

Hypertension control status and quality of care for hypertension among patients availing treatment from private sector: A cross-sectional study in urban field practice area of JIPMER, Puducherry

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ABSTRACT

Introduction: In low-income countries like India, there is paucity of evidence regarding hypertension control status and the quality of care pertaining to hypertension care among the patients availing treatment from private sector. We wanted to determine the hypertension control status and quality of care pertaining to hypertension received by patients seeking care from private sector. **Materials and Methods:** This was an community based analytical cross-sectional study carried out in an selected urban area of Puducherry. This study was conducted among 265 adults with hypertension, availing treatment from private sector. Blood pressure was measured according to standard protocol. Data were collected using pre-tested semi-structured questionnaire by doing home visits. **Results:** The proportion of patients who were optimally controlled for hypertension were 43.9%. More than half (64%) of the participants had not checked their blood pressure in the last 1 year. There were 21.3%, 20%, 18.2%, and 9.5% of the participants who had optimally undergone fundus examination, blood sugar, serum cholesterol and serum creatinine examinations, respectively, as per recommended frequency. More than half (64%) of the study participants had not availed follow-up blood pressure monitoring in the last 1 year. The adherence to medication among the study participants was found to be 76.5%. **Conclusion:** Around 4 out of 10 patients had their blood pressure status controlled. More than half of the patients did not have any sort of follow-up investigations for the last 1 year. There was a scope for improvement in frequency of follow-up investigations as per recommendations.

Keywords: Control status, hypertension, low-income country, private sector, quality of care

Introduction

Non-communicable diseases (NCDs) are rising disproportionately in both developing and developed countries. Globally, they present a bonafide challenge to the social and economic development to any country especially for developing countries like India.^[1]

It is estimated that hypertension affects 20% of adult population in the world. In 2015, the World Health Organisation (WHO) estimated

that 972 million people had high blood pressure (BP) in the world with a prevalence of 26%. It is expected to rise to 1.5 billion by 2025 with an increased prevalence of 29%.^[2] In 2013, WHO reported that high BP claims 1.5 million lives each year in South East region.^[3] India had an overall prevalence of 29.8% in 2014.^[4] Globally, raised BP is estimated to cause 7.5 million deaths which constituted 12.8% of all death in 2015. This accounts for 7 million disability-adjusted life years (DALYs) or 3.7% of total DALYs.^[2]

In high-income countries, 20–30% of patients with hypertension, in general population, are not optimally controlled, whereas

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Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_248_18

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How to cite this article: Babu V, Sahu SK, Kanungo S. Hypertension control status and quality of care for hypertension among patients availing treatment from private sector: A cross-sectional study in urban field practice area of JIPMER, Puducherry. J Family Med Prim Care 2019;8:72-6.

in low-income countries, 70–90% of the patients in general population with hypertension are not optimally controlled.^[5] Despite the availability of multiple effective antihypertensive medications, control of hypertension remains poor. In both high- and low-income countries, <27% and 10% of hypertensive patients, respectively, have achieved their target BP status.^[6,7]

Poor population-level BP control is primarily attributed to therapeutic inertia and low patient engagement. New models of care delivery utilising patient-generated health data, computerised algorithms generating tailored interventions, comprehensive control of social health determinants, frequent communication and reporting and non-physician providers as an integrated practice unit will be emerged out.^[8]

The number of hypertensive adults availing treatment from private providers is three times more than the number of those availing treatment from government providers.^[5] However, there are not many studies which have dealt with hypertension control status among patients seeking care from private practitioners in India. International agencies like the National Health Service (NHS) has strictly provided information on when to take treatment based on the BP control status, i.e., if the BP is consistently >140/90 mmHg but risk of other problems are low, then the patients will be advised for lifestyle changes and if it is >140/90 mmHg with other risks, then it is advisable for taking medications along with lifestyle changes, and if it is consistently >160/100 mmHg, it is recommended to be monitored thoroughly.^[9]

The primary objective of the present study was to determine the proportion of people with hypertension who are optimally controlled among those availing treatment from private sector. The secondary objectives were to assess the quality of hypertension care received by them from private health sector and also assess patient's adherence to hypertension therapy.

Materials and Methods

Study design and study period

This was a community-based cross-sectional analytical study conducted among hypertension patients, aged 30 years and above, who were seeking hypertension care from private sector, and were residing in an Urban Primary Health Centre area of Puducherry. Data collection were done over 2 months period, i.e., during August and September 2017.

