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ASSESSMENT OF AWARENESS REGARDING HYPERTENSION & APPLICATION OF RULE OF HALVES AMONG ADULT TRIBAL POPULATION OF BASTAR DISTRICT OF CHHATTISGARH: A CENTRAL INDIA STUDY

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Abstract: This study has been undertaken to investigate the awareness regarding hypertension & application of rule of halve in Bastar district of Chhattisgarh by using cross sectional observational study with the following objectives (1)to assess the awareness about hypertension & its complication among adult tribal population (2) to find the health seeking behavior of hypertension of study subjects (3) to analyze the current status of Rule of Halve of hypertension among study subjects among 25-60 years tribal, residing since 1year, data collected from November2018 to February2018 among 330 study subjects by systematic random sampling through interview method. The variables include status of awareness, knowledge and diagnosis status were used. It was found majority was hypertensive, of them 6% were known hypertensive, of them 5% was on regular treatment & 15% were control. Only 8.8% were aware about hypertension, of them 58.7% were aware by government doctors. Among aware 55.2% were having knowledge of hypertension & related complication. Study indicates, rule of halves in the place with weaker health system & equally weaker health awareness & knowledge among population.

Index Terms **- Awareness, Knowledge, Health seeking behavior, Rule of halves.**

I. INTRODUCTION

According to WHO

"Health is a state of complete physical, mental and social well- being and not merely an absence of disease or infirmity and ability to lead a socially and economically productive life". [1]

It is not a static condition, constant changes and adaptation to stress result in homeostasis. Health seeking behavior is an important factor in health management but this is often ignored while providing health facilities to people. Thus health seeking behavior is conceptualized as a "sequence of remedial actions" taken to correct "perceived ill-health"

Tribal are the most marginalized social category in the country and they carry traditional worldview with large number of beliefs and practices which affect their health, sometimes favorable & unfavorable. There exists a severe gap of scientific knowledge about diseases cause and prevention. Hypertension is now a significant public health problem in tribal population of Chhattisgarh.

Tribal culture carried heritage of traditional healing methods via medicinal herbs which address both mind and body. This belief and healing system has strong influence on health practices and health seeking behavior and choices of tribal people. Many studies have been done on hypertension in urban & rural areas but very few studies have been done among tribal population especially in Southern part of Chhattisgarh.

Aims & Objectives

1) To assess the awareness about hypertension & its complication among adult tribal study subjects residing in Lohandiguda block of Bastar district of Chhattisgarh.

2) To find out health seeking behavior of known hypertensive subjects.

3) To analyse the current status of Rule of Halve of hypertension among study subjects.

Materials & Methods

1. Study design- Community Based Cross sectional Observational study.

2. Study setting- Department of Community Medicine, Pt. J.N.M. Medical College, Raipur (Chhattisgarh).

3. Study area - Lohandiguda block of Bastar district (Chhattisgarh)

4. Study duration- August 2017 to October 2019. Collection of data has been done from November 2018 to February 2019.

5. Study population- The study population includes adult tribal populations aged 25-60 years residing in Lohandiguda block of Bastar district of Chhattisgarh.

6. Study participant criteria-

a) Inclusion criteria-

(1) Adults tribal population willing for participating in the study after giving informed consent.

(2) Adult tribal population was residing in the present locality for ≥1 year.

b) Exclusion criteria-

(1) Non tribal populations.

(2) Tribal adults aged <25 years & >60 years.

(3) Pregnant women & Lactating women.

(4) Co- morbidity, severe illness, complication related to hypertension, deaf, mute, blind person and mentally unsound patients.

(5) Visitors who were residing for <1 year.

7. Sample Size Estimation- Sample size was calculated by using statistical formula for sample size determination. The following formula used:

$$n = \frac{Z^2_{(1-\alpha/2)} * (p * q)}{d^2}$$

n = Sample size.

