications with lesser salt ,fats will go in long way of reducing burden of these diseases and risk factors.

Keywords: Rural women, Diabetes, Risk factors, Hypertension

INTRODUCTION

Diabetes is one of the largest global health emergencies of the 21st century. Each year more and more people live with this condition, with neurological 24.6%, CVS 23.6%, retinopathy 16.6% foot ulcers 5.5% complications. According to International Diabetes Federation, an umbrella organization of diabetes associations in 160 countries. IDF, 2015 reports, world has 415 million diabetics with 215 males and 199.5 females, besides 318 million with impaired glucose tolerance. India has 69.2 million diabetic, prevalence of 8.7, second largest after China.[1] Nearly 60% of diabetics have never been screened or diagnosed due to a lack of awareness.

Indians have increased insulin resistance, greater abdominal adiposity, changes in dietary patterns and decreased physical activities. Women act as caretaker in the family and prioritize the health of family members above their own; she has to beware of gestational diabetes also.

Recent reports indicate that nearly 1 billion adults had hypertension in 2000, and will increase to 1.56 billion by

2025, mostly in developing nations. In six decades it increased from 2% to 25% among urban and from 2% to 15% among the rural in India. Various factors are increased life expectancy, urbanization, lifestyle changes, stress, increasing salt intake, awareness and detection and the overall epidemiologic transition. Early identification of at-risk persons using simple screening and appropriate lifestyle intervention would greatly help in preventing / postponing the onset of diabetes, hypertension.[2]

On these back grounds, a study was undertaken to find the prevalence, risk factors of diabetes, hypertension, in a rural health centre of district Ghaziabad, which was never done here earlier for rural women.

METHODS

This is a cross sectional study carried out, in Kheda a rural health centre in district Ghaziabad, from 02 Jan 2013 to July 2013. The health centre is equipped for providing primary health care to approximately 45000 populations. Before study, Institutional Ethical committee approval was taken. The study was well advertised inviting all non-pregnant women for diagnosis of high blood pressure, obesity and Diabetes mellitus in health centre.

Inclusion criteria

All non-pregnant females in age group of 20 and above years, who reported to the health centre serially during its working hours from Jan to July 13, were taken in the study. This age group was selected deliberately, because of being most vulnerable for life style diseases, and shouldering high responsibilities for their family's communities, place of employment and most productive, besides being main caring members in the family. They are mature, amenable to health education.

Exclusion criteria

Those not willing to participate in the study.

Base measurements

A predesigned and pretested performa was administered to all participants reporting to health centre. It included questions on medical history, socioeconomic factors, diet, family history of hypertension and diabetes, physical activities etc.

Height in cms and weight in Kgs rounded to nearest 100 grams was taken without shoes and with light clothes and filled up in the questionnaire for the study. BMI was calculated as weight in Kilograms divided by square of the height in meters. BMI value of more than 25 was taken as abnormal. Blood pressure was measured after resting, twice from right arm after 5 minutes of lying quietly, using a mercury sphygmomanometer. Mean of these 2 readings was recorded. A person was considered

to have hypertension, if it was more than 140/90 mm of Hg, or if he reported having taken anti-hypertensive drugs during preceding 7 days.

Next morning fasting blood sugar level was taken, with a glucometer, from ring finger tip, under all aseptic precautions, in the centre. It was observed that, most of participants did not come back for PP sugar testing, hence only fasting blood sugar was considered in this study.

Pure vegetarians consuming predominantly foods of plant origin, with milk and other dairy products were included in vegetarian group and those consuming foods of plant and animal origin were included in non-vegetarian group.[5]

Sedentariness was assessed by screen time (hours/day spent before the TV or computer) and separately, sitting time (hours per day spent sitting for any purpose). Incidental exercise was measured by the frequency of housework or farming/job work, categorized as follows: ≤3 times/ month; 1–2 times/week; 3–4 times/week; most days as given following. This weighting system is based on the recommendation of the International Physical Activity Questionnaire.[6]

Table 1: International physical activity questionnaire.

Category of physical activity	Categorical score- three levels of physical activity are proposed
Mild	No. activity is reported (Or) Some activity is reported but not enough to meet Moderate and Sever
Moderate	Any one of the following 3 criteria a. 3 or more days of vigorous-intensity activity of at least 20 minutes per day. (Or) b. 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day. (Or) c. 5 or more days of any combination of walking, moderate-intensity or vigorous.
Severe	Any one of the following 2 criteria Vigorous-intensity activity on at least 3 days (Or) 7 or more days of any combination of walking, moderate- or vigorous-intensity

*vigorous equivalent to fast walking approximately 5000 steps per day.

