

Prevalence of Hypertension among Reproductive Age Group Women in Study District of West Gujarat : A Community Based Cross Sectional Study

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Abstract :

Introduction : Non-communicable Disease, are on rise in our country and mean age of incidence is comparative-10 to 20 years lower in India as against western countries. Same holds true for Hypertension. Despite decades of public health education, hypertension awareness remains problematic, with only about two-thirds of adults and the elderly aware of their hypertension status and known differences between men and women. **Aims & objectives :** To assess prevalence of Hypertension and associated factors. **Method :** A community based cross-sectional study was conducted among 450 women of reproductive age group women of Jamnagar district. **Results :** There was even distribution in almost all Age groups of reproductive age group women except for 15-19 years and 40-44 years. Mean systolic Blood pressure was 124.84±13.616 mm of Hg with range of 98- 162 mm of Hg. On diastolic blood pressure measurements, mean value was 77.14±9.574 mm of hg with range of 52- 98 mm of Hg. **Conclusion :** The prevalence of HT in present study was 20.44%. 55.33% fallen on in pre hypertensive stage. There was significant association between various risk factors & occurrence of HT.

Keywords : Hypertension, Reproductive age group, JNC-7

Introduction :

Hypertension a silent killer is a major risk factor for cardiovascular disease worldwide and is one of the most important reasons to visit to physician. ^[1] Good control of blood pressure will result in prolonged survival. ^[2] India and many other developing countries were facing a problem of epidemiological transition from communicable diseases to non communicable diseases. ^[3] Successful implementation of various controlling; preventing and eradication programs gradually decreased the burden of communicable diseases. At the same time globalization brought the life style and behavioural modifications and in turn increased the prevalence of life style disorders such as Hypertension and diabetes mellitus etc. According to ICMR survey report 2007-08, the prevalence of hypertension was varying from 17-21 % in all the states with marginal rural-urban differences. ^[4] But according to rule of halves, Only one half of the patients with high blood

pressure in a population have been diagnosed, only half of those detected have been treated, and only half of those treated have been adequately treated to a normal blood pressure. ^[5] It clearly represented the iceberg phenomena of disease. Despite decades of public health education, hypertension awareness remains problematic, with only about two-thirds of adults and the elderly aware of their hypertension status ^[6] and known differences between men and women. ^[7] While hypertension prevalence is highest in older populations, almost 20 percent of young adults are hypertensive. ^[8] Among young adults (ages 19-24), uninsured persons are more likely to have no contact with a physician or no usual source of care, to delay or miss a medical appointment, and to not fill a prescription because of cost. ^[9] Women are more liable to get undiagnosed because of ignorance, non frequent visits to health care centre & major occupation being home maker. Keeping in view the above stated problems, there is a need of conducting study which can assess of reproductive women.

Objectives :

- Primary Objective: To estimate the prevalence of Hypertension amongst women in the study population.
- Secondary Objective: To study the effect of various determinants on Hypertension amongst the study population.

Method :

Study area and population: The present assessment employed quantitative research methodology in rural areas of Jamnagar (Jamnagar & Dwarka) district of Gujarat.

Type of study : A cross sectional study.

Period of study : 1 year (July 2013- June 2014)

Sample size : A community survey carried out by ICMR during 2007-2008 reported prevalence of HT varying from 17-21% in all the states with marginal rural-urban differences.^[10] As per WHO practical manual on sample size determination in health studies by Lwanga and Lemeshow^[11] $N = Z_{\alpha}PQ/l^2$ Where, $Z_{\alpha}=1.96$ at 5% significance level, N= required sample size, P=proportion or prevalence of interest, Q=100-p, l=allowable error. So when absolute error taken as 5%, P is taken as 17%, so as q=83%. Then, sample size would be, $N = (1.96)^2 * 17*83/5^2 = 216.82$. Sampling technique being cluster sampling method, design effect of 2 was taken in considerations. Thus total sample size would come to $216.82*2 = 433.63$ participants. It was rounded to 450. Thus final sample size studied was 450 reproductive age group women. Study population: The study group comprised of 450 women of reproductive age group of rural areas of study district.