Z (1- α/2) = Standard normal deviate for α = 95% value is 1.96.

p = Prevalence of hypertension

d = Allowable error, which is consider 5% [2]

Sample size determined by taking 26% prevalence of hypertension as per Central India ICMR study. [3]

n = 295

By using PPS Sampling method, calculated sample size for approximate population was 330.

So the present study was done by using sample size 330.

8. Sampling method- Systematic Random Sampling

Community Health Centre [CHC] Lohandiguda having total population of approximately 80,397 and consists of total 5 Primary Health Centres [PHC]. Out of them, 3 PHC has to be selected by Systematic Random Sampling. From each PHC, 2 Sub Health Center has been chosen by Simple Random sampling (without replacement) by Lottery method and all the villages come under these SHC have been covered. For household selection among village population, Probability Proportionate to Size (PPS) sampling method was applied. For selecting the household in a particular village, WHO Epi-Random Walk sampling method has been applied. So the primary sampling unit was community health centres, secondary sampling unit was primary health center & sampling unit was households.

9. Study tool-

A pretested, pre designed, modified structured questionnaire by WHO Developing Integrated Response of Health Care System to Rapid Population Ageing Patient questionnaire for Hypertensive patients. It consists of questions regarding diagnosis of hypertension, management, complications & hospitalization, medications & adherence and knowledge & self care.

10. Methodology-

Study topic was selected and approved from the Department of Community Medicine, Pt. J.N.M. Medical College Raipur Chhattisgarh. Approval was taken from the Institutional Ethics Committee of Pt. J.N.M. Medical College Raipur Chhattisgarh before starting the study. One day sensitization training has been given to the health care workers of Lohandiguda block.

Before starting interview, the purpose of the study and its procedures was explained to them. Informed verbal consent with the assurance of confidentiality has been taken from the study subjects. Data was collected by the principal investigator along with trained health care workers through pre designed pre-tested semi-structured performa from November 2018 to February 2019 and compiled & entered in Microsoft excel sheet 2010 on the same day. Entered data were coded and has been checked for its completeness & correctness before analysis & analysed.

Operational definition-

Joint National Committee-8 Definition of hypertension- [4]

- Hypertension is defined as systolic blood pressure ≥ 140 mm of Hg and/or a diastolic blood pressure ≥ 90 mm of Hg and/or current use of blood pressure lowering medications for hypertension– Joint National Committee 8 (JNC VIII) criteria.
- **Hypertension awareness status-**[5] was estimated as
  (a) Proportion of all participants without hypertension who were aware about the hypertension.
  (b) Proportion of all participants with hypertension (BP 140 and/or 90 mm Hg) who were aware of their hypertensive status having been diagnosed before by a physician or any other healthcare provider.
- **Treatment status-**[5] was defined as (a) proportion of overall hypertensive participants on drug treatment or (b) aware/known hypertensive participants on treatment.
- **Hypertension control-**[5] was defined as BP < 140 mm Hg systolic and <90 mm Hg diastolic and determined as percentage of (a) all participants with hypertension (b) participants with known hypertension and (c) hypertensive participants on drug treatment.
- **Health or care seeking behaviour-**[6] Health or care seeking behaviour has been defined as any action undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy.

Result

The present community based cross sectional observational study was carried out among 25 and 60 years adult tribal population residing for ≥1 year in Lohandiguda block of Bastar district of Chhattisgarh with response rate of 97.05%. The demographic & socio economic characteristics of study subjects was as follows-

Majority 34% study subjects belonged to age group 31-40 years, the mean age of study subjects was 41.67 ±10.23. Maximum 53.9% study subjects were female as compared to male i.e. 46.1%. Maximum 69.4% study subjects were married, of them majority 74.5% were having non consanguineous marriage and 25.5% consanguineous marriage.