Statistical analyses

Chi square test was applied on all the data by using SPSS-16 software.

RESULTS

Table 2: Distribution of participants according to age groups, abnormal BMI, diabetics, hypertensive and positive family history of diabetes /hypertension among them.

Serial No.	Age groups	20-25 year	26-30 year	31-35 year	36-40 year	41-45 year	Above 45 years	Total
1	Age wise distribution of Study group	85	283	114	49	22	16	569
2	BMI more than 25	18 (21.17%)	50 (17.66%)	33 (28.94%)	21 (42.85%)	9 (40.90%)	3 (18.75%)	134 (23.55%)
3	F Blood Sugar >126 mg%	13 (15.29%)	55 (19.43%)	12 (10.52%)	9 (18.36%)	2 (9.09%)	2 (12.5%)	93 (16.34%)
4	Blood Pressure >140/90 mmHg	7 (8.23%)	20 (7.06%)	16 (14.03%)	9 (18.36%)	5 (2.25%)	2 (12.5%)	59 (10.36%)
5	Family history of diabetes Mellitus Out of Age wise study Group	11 (12.94%)	23 (8.12%)	13 (11.40%)	7 (14.28%)	3 (13.63%)	-	57 (10.01%)
6	Family history of hypertension Out of Age wise Study group	5 (5.88%)	13 (4.59%)	14 (12.28%)	10 (20.40%)	2 (9.09%)	-	44 (7.73%)
7	Diet veg	58 (68.23%)	184 (65.01%)	62 (54.38%)	31 (63.26%)	16 (72.72%)	12 (75%)	363 (63.79%)
	Non veg	27 (31.76%)	99 (34.98%)	52 (45.61%)	18 (36.73%)	6 (27.27%)	4 (25%)	206 (36.20%)
	Total	85	283	114	49	22	16	569
8	Physical Activity							
	A. Mild	16 (18.82%)	92 (32.50%)	46 (40.35%)	23 (49.93%)	7 (31.81%)	5 (31.25%)	189 (33.21%)
	B. Moderate	44 (51.76%)	115 (40.63%)	52 (45.61%)	18 (39.73%)	12 (54.54%)	7 (43.75%)	248 (43.58%)
	C. Severe	25 (29.41%)	76(26.85%)	16(14.03%)	8(16.32%)	3(13.63%)	4(25%)	132(23.19%)
	Total	85	283	114	49	22	16	569

Table 2 above, serial 2, shows that abnormally higher BMI of more than 25, is maximum (40.90%) in age group 41-45 years.

From serial no 3, over all prevalence of diabetes is found to be 16.34%, with maximum cases in 26-30 years group 19.43%.

From serial 4, it is observed that over all prevalence of Hypertension in study sample is 10.36% and is maximum (18.36%) in 36-40 age group.

As per serial 5, it is seen that 57 subjects out of 569, (10.01%) have positive family history of Diabetes mellitus.

From serial 6, it is observed that, total of 44 subjects, (7.73%) had family history of hypertension.

As per serial 7, out of total subjects of 569, 363 (63.79%) were veg, whereas, 260 (36.26%) non veg.

As per serial 8, majority of subjects (43.58%) were moderate workers.

Table 3: Statistical analysis of data of Table 1 on age groups, BMI, hypertensives, diabetics, F/H.