Study setting

The study was carried out in the urban field practice area of the Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry, South India. The health centre caters to a population of around 8000 providing mainly out-patient services. It conducts NCD clinic on a weekly basis for patients suffering from hypertension, diabetes, epilepsy, asthma, and rheumatic heart disease.

Inclusion criteria

The patients included in the present study were known hypertension patients residing in the urban field practice area of the JIPMER; but seeking hypertension care from private sector. Patients included in the present study were identified from the enumeration register maintained in the health centre.

Sample size and sampling

The sample size was calculated using the Open Epi version 3 assuming that the proportion of hypertension patients who had achieved control status was 45.9%, as recorded from a study conducted in Chennai by Mohan *et al.*^[10] The sample size was estimated to be 207 assuming 95% confidence interval (CI) and 5% absolute precision. Expecting 10% non-response rate, the final sample size was estimated to be 227. Out of the 265 hypertensive patients who were seeking care from private sector based on the enumeration list maintained in the primary health centre, 17 had migrated from the area, 6 individuals could not be contacted as their houses were locked and 12 had died. So the study was conducted among 230 patients with hypertension.

Study procedure

After obtaining the approval from the JIPMER scientific and ethics committee, the study was conducted. All the 230 patients, aged 30 years and above, seeking hypertension care from private health care providers but were residing in urban field practice area of the JIPMER were included in the study. Selection of the study subjects were done from the enumeration list maintained in the Urban Primary Health Centre. All these subjects were visited preferably at their residence or at a place convenient to them. The pre-tested structured questionnaire was used to interview the participants after obtaining informed consent. Pre-tested questionnaire in local language was used for data collection. The locked houses during the first visit were visited once more before they were excluded from the study.

BP was measured twice as per the JNC 8 standard guidelines using an OMRON HEM-7120-IN validated automated BP measuring device and average BP was calculated. The control status was determined based on JNC 8 guidelines and medication adherence was assessed using a validated tool, the Morisky Medication Adherence Scale (MMAS-4). JNC 7 criteria were used for defining recommended frequency of BP measurement. The National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS) guidelines were used to define optimal frequency of various other recommended follow-up investigations.

The pre-tested structured questionnaire captured the socio-demographic and clinical profile of the study participants, their hypertension control status and quality of care for hypertension received by them from their private practitioners.

Hypertension was defined as BP >140/90 mmHg in persons aged 30–59 years and BP >150/90 mmHg in person aged 60 years

and above as specified in the JNC 8 criteria.^[1] Adherence to hypertension medication was assessed using the MMAS-4 scale. Patients who scored ≥ 2 on MMAS-4 were considered to have good adherence.^[11]

Analysis

Data were entered using the Epidata Software version 3.1 and analysis was done using the SPSS 20 version (IBM Corp., Armonk, NY, USA). Continuous data were presented as means and standard deviation (SD), while categorical data were presented as percentages.

Ethical Approval

Approval of Institute Ethics Committee of JIPMER, Puducherry was obtained before undertaking data collection.

Results

Among 230 patients enrolled in the study, 116 (50.4%) were males. Most of the participants were aged 60 years and above (54.2%). More than one-third of the participants had academic achievement up to middle school (36%). Majority were unemployed (35.7%) and Hindus (84.8%) by religion. The socio-economic status of the study population was measured using the modified Kuppuswamy scale. Majority of the study participants were in the upper middle class (33.9%) and a very few were in the upper class (2.6%). The mean systolic and diastolic BP were 140 mmHg (SD ± 20) and 87 mmHg (SD ± 26), respectively.

The clinical profiles of the patients shows that about 55.7% of participants had a family history of hypertension. Majority of the study participants (53.9%) were having hypertension for >5 years. Almost 30% of the study participants had initially presented with fatigue, while 3.1% of the study participants had no symptoms. Approximately one-fourth of the study participants also suffered from diabetes (27%), 6.5% used tobacco during the last 1 month, and 8.3% had used alcohol during the last 1 year. Around 76% of the participants showed good adherence to their hypertension medication according to the MMAS-4 scale. Around 17% of the study participants had consulted their respective practitioner regularly on a monthly basis and around 63% had not consulted their practitioner even once in the last 1 year.