Majority 53 .3% study subjects were illiterate, 16.4% completed their primary school education, 9.4% completed their middle school education, 7.6% completed intermediate diploma, 4.2% were literate & rest 2.7% were graduate. Majority71.0% subjects belonged to occupation category clerical/ shop owner/ farmer/ self employed/ small businessman, 9.4% were unskilled workers, 8.8% were skilled workers, 6.3% were unemployed, 3.0% belonged to semi professional category & rest 1.5% were semi skilled workers. Majority 63.8%

belonged to middle socio economic status, 24.8% belonged to lower socio economic status & rest 11.2% belonged to upper socio economic status.

It can be observed from the table no.1, that majority 91.2% study subjects were unaware about hypertension as compared to 8.8% who were aware. Among aware majority 58.7% study subjects were aware by government doctors & nurse, 13.8% by hypertensive subjects, each 10.3% by private doctors & neighbors and rest 6.9% by their friends. Among aware, 44.8% did not have knowledge and 55.2% study subjects were having knowledge about hypertension & related complication, of them majority 56.2% subjects get knowledge by government doctors & nurse, 18.8% by neighbor and each 12.5% by hypertensive subjects & private doctors. Among aware maximum 37.5% stated that they had knowledge about heart attack as a complication of hypertension, 31.3% stated death, 18.7% stated paralysis and 12.5% stated faintness, tingling & headache.

In fig. 1 it is showing that, among total hypertensive, 136 were screened during this study & 20 were already diagnosed cases.

In table no. 2 it can be depicts that, among known hypertensive subjects majority 55.0% diagnosed during opportunistic screening, 30.0% in routine medical checkup and 15.0% in previous screening program. Majority 55.0% of known hypertensive subjects diagnosed 1 year before, 35% between 1-5 years and 10.0% diagnosed between 5-10 years.

In fig. 2 it is showing that majority 50.0% of known hypertensive subjects diagnosed in private clinics, 25.0% in community health centers, each 10.0% diagnosed in sub health centers/ primary health centers and previous health camps and rest 5.0% in tertiary care hospitals.

In table no. 3 it is showing that 45.0% of known hypertensive did not go for further check up, 50.0% when they did not feel well and rest 10.0% did go for check up as advised by doctor. Majority 85.0% did not admitted in the hospital due to hypertension or related complications and rest 15.0% study subjects had admitted in the hospital due to hypertension or related complications.

In the table 4 & fig. 3 & 4 it is showing that among known hypertensive majority 90.0% were prescribed allopathic anti hypertensive drugs & rest 10.0% combination of allopathic & herbal medications. Majority 95.0% were taking medications irregularly and rest 5.0% was regular on medications. Among known hypertensive subjects non compliant with their medications, majority 26.3% stated that they were taking medications when they needed, 21.0% stated cannot afford the cost, each 15.8% stated due to unavailability of drugs in government set up and forget to take and rest 10.5% preferred alternate medicine.

Table 5 is showing among total hypertensive 87.2% were unknown & undiagnosed, 10.9% were diagnosed but uncontrolled and only 1.9% were diagnosed but controlled their blood pressure.

Fig.5 is showing rule of halve in which out of total sample size (330), 156 were total hypertensive, of them only 20 were diagnosed, of them only 1 was regular & 19 were irregular on treatment. Of total diagnosed, only 3 were controlled their blood pressure.

Fig. 6 is showing among diagnosed hypertensive 15% were pre hypertensive, 40% were in stage 1 hypertension and 45% in stage 2 hypertension during the time of visit.