Inclusion criteria : Ever Married, Reproductive age group women (15-49 years), willing to participate

Exclusion criteria : Pregnant Presently, Not willing to participate

Sampling technique : Study subjects were selected by Cluster sampling. Out of the total 7 blocks in the district, 3 blocks were selected randomly. Five

Primary Health Centres were selected from each of the blocks by simple random sampling. From each PHC three sub centres were selected by simple random sampling method. So total 45 sub centres were selected from 3 blocks. Sub centre was taken as natural cluster. Thus total 45 clusters were selected. From the one geographically identified point, one direction was chosen randomly and from each cluster 10 women were selected and interviewed till the desired number was achieved in each cluster. So total 450 women were recruited from rural area.

Method : Data were collected in a pre-designed and pre-tested Proforma by interviewing woman. The study was carried out by undertaking house to house visits of the area of each cluster. Proforma consisted sociodemographic profile, various risk factors of HT, clinical Examination, BP measurement, & BMI measurement. BP measurement: BP was measured according to the international guidelines. Measurements were taken at the end of the interview using a standard mercury sphygmomanometer with bladder size 12x35 cm. The subject remained at rest in the sitting posture for at least 5 min and then the BP was measured in both arms. For diastolic BP (DBP) Korotkoff phase V was used. In every visit, three BP measurements were taken with at least 1-min interval between them. In the analysis, only the average BP of the was used. If the subjects received antihypertensive medication, the measurements took place without any intervention on it.

Definition : Hypertension was defined as systolic BP (SBP) 140 mmHg or DBP 90 mmHg, or current treatment with antihypertensive drugs, according to the guidelines of the Joint National Committee (JNC) VI in the US⁶ and the WHO – International Society of Hypertension.^[12]

Educational Tool : Self designed educational tool was used to educate and counsel the women for various lacunas associated with Hypertension, found while data collection.

Ethical clearance : The study protocol was reviewed and approved by the institutional ethical committee of the institution. Prior written informed consent

Results:

Table 1 : Socio-demographic profile of study subjects :

Socio-demographic Characteristics	No. (Frequency)	Percentage (%)
Age group		
15-19 Years	9(2%)	2%
20-24 Years	99 (22%)	22%
25-29 Years	81 (18%)	18%
30-34 Years	72 (16%)	16%
35-39 Years	72 (16%)	16%
40-44 Years	36 (8%)	8%
45-49 Years	81 (18%)	18%
Religion		
Hindu	378 (84%)	84%
Muslim	72 (16%)	16%
Social Class		
I	63 (14%)	14%
II	81 (18%)	18%
III	138 (30.7%)	30.7%
IV	111(24.6%)	24.6%
V	57(12.7%)	12.7%
Educational Status of Women		
Illiterate	198 (44%)	44%
Primary	144(32%)	32%
Secondary & Higher Secondary	108(24%)	24%
Educational Status of Husband		
Illiterate	126(28.57%)	28.57%
Primary	140 (31.74%)	31.74%
Secondary & Higher secondary	130(29.47%)	29.47%
Graduate & above	45 (10.20%)	10.20%
Occupation of Women		
Housewife	333 (74%)	74%
Laborer	63 (14%)	14%
Farmer	54 (12%)	12%
Occupation of Husband		
Business	90(20.40%)	20.4%
Service	81(18.36%)	18.36%
Laborer	180(40.81%)	40.81%
Farmer	63(14.81%)	14.81%
Other	27(6.12%)	6.12%

Figure: 1 Distribution of study participants according to systolic & diastolic Blood pressure.