The details of hypertension control status are depicted in Table 1. Overall, there were 43.9% (95% CI 37.44–50.59) of study participants who were optimally controlled for hypertension. Around 11.3% were not controlled for their isolated systolic BP, 26.1% were not controlled for isolated diastolic BP and 18.6% were not controlled for both systolic and diastolic BP.

The details on the advices received by patients are given in Table 2. Among the study population, majority were not aware of their goal BP (54.8%).

Table 3 depicts the quality of care regarding frequency of BP measurements. This study shows that around 64% of the

Table 1: Control status among patients with hypertension seeking care from private providers (n=230)

Variables	n	%	CI
Overall controlled blood pressure status	101	43.9	37.44-50.59
Overall uncontrolled blood pressure status	129	56.1	49.41-62.56
Uncontrolled for isolated systolic BP	26	11.3	7.65-16.29
Uncontrolled for isolated diastolic BP	60	26.1	20.64-32.35
Uncontrolled for both SBP and DBP	43	18.6	13.99-24.47

Table 2: Quality of care regarding receipt of advices among the study participants residing in an urban field practice area of JIPMER, Puducherry, 2017 (n=230)

Variables	n	%
Made aware regarding goal blood pressure (n=230)		
Not aware	126	54.8
Aware	104	45.2
Received advice regarding (n=230)		
Decreasing salt intake	186	80.9
Decreasing saturated oil intake	180	78.3
Regular physical activity	170	73.9
Ill effects of tobacco	111	48.3
Ill effects of alcohol	110	47.8

Table 3: Quality of care regarding frequency of blood pressure measurement among the study participants residing in an urban field practice area of JIPMER, Puducherry, 2017 (n=230)

	n	%
Overall frequency of blood pressure measurement		
Never	146	63.5
Sometimes	60	26.1
As per recommendation	24	10.4
Frequency of blood pressure measurement among controlled (n=101)		
Never	68	67.3
Less than two times	9	8.9
As recommended (two to four times)	24	23.7
More than four times	0	0
Frequency of blood pressure measurement among those not optimally controlled (n=129)		
Never	78	60.4
Less than two times	19	14.7
Two to four times	32	24.8
As recommended (monthly)	0	0

participants had not checked their BP in the last 1 year. The proportion of patients who had never undergone their BP examination in last year was around 67% among those who had achieved control status and was 60% among those who were not optimally controlled.

Table 4 shows that 45% of the study participants had not undergone blood glucose examination in the last 1 year. Among those who had diabetes, 9.6% had adhered to recommended monthly blood sugar examination. Table 4 also shows that

Table 4: Quality of care regarding frequency of blood glucose examination and serum investigation among the study participants residing in n urban field practice area of JIPMER, Puducherry, 2017 (n=230)

Blood glucose examination		
Overall blood glucose measurement	n	%
1.a Never	103	44.7
1.b As per recommendation	44	19.1
Patient without diabetes (n=168)		
1.1a Never	93	55.3
1.1b Less than two times	34	20.2
1.1c As recommended (two to four times)	38	22.6
1.1d More than four times	3	1.6
Patient with diabetes (n=62)		
1.2a Never	10	16.1
1.2b One or two times	3	4.8
1.2c Two to four times	43	69.3
1.2d As recommended (monthly)	6	9.6
Serum investigations		
Serum creatinine examination (n=230)	n	%
2.a As recommended (one to two times)	22	9.5
2.b More than two times	2	0.8
2.c Never	206	89.5
Serum cholesterol examination (n=230)	n	%
3.a As recommended (at least once)	42	18.2
3.b More than one time	18	7.8
3.c Never	170	74
Fundus examination (n=230)	n	%
4.a As recommended (at least once)	49	21.3
4.b More than one time	7	3.0
4.c Never	174	75.6

9.5% of the participants had examined their recommended frequency of serum creatinine estimation, 18.2% had examined their recommended frequency of serum cholesterol level and 21.3% had examined their fundus as per recommendation in the last year.

Figure 1 shows that among the study population, almost 80% were either somewhat happy or very happy with the services they had received from the private practitioners.

Discussion

The present study is one of the few studies among patients with hypertension specifically seeking care from the private sector. The findings of the present study throws light on the quality of care received by the patients with hypertension from private sector and their hypertension control status.