Table 1- Distribution of the study subjects according to their awareness & knowledge status about hypertension

Variables	Frequency	Percent
Awareness about hypertension (330)		
Yes	29	8.8
No	301	91.2
Total	**330**	**100.0**
Source of Awareness (n=29)		
Government Doctors & Nurse	17	58.7
Private Doctors	3	10.3
Neighbour	3	10.3
Friends	2	6.9
Hypertensive Subjects	4	13.8
Total	**29**	**100.0**
Knowledge about hypertension & related complications (n=29)		
Yes	16	55.2
No	13	44.8
Total	**29**	**100.0**
Source of knowledge (n=16)		
Government Doctors & Nurse	9	56.2
Private Doctors	2	12.5
Neighbour	3	18.8
Hypertensive Subjects	2	12.5
Total	**16**	**100.0**
Knowledge about type of complications of hypertension (n=16)		
Faintness, tingling & headache	2	12.5
Heart attack	6	37.5
Paralysis	3	18.7
Death	5	31.3
Total	**16**	**100.0**

Figure 1 Distribution of hypertensives according to their mode of diagnosis (n=156)

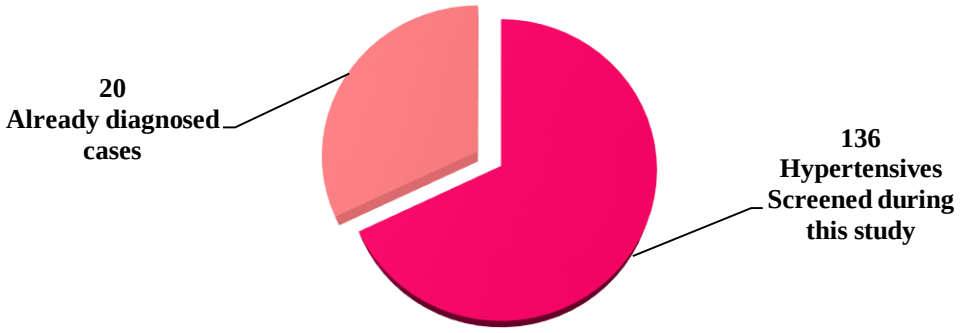


Table 2 -Distribution of hypertensive subjects according to their status of diagnosis

Variables	Frequency	Percent
Mode of diagnosis of known hypertensive (n=20)		
In routine medical check up	6	30.0
Previous screening programme/camp	3	15.0
Opportunistic screening	11	55.0
Total	**20**	**100.0**
Duration of diagnosis (n=20)		
<1 year	11	55.0
1 – 5 years	7	35.0
5- 10 years	2	10.0
>10 years	0	0.0
Total	**20**	**100.0**

Figure 2-showing places of diagnosis of known hypertensive subjects (n=20)

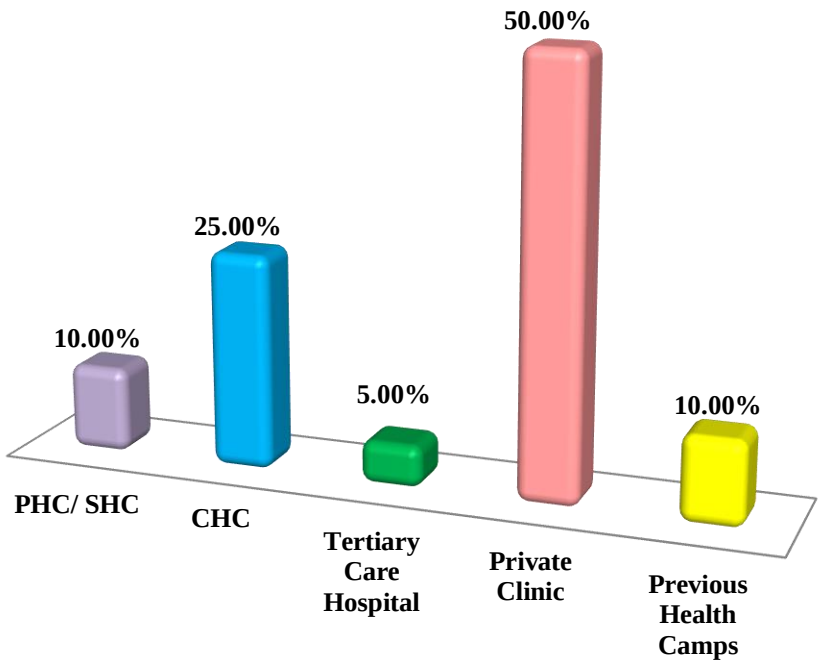


Table 3- Distribution of known hypertensive subjects according to their Health practices (n=20)

