Research Article

Poor control of hypertension among the study population from South India and the influence of demographic factors

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ABSTRACT

Objectives: Higher global prevalence and inadequate control measures among the affected individuals have made hypertension, a major morbidity and mortality challenge to the modern society. The aim of the study was to assess various variables influencing hypertension control. This study is a cross-sectional study done at the tertiary level hospital, Southern part of India. **Case Study:** Patients with a history of hypertension (≥140/90 mmHg) and on more than 1-year prescription with antihypertensive drugs, more than 20 years of age, both the genders and with or without comorbidity were enrolled. **Results:** Various demographic variables were analyzed. Statistical analysis was done to determine the association of variables with the control of hypertension. Among the 448 patients, 244 (54.4%) were female and 203 (45.3%) were male. The mean systolic blood pressure (SBP) and diastolic BPs were 144.81 mmHg (standard deviation [SD] ± 14.9) and 90.81 mmHg (SD ± 7.6), respectively. Only 11.8% of the hypertensive patients had a good control of hypertension. Variables such as age ($P = 0.002$), duration of hypertension ($P = 0.052$), history of drugs intake ($P = 0.002$), comorbid diseases ($P = 0.000$), and professional status ($P = 0.001$) had a statistically significant association with poor control of hypertension. An alarmingly, 87.2% of the study population was not controlling hypertension. Various variables were shown to be associated with poor control of hypertension. Any population with such poor hypertension control practices would lead to high morbidity and mortality, and urgent measures have to be undertaken to remove the poor control behaviors in a community.

KEY WORDS: Association, Control, Demographic variables, Hypertension

INTRODUCTION

Hypertension is a chronic non-communicable disease,[1] which is a multifactorial systemic disorder that leads to macrovascular and microvascular complications, resulting in high mortality and morbidity in a community. The World Health Organization (WHO) in 2016 reported that 17.9 million people (31% of all global death) died due to cardiovascular diseases (CVD).[2] Incidentally, uncontrolled hypertension is a major cause of concern in the society. India experienced a rapid demographic transition since 1950 due to rapid industrialization and urbanization which lead to decreasing fertility and low mortality. This transition bought changes in social and economic patterns of a society which resulted in the increased prevalence of non-communicable diseases.[3] Plethora of studies has reported that various determinants such as age, gender, level of education, income, geographical location, high body mass index, and proximity to health care have strong association with the control of hypertension in a population.[4] Such data were not available in this part of the world, and hence, a study was intended to assess the role of various variables associated with hypertension that could determine the impact of social context on health-care regimen and self-care compliance practices among these patients.

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Analysis of demographic and other variables would help us to gain a better understanding of poor control of hypertension and also to take measures to prevent those practices.

MATERIALS AND METHODS

This is a cross-sectional study conducted in a tertiary general hospital in Chennai, Tamil Nadu, South India, on patients who presented with hypertension to the outpatient department of medicine between June 2016 and June 2018. Inclusion criteria included patients more than 20 years of age, with a history of hypertension and on antihypertensive medications for more than 1 year, and with or without comorbid conditions. The follow-up of patients was done by physicians and resident doctors of the department of medicine. Institutional ethical committee approval was obtained before the commencement of the study and patient consent was also taken. All information were analyzed using statistical package SPSS-17. $P \leq 0.05$ was considered statistically significant.

In 2017, the Joint National Congress (JNC)-8 updated the definition of hypertension as systolic blood pressure (SBP) of 130 mmHg and DSP of 80 mmHg (Stage 1).[5] In the middle of our study, December 2018, the JNC-8 has relaxed guidelines for managing hypertension. Guidelines recommend initiating drug treatment to a goal of maintaining the SBP <140 mmHg and a DSP goals of <90 mmHg in population. We considered SBP <140 mmHg and DSP <90 mmHg as the control of hypertension for our study group.

RESULTS

A total of 500 questionnaires from hypertensive patients were collected, of which 52 questionnaires were excluded due to incomplete information. Among the 448 patients recruited in our study, 54.4% ($n = 244$) were female and 45.5% ($n = 203$) were male. The mean age of the study group was 53.32 ± 11.21 years and the mean body weight was 66.49 ± 10.79. The mean SBP and diastolic BPs were 144.81 mmHg (standard deviation [SD] ± 14.9) and 90.81 mmHg (SD ± 7.6), respectively. About 96.7% ($n = 433$) of the patients were educated. Most of the hypertensive patients, 45.7% ($n = 205$) were on angiotensin receptor blocker (ARB) drug therapy. Majority of the hypertensive patients recruited for the study were married 98.4% ($n = 441$), 38.6% ($n = 173$) of the patients had a family history of hypertension, 96.7% ($n = 433$) of the patients were literate, 44.6% had comorbid diseases, and most of the participants were homemakers 34.8% ($n = 156$). Variables such as age ($P = 0.002$), duration of hypertension ($P = 0.052$), history of drug intake ($P = 0.002$), comorbid diseases ($P = 0.000$), and professional status ($P = 0.001$) of the study population were found to be significantly associated with control of BP. Statistical analysis of association between the control of hypertension and various variables of the study subjects is summarized in Table 1.