Systolic

Systolic Stem-and-Leaf Plot

Frequency	Stem &	Leaf
1.00	9 .	&
39.00	10 .	000000000000000000224
11.00	10 .	88888
62.00	11 .	0000000000000000000000000000000022&
10.00	11 .	6888
83.00	12 .	0000000000000000000000000000000000222244444
37.00	12 .	666688888888888888
108.00	13 .	00
7.00	13 .	668
74.00	14 .	00000000000000000000000022222222222222224444
.00	14 .	
10.00	15 .	0000&
8.00	Extremes	(>=158)

Stem width: 10
Each leaf: 2 case(s)

Diastolic

Diastolic Stem-and-Leaf Plot

Frequency	Stem &	Leaf
3.00	5 .	2
5.00	5 .	8&
70.00	6 .	00000000000000222444444444
35.00	6 .	668888888888
40.00	7 .	0000000002244
3.00	7 .	8
207.00	8 .	0002222222222222222222222244444444444
63.00	8 .	666688888888888888888888
22.00	9 .	0000024
2.00	9 .	&

Stem width: 10
Each leaf: 3 case(s)

& denotes fractional leaves.

was taken after fully explaining the purpose of the study.

Data entry and analysis: The data entry was done in Microsoft Office Excel 2007. Analysis was done using Epi info and Microsoft office Excel2007 and SPSS. Quantitative variables were subjected to linear correlation and regression where as qualitative variable were subjected to Binary logistic regression. P value<0.05 was considered as statistical significance.

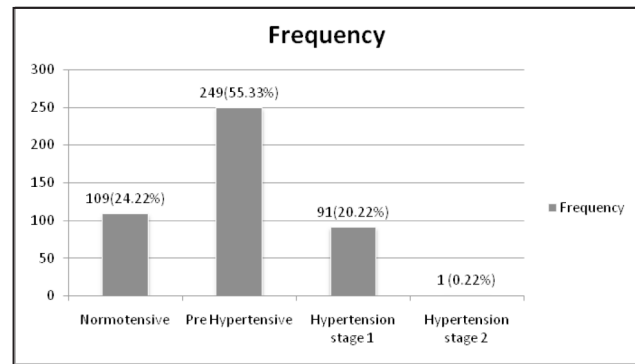
There was even distribution in almost all Age groups of reproductive age group women except for 15-19 years and 40-44 years. Majority belonged to middle and lower socio economical class. Higher literacy rate among husbands of participants (71.43%) than females (56%). Most Women were engaged in house hold activities (74%) where as their husbands were engaged in labour work (40.81%), some kind of business (20.40%), farming (14.81%).

Figure 1 Denotes stem and leaf diagram of study participants according to their systolic and Diastolic blood pressure measurements. Stem and Leaf plots used to analyze data and display data all at the same time. It is a way of showing each data value along with its relationship to other values. "Stem" by listing the largest place- value digits to the left of a vertical line. The remaining digits will be written to the right of the vertical line to create the 'leaves'".

In the stem and leaf diagram of SBP, 1st column is showing frequency in the particular stem. Second column is stem; with systolic blood pressure range of 98- 162 mm of Hg. Mean systolic Blood pressure was 124.84±13.616 mm of Hg. On diastolic blood pressure measurements, stem of diastolic blood pressure range from 52- 98 mm of Hg with mean value was 77.14±9.574 mm of Hg.

In the current study prevalence of Hypertension was 20.44% among reproductive age group women. (Figure 2) But when looked in to another classification of pre hypertensive stage, 55.33% belonged to this group, which suggests that chances