Variables	Frequency	Percent
Required follow up practices after diagnosis (n=20)		
As advise by doctor	1	5.0
When they not feel well	10	50.0
Did not go for further check up	9	45.0
Total	**20**	**100.0**
Admission in hospital due to hypertension/ related complications (n=20)		
Yes	3	15.0
No	17	85.0
Total	**20**	**100.0**

Table 4-Distribution of known hypertensive subjects according to medications & Adherence (n=20)

Variables	Frequency	Percent
Medication prescribe (n=20)		
Yes	20	100.0
No	0	0.0
Total	**20**	**100.0**
Type of Medication prescribe (n=20)		
Allopathic	18	90.0
Ayurvedic	0	0.0
Homeopathic	0	0.0
Allopathic & Herbal medication	2	10.0
Total	**20**	**100.0**

Figure-3 showing medication adherence of known hypertensive (n=20)

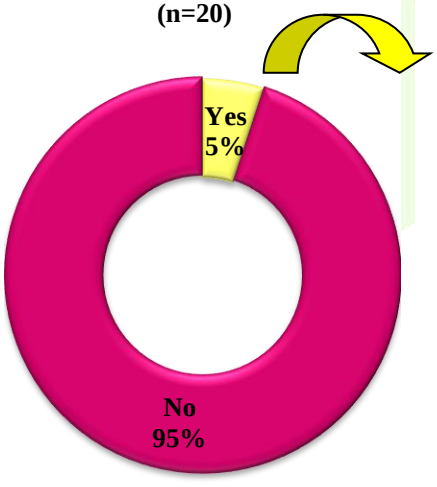


Figure-4 showing causes of medication irregularity among known hypertensive (n=19)

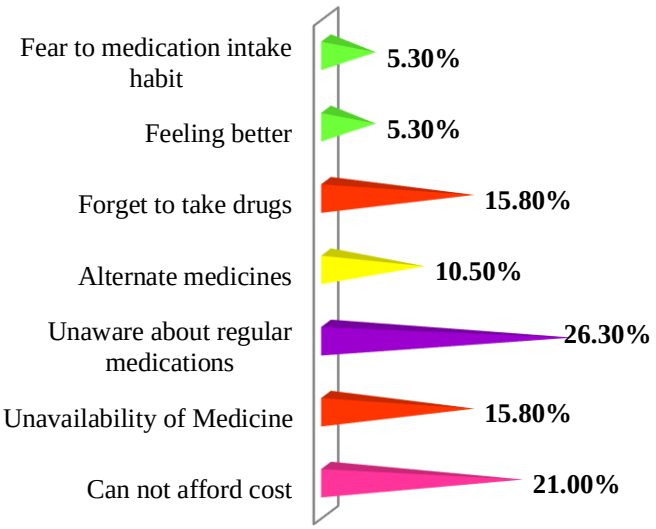


Table 5- Distribution of study subjects according to their Blood pressure stage (n=156)

Blood pressure status	Frequency	Percent
Unknown & undiagnosed	136	87.2
Diagnosed & Uncontrolled	17	10.9
Diagnosed & Controlled	3	1.9
Total	**156**	**100.0**

Figure 5 showing blood pressure status among adult tribal study population (n=330)