DISCUSSION

Hypertension contributes to the burden of cardiovascular disorders, stroke, kidney failure, and premature mortality and disability. A cross-sectional epidemiological study from Jaipur, India, reported that there was an increase in the rate of hypertension prevalence, awareness, treatment, and control of hypertension since 1991–2015, but the study observed a gradual increase in the rates of control of hypertension and treatment which is off-target for the WHO Global Monitoring Framework.[6] This is a cause of concern to the society since slow adaptation to healthy habits has been frequently associated with increased CVD mortality and morbidity in the population. In our study, we tried to analyze sociodemographic and other factors that may influence the control of hypertension in patients taking antihypertensive therapy for more than 1 year. We observed that in a sample size of 448 hypertensive patients receiving pharmacotherapy, an eighth of the study population (11.8%) were able to control hypertension according to JNC-8 recent guidelines. Similar studies conducted globally (Yaounde, Cameroon)[7] and nationally (Varanasi, North India)[8] reported that 36.8% (440 hypertensive subjects) and 35.08% (211 hypertensive subjects) were able to control hypertension. However, our study observed an alarmingly poor control of hypertension among the recruited hypertensive population.

An increase in BP has always been associated with aging, leading to hypertension in elderly population.[9] Our study population also showed a significant increase in hypertension with increasing age and decrease in the control of hypertension. Gender plays an important role on hypertension as many studies showed that men below 60 years of age have higher

Table 1: Association between control of hypertension and various variables

Variables	Pearson Chi-square value	Df	*P* value
Age	89.917	54	0.002
Gender	1.475	1	0.225
Body weight	64.829	54	0.149
Duration of hypertension	23.531	14	0.052
Drugs intake by the patient	24.902	8	0.002
Marital status	0.954	2	0.621
Family history of hypertension	2.883	2	0.237
Education	7.186	3	0.066
Comorbid diseases			0.000
Professional status	24.153	7	0.001

systolic (6–7 mmHg more) and diastolic pressures (3–5 mmHg more) than in age-matched women. After 60 years of age, women have increased BP (particularly systolic), so hypertension became more prevalent or at least equally prevalent in women as men.[10] However, our study did not show any significant association of gender with respect to the control of hypertension. People suffering from hypertension for more than 5 years had a significant association with control of hypertension. As the duration of hypertension increases, there was a decrease in the adoption of control of hypertension. A significant association of drugs intake by the patients was seen with respect to the control of hypertension. About 45.7% of the patients were under ARB antihypertensive drugs, but only 8.4% of them were able to maintain a good control of hypertension. Whether the patients were married, unmarried, or divorced, these factors were not associated with control of hypertension in our study, and hence, marital status had no influence in this matter. About 38.6% of the patients had a family history of hypertension, but the participants lacked control over hypertension despite being aware of hypertension and its consequences. Previous literature states that variables such as educational level and professional status have always influenced the prevalence of non-communicable diseases. In our study, hypertension control was not related to the education level even though some studies[4] showed strong influence of control of hypertension with higher education level. About 46.6% of the participants had comorbid diseases and most common was the Type 2 diabetes mellitus (61.2%). Comorbid diseases showed a significant association with poor control of hypertension in our study. Professional status of the patients showed a significant association with the control of hypertension. Majority of patients were homemakers (38.4%) who had a poor control of hypertension. Although many studies[11] showed that the prevalence of hypertension was more among professionals holding higher positions, a previous study[12] in Kashmiri population, India, observed higher distribution of hypertension and poor control among homemakers. The reason for this could be that the homemaker focuses more on the well-being of the family members, rather than themselves. Barriers to control of hypertension like lack of adherence to clinical guidelines at the health-care provider level or lack of adherence to prescribed medications and lifestyle modifications at patient's level have to be identified at the earliest to improve the treatment outcome and also to reduce the overall negative impacts of these factors on the mortality and morbidity of hypertension. Health-care providers should devise methods to overcome the barriers limiting BP control to persuade the patients for good compliance and adoption.

The present study has some limitations. Sample size was small as compared to the prevalence of hypertension in India. Since general clinics were busy, we were not able to obtain information regarding the patient income, assess the anthropometric factors which are also important cardiovascular risk factors. We have also did not measured the Morisky Medication-Taking Adherence Scale-4 for adherence to antihypertensive drugs by the hypertensive patients. However, our present study has relevant information regarding factors, leading to poor control of hypertension which may increase the risk for cardiovascular complications of mortality and morbidity in subsequent years. Further research should be done to include hypertensive patients from various regions, to assess the anthropometric risk factors along with other demographic determinants and adherence compliance to medications.

CONCLUSION

The findings of our study revealed that an eighth of the total hypertensive patients (11.8%) recruited for the study were able to control hypertension and 87.2% of patients did not. Variables such as age ($P = 0.002$), duration of hypertension ($P = 0.052$), history of drugs intake by the patient ($P = 0.002$), comorbid diseases ($P = 0.000$), and professional status ($P = 0.001$) were associated with poor control of hypertension. Since hypertension is a chronic disease and a major silent epidemic affecting a larger section of the society, identification of various direct and indirect barriers associated with this disease at an early stage can contribute toward prevention, control, and effective management of this condition.

CONTRIBUTIONS OF THE AUTHORS

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