The present study found that almost 44% of the hypertension patients being treated by private practitioners for hypertension had achieved their BP control status. A study conducted by Mohan *et al.* in Chennai (CURES study) had reported hypertension control status of 55.1% in general population.^[10] A multicentre study conducted across India by Gupta *et al.* in

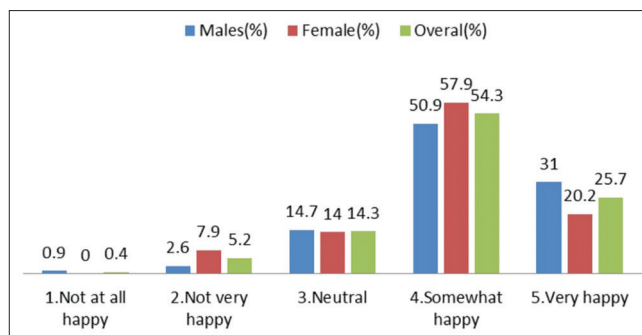


Figure 1: Levels of satisfaction for treatment received from private practitioners among the patients with hypertension residing in urban field practice area of JIPMER, Puducherry, 2017 (N = 230)

2013 found that the control status of hypertension among the patients was around 70%.^[12] This variation in the control status in various studies might be due to differences in topography, nutrition, treatment-seeking behaviour and cultural practices across various places in the country.

The first step in control of BP is to monitor the patient’s BP at regular intervals. In the present study, only 10.4% of the study participants had undergone their recommended frequency of BP measurement as recommended in the JNC 7 criteria. The criteria recommend that BP measurement needs to be done at an interval of 3–6 months among those who have achieved control status where it needs to be measured at monthly interval for those whose BP is not adequately controlled.^[8] Around 4% of the study participants had sought all their recommended follow-up examinations in the last 1 year. Almost two-third (64%) of the study participants had not visited their private practitioner even once in the last 1 year for their follow-up examinations. None of the participants who had not achieved control status had followed recommended frequency of BP measurements, whereas 24% among those with control status had followed the recommended frequency.

In our study, 45% of the study participants had never measured their blood glucose level in the last 1 year. Around 23% of the participants with diabetes and around 10% of the participants without diabetes had undergone recommended frequency of blood glucose examinations. As per recommendations by the NPCDCS, blood glucose examination needs to be done at an interval of 3–6 months among patients without diabetes and at a monthly interval for patients with diabetes.^[13]

NPCDCS guidelines recommended that serum creatinine examination needs to be done once or twice in a year, while serum cholesterol and fundus examination needs to be done at least once in a year. In our study, it was found that more than three-fourths of the participants had never undergone serum creatinine, serum cholesterol, and fundus examination in the last 1 year.^[13] The proportion of participants who underwent serum creatinine, serum cholesterol, and fundus examinations were 9.5%, 18.2%, and 21.3%, respectively.

In the present study, less than half of the participants were aware of their goal BP (45.2%); similar result of 44.7% and 44% were reported from other studies by Prince *et al.*^[14] Gupta *et al.*,^[15] respectively. Around 76.5% of the study participants have adherence to hypertension medication. The results were slightly higher than the results obtained from a study conducted from South India in 2014^[16] and 2016.^[17]

It is good that >75% of the study participants were advised to cut down on their salt and saturated fat intake. Around 74% were advised to undertake regular physical activity. Unfortunately, less than half of the participants had received advices on ill effects of tobacco and alcohol.

Strength and Limitation

Strength: The study covered all the hypertensive patients who were seeking care from the private sector in the study area.

Limitation: The study was carried out in a selected Urban Primary Health Centre area, thus the results may not be representative of the whole population of Puducherry. There may be social desirability bias while assessing the quality of care received from the participants for hypertension care. The data regarding laboratory investigations were not obtained from the records and hence there may be a wish bias.

Conclusion

More than half (56%) of the study participants seeking care from a private practitioner were not optimally controlled for their BP and more than half (64%) of the study participants had not sought their recommended follow-up examinations in the last 1 year. There is a scope for improvement in achieving hypertension control status and adherence to recommended follow-up care and investigations.

Acknowledgements

We acknowledge the support received from the staffs of the Urban Health Centre of JIPMER, Puducherry. We are also thankful to the entire patients with hypertension who participated in the study.

Financial support and sponsorship

Nil.

Conflicts of interest

There is no conflicts of interest.

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