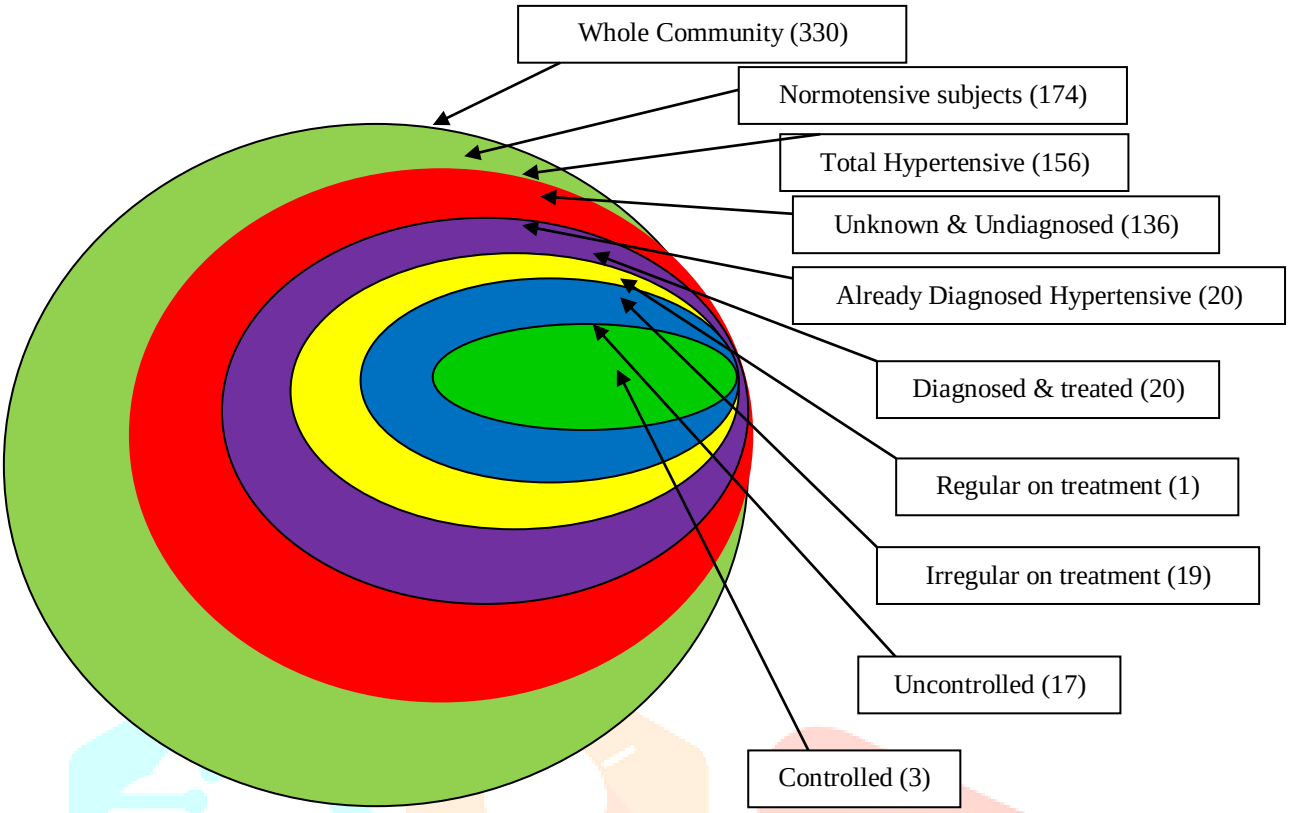
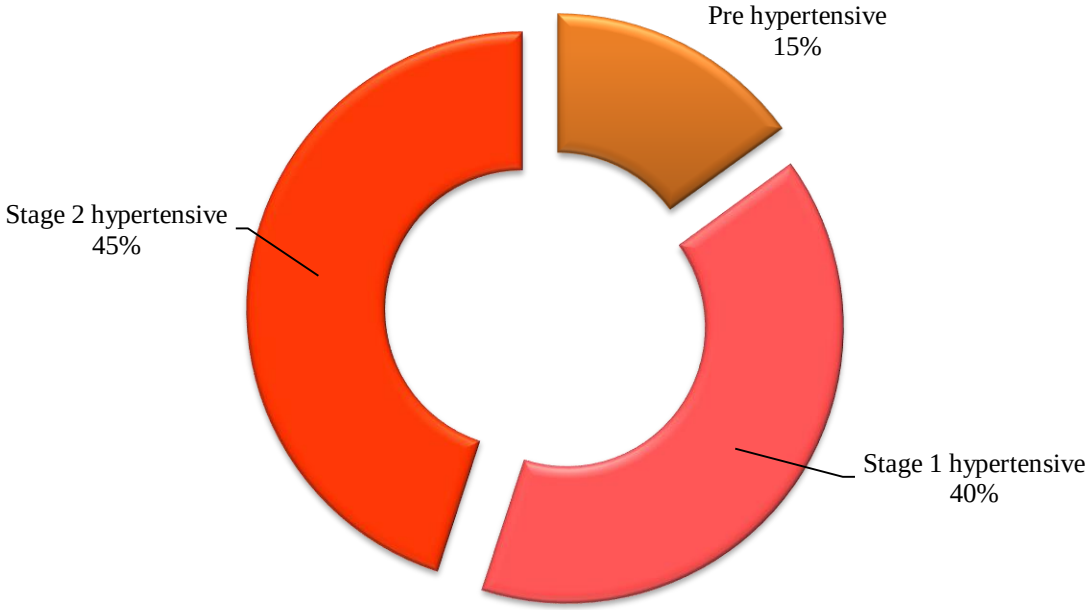