Figure 2 : Prevalence of Hypertension among Reproductive age group women

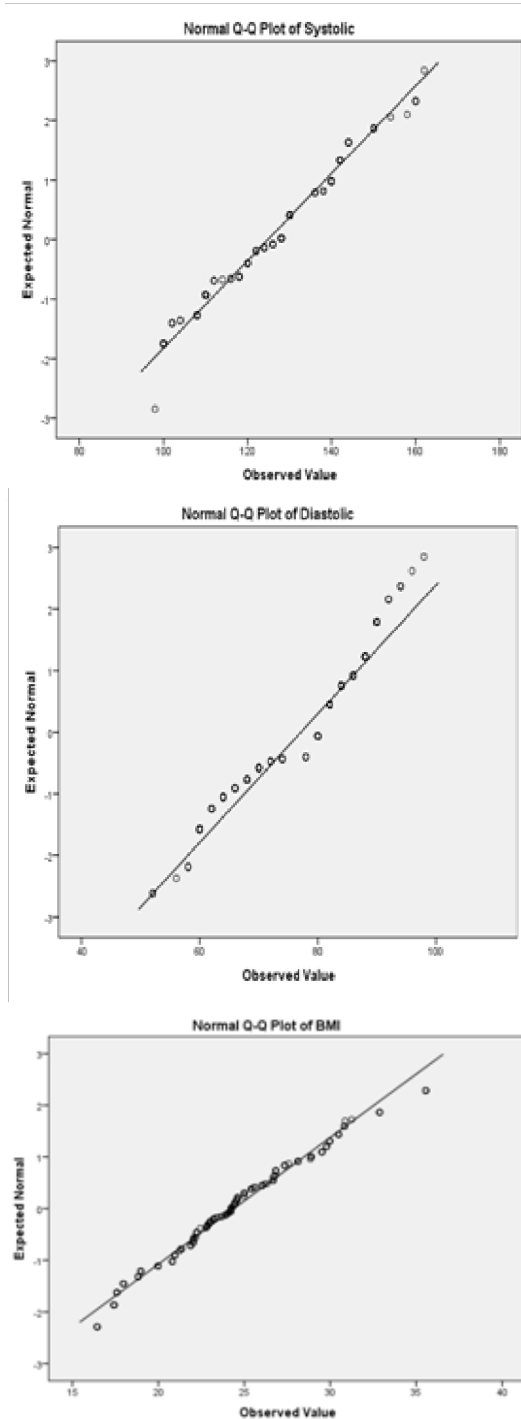


of transition from pre hypertensive stage to Hypertensive stage is high. All the subjects were instructed to have followed up visit and Blood pressure measurement at least once a year. All the participants were educated about the various modalities of prevention and control and treatment protocol of hypertension. Those who were diagnosed as Hypertension were advised to seek medical care immediately and were referred to nearest health care facility. 2.66% had family history of Hypertension. When evaluated about past major illness 8% had Diabetes Mellitus, 12% had HT, and 4% had IHD attack. They were evaluated for treatment protocols and counselled accordingly.

Quantitative variables were tested for normality using Kolmogorov-Smirnov and Shapiro- Wilk test. Age in complete years and BMI were tested and found normality distributed. Thus Pearson's correlation regression (Linear correlation-regression) was applied. There was statistically significant correlation between Ages in completed years, BMI and Hypertension.

There was significant correlation between increasing age and systolic Blood Pressure. One Unit rise in age in completed years, there was 0.921 Unit rise in Systolic Blood Pressure. The same was found for Diastolic blood pressure. One Unit rise in age in completed years, there was 0.585 Unit rise in Diastolic Blood Pressure. One Unit rise in BMI, There was 1.015 Unit rise in Systolic Blood Pressure. One Unit rise in BMI, There was 0.779 Unit rise in Diastolic Blood Pressure.

Figure 3: Scattered diagram of (A) Systolic Blood pressure (B) Diastolic Blood pressure & (C) BMI of Reproductive age group women



Qualitative variables were subjected to Binary logistic regression. Table 2 show logistic regression analysis of various risk factors and presence of

Hypertension. There was statistical significant association between Religion, Nuclear type of family, Socioeconomical class, Educational status of female participants, Educational status of Husband, Occupation and contraceptive usage. But there was no statistical association between Family history of Hypertension, addiction, lack of exercise and presence of Hypertension. No significant association might be due to less no. of the study subjects in respective groups.