	Groups	Chi-Square	P value	Conclusion
BMI more than 25	Age wise distribution of study groups	23.12	0.002	Significant
	F Blood Sugar >126 mg%	8.49	0.130	Non Significant
	Blood Pressure >140/90 mmHg	7.41	0.191	Non Significant
	Family history of diabetes Mellitus Out of Age wise study Group	6.38	0.27	Non Significant
	Family history of hypertension Out of Age wise Study group	11.77	0.038	Significant
	Diet			
	Vegetarian	12.47	0.020	Significant
	Non Vegetarian	17.26	0.004	Significant
	Physical Activity			
	Mild	14.14	0.014	Significant
	Moderate	14.56	0.012	Significant
	Severe	14.56	0.012	Significant
	Blood Pressure >140/90 mmHg	13.03	0.023	Significant
F Blood Sugar >126 mg%	Family history of diabetes Mellitus Out of Age wise study Group	7.58	0.180	Non Significant
	Diet			Non Significant
	Vegetarian	3.38	0.641	Non Significant
	Non Vegetarian	6.33	0.270	Non Significant
	Physical Activity			Non Significant
	Mild	7.98	0.156	Non Significant
	Moderate	6.93	0.220	Non Significant
	Severe	1.95	0.855	Non Significant
	Family history of hypertension Out of Age wise Study group	16.25	0.006	Significant
	Age wise distribution of Study group	9.67	0.084	Non Significant
Blood Pressure >140/90 mmHg	Family history of diabetes Mellitus Out of Age wise study Group	4.12	0.531	Non Significant
	Diet			
	Vegetarian	10.38	0.065	Non Significant
	Non Vegetarian	8.36	0.137	Non Significant
	Physical Activity			
	Mild	5.40	0.368	Non Significant
	Moderate	8.14	0.148	Non Significant
	Severe	18.87	0.002	Significant
	Family history of hypertension Out of Age wise Study group	16.98	0.004	Significant
	Age wise distribution of Study group	16.26	0.006	Significant
Family history of hypertension Out of Age wise Study group	Family history of diabetes Mellitus Out of Age wise study Group	4.19	0.380	Non Significant
	Diet			
	Vegetarian	16.42	0.005	Significant
	Non Vegetarian	10.49	0.050	Significant
	Physical Activity			Non Significant
	Mild	8.04	0.153	Non Significant
	Moderate	15.84	0.004	Significant
	Severe	24.64	0.000	Significant
	Age wise distribution of Study group	4.40	0.492	Non Significant
Family history of diabetes Mellitus Out of Age wise study Group	**Diet**			
	Vegetarian	6.24	0.282	Non Significant
	Non Vegetarian	4.28	0.509	Non Significant
	Physical Activity			
	Mild	7.14	0.610	Non Significant
	Moderate	3.55	0.614	Non Significant
	Severe	10.00	0.075	Non Significant

From above Table 3, it is seen that, data on age groups and diet, physical activity is statistically found to be significant. Similarly data on diabetics and hypertensive and family history of hypertension was also found to be statistically significant. Data on hypertensive with severe physical activity and on family history of hypertension was also found to be significant.

DISCUSSION

From Table 2, it is observed that, out of total 569 participants, 134 (23.55%) had abnormal BMI of more than 25. As per WHO Global report on Diabetics -2016, prevalence of BMI more than 25 is 25.3% in females and 19.3% in males in South East Asia region[7] We have slightly lesser prevalence than this.

Total of 93 participants out of 569 were found to be diabetics giving a prevalence of 16.34%. According to Mohan et al the prevalence of diabetes in those above 40 year of age, was 5 per cent in urban and 2.8% in rural areas.[8]

Gupta et al from Jaipur, through three epidemiological studies carried out during 1994, 2001 and 2003 demonstrated rising trend rates of diabetes 1%, 13%, and 18% respectively among males and 1%, 11% and 14% respectively among females.[9-11]

In ICMR–INDIAB 2008-11 national study (executive summary) prevalence of diabetes (both known and newly diagnosed) was 10.4% in Tamil Nadu, 8.4% in Maharashtra, 5.3% in Jharkhand, and 13.6% in Chandigarh. The prevalence's of prediabetes (impaired fasting glucose and/or impaired glucose tolerance) were 8.3%, 12.8%, 8.1% and 14.6% respectively.

The sudden rise in the prevalence of diabetes, obesity, hypertension and the metabolic syndrome could be related to the rapid changes in life style that has occurred during the last 50 year. This "epidemiological, or socio economic transition", which includes improved nutrition, better hygiene, control of communicable diseases and better availability of quality healthcare have resulted in increased longevity, besides, rapid rise of the new-age diseases like obesity, diabetes, hypertension and heart disease. The onslaught of western culture onto the lives of traditional indigenous societies, more use of machines, vehicles, money power, stress, has also had devastating results in terms of the rise in diabetes and life style disorders in epidemic proportions over the globe.

Total 59 participants out of 569 were found to be hypertensive, giving a prevalence of 10.36%.which is quite lesser than national level. In a study by Gupta et al this was found to be 18% in rural area of Meerut.[12] In a study in West Bengal, prevalence of hypertension in women subjects was 24.7% and that of pre-hypertension and tachycardia was 40.8% and 6.4%, respectively. Both hypertension and pre-hypertension were seen to increase with age. Other identified significant factors were use of biomass fuel for cooking, absence of separate kitchen, higher body mass index (BMI), education and average family income.[13]

All participants detected with abnormal findings & habits, were given health education and appropriate advice. Healthy individuals were told to be on guard & do yearly check up with doctors in health centre.

CONCLUSION

The study provides insight in important data on high burden of prevalence of hypertension, diabetes mellitus, and the associated risk factors in a rural women population in a health centre. Life style modifications, such as more physical activity, lesser intake of non-vegetarian items which uses more oil/ ghee for cooking, & extra butter, salt in the diet, will result in down ward risk & trend of these life style diseases. Simultaneously health education was imparted to total study group.

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