Figure 6 showing current status of hypertensive subjects during the time of study (n=20)



Discussion

In the present study majority 91.2% study subjects were unaware about hypertension as compared to 8.8% who were aware. Majority 58.7% study subjects were aware by government doctors & nurse, 13.8% by hypertensive subjects, each 10.3% by private doctors & neighbors and rest 6.9% by their friends. Among total hypertensive 87.2% were unknown & undiagnosed, 10.9% were diagnosed & uncontrolled and only 1.9% was diagnosed & controlled.

A study by ***Rajamanickam S. et al***[7] in shimoga Karnataka shows that, in rural area 59.6% were aware about hypertension, of those 72.0% were under treatment, out of them only 44.4% had controlled blood pressure while in urban area 34.7% were aware, of those 58.3% were under treatment and among them only 35.5% had controlled blood pressure. The
Finding was more from present study findings.

Another study by ***Kushal K. et al*** [8]in urban adult population of Himachal Pradesh shows 35.0% were known hypertensive, among them 67.0% were aware, of those 88.0% were under treatment & among those, 35.0% got their blood pressure control. The finding was more from present study findings.

Similar study by ***Nadir E.B. et al*** [9] conducted in parsi community in Bombay. The overall prevalence of hypertension in the community was 36.4%, of whom 48.5% were unaware of their hypertensive status. Of those aware of having hypertension, 36.4% were non-compliant with their anti-hypertensive drugs and only 13.6% had optimally controlled hypertensive. The present study findings were very low from this study finding.

Conclusion & Recommendations

The present study concludes that, among total hypertensive screened, very few were already diagnosed cases. Majority of hypertensive subjects were unknown & undiagnosed. Among known hypertensive, majority were diagnosed but uncontrolled and very fewer subjects were diagnosed & controlled. The present study is indicating about iceberg phenomenon of disease. Standard measurement for rule of halves among tribal population shows that studied subjects had poor health seeking behavior due to low level of awareness and knowledge and equally weaker health system.

As there is gap in health services & utilization there is need of effective & efficient efforts for immediate awareness generation by sensitization sessions in regional language (halbi/gondi) by involving local leaders, preachers, health education by use of focal media like-local “Nachas” and “Natak”/ Role play & “Cultural gatherings” etc. are good platform, prevention by hands on trainings of health practitioners & health workers and early diagnosis & treatment of hypertensive cases by camps/ outreached camps and strong referral system to mobilize them for more utilization of health services in the present locality.

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