While considering Muslim religion as referent, Hindus had 17.594 times higher chances of occurrence of Hypertension than Muslims. The Odds Ratio could be higher because of fewer samples in Muslim religion. Those participants who belonged to Nuclear family had 17.224 higher prevalence of HT compared to Three generation family. Higher chances of occurrence of Hypertension as socio class advances, which is shown in table 2, in which increasing Odds Ratio from class V to class I respectively. Educational status of participants as well as their husbands 'educational status plays important role in occurrence of Hypertension. Higher the educational status lower the chances of hypertension, it may be due to high level of knowledge and awareness about the risk factors of HT & its occurrence and complications. Those who were using Oral contraceptives had 2.09 times higher occurrence of Hypertension than no contraceptive users. Other contraceptive users had 1.44 times more prevalent HT but it was not statistically significant.

Overall prevalence of addiction was 19.1%. Of which 12.66% had addiction of Mava (Pan, Ghutakha, and Masala) Chewing (Tobacco chewing) while rest were using bajar. All those who had addiction were aware of its adverse effects. When asked for quitting the addiction, only 12% were willing to quit it with supplement drugs available in government drugs. Those who were not willing to quite, said that it was habituated so long so it was difficult to quite and other responses were as follows; chewing tobacco less harmful.

Table 2: Association between various risk factors & Hypertension (Binomial Logistic Regression)

Variable	Statistics		
	Hypertension	Adjusted OR	P value
Religion			
Hindu	91(98.91%)	17.594	<0.005
Muslim	1(1.08%)	1	
Type of Family			
Nuclear	38 (41.3%)	17.224	<0.005
Joint	18(19.6%)	0.52	0.33
Three generation	36(31%)	1	
Socio economical class			
I	9(9.3%)	34.54	<0.005
II	11(12%)	24.33	<0.005
III	36(39.1%)	18.64	<0.005
IV	18(19.6%)	17.8	<0.005
V	18(19.6%)	1	
Educational status of Female			
Illiterate	47(51.1%)	34.404	<0.005
Primary	27(29.3%)	37.303	<0.005
Secondary & above	18(19.6%)	1	
Educational status of Husband			
Illiterate	29(31.5%)	2.709	<0.05
Primary	36(39.1%)	3.690	<0.05
Secondary above	27(29.4%)	1	
Occupation			
Housewife	65(70.7%)	2.855	0.002
Farmer	9(9.8%)	2.550	0.006
Labourer	18(19.6%)	1	
Family History			
Yes	1	1.318	0.09
No	91	1	
Contraceptives			
OCPs	52	2.094	0.05
Others	30	1.44	0.33
No	10	1	

Discussion :

According to, JAPI supplement overall prevalence of HT among Urban people was 25% and among Rural people was 15%.^[13] In present study conducted among rural women found higher prevalence of the hypertension than other studies.

Non-communicable Disease, are on rise in our country and mean age of incidence is comparative- 10 to 20 years lower in India as against western countries. Same holds true for According to, Agrawal VK (2006), prevalence of HT among rural female was 17%.^[14]

A community survey carried out by ICMR during 2007-2008 reported prevalence of HT varying from 17-21% in all the states with marginal rural-urban differences. Overall pattern of prevalence was found increasing with age groups in all states.

Tobacco use among women is prevalent in all regions of India and among all sections of society. Overall, 2.4% of women smoke and 12% chew tobacco. In a report from a large teaching maternity hospital in Mumbai (2003) 33.4% of women in reproductive age group were smokeless tobacco users.^[15]

Conclusion :

The prevalence of HT in present study was 20.44%. 55.33% fallen on in pre hypertensive stage. There was significant association between various risk factors and occurrence of HT.

Recommendations :

As HT resembled the iceberg phenomenon, there is need of screening of everyone as a part of opportunistic screening. Whenever patient attends health facility there must be screening for HT. People must be made aware about the BP measurements at least once a year after 30 years age. Which could help in early diagnosis & timely initiation of treatment & thus prevention of the complications occurring from HT as well as mortality?

Limitation of study :

Relatively small sample size could be the limitation, for so such type multicentre study should be conducted with larger sample size. Only variable of interest were included in study.

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