

The SOCIO-Demography AND patients' knowledge, attitudes and practice with regards to hypertension among a group of female hypertensiveS followed up in a tertiary care hospital in Sri Lanka

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Abstract

Background Hypertension is a silent killer. Differences between men and women in the pathophysiology, risks, and treatment of essential hypertension have been noted for many years. The aim of this study was to describe the socio-demography and knowledge, attitude and practice with regards to hypertension among female hypertensives.

Methodology This was a cross sectional descriptive study conducted at Teaching Hospital Peradeniya. Data was collected by an interviewer administered structured questionnaire, and epidemiological patterns, risk factors and outcome were analyzed. Results 113(43.4%) had at least one sibling while 102(39.1%) had at least one parent with hypertension. Mean BMI was 25.10 kg/m² and mean waist circumference was 90.92cm. 60.3% were either overweight or obese. 67.6% had adequate amount of physical activity. History of PIH is reported in 17.69% of patients.

Conclusion Majority of patients were currently on either ACEI or ARBs followed by diuretics. There is a delay in diagnosing hypertension and stresses the importance of early screening. Overweight and obesity is a significant problem. Majority of patients having target blood pressure control and good awareness about hypertension related complications.

Background

Hypertension in general is defined as systolic blood pressure above 140 mmHg and diastolic blood pressure above 90mmHg (1-4) and it is a highly prevalent cardiovascular risk factor which if uncontrolled leads to devastating complications including myocardial infarction, strokes, chronic kidney disease and peripheral vascular disease (5). Prevalence of hypertension among adult females in United States is 28.1% (6) and it is more than a quarter of the entire population and it is expected to increase by 13% between 2000 and 2025(7) making it a major contributing factor for cardiovascular disease, the leading cause of mortality among females (8,9).

Hypertension is a silent killer which usually doesn't show many specific symptoms and usually diagnosed as an incidental finding, at screening and when patients present with complications (4, 10). However there could be some symptoms which suggest a possibility of hypertension but patients may have ignored resulting in a delay in the diagnosis. Therefore it is important to assess the prevalence of these symptoms in order to improve public awareness which may help in early detection.

Cardiometabolic risk factors usually present in clusters and the presence of other risk factors along with hypertension exaggerate the cardiovascular risk of hypertension (11). Most of the modifiable risk factors such as alcohol consumption, smoking and uncontrolled diabetes mellitus and non modifiable risk factors such as family history affect both males and females equally. However there are some risk factors which affect entirely or predominantly on females such as pregnancy and development of pregnancy induced hypertension (PIH), use of hormonal contraceptives and hormone replacement therapy and other female predominating rheumatologic conditions such as systemic lupus erythematosus, anti phospholipid syndrome and rheumatoid arthritis. Assessing the prevalence of these risk factors may help to upgrade screening programmes for better detection of new cases and to improve the control of these risk factors.(12,13) The National Health and Nutrition Examination Survey (NHANES) 2007–2012 showed that hypertension was higher among males until age 54, similar among males and females from 55 to 64 years of age, and higher among females from age 65 (14,15).Differences between men and women in the pathophysiology, risks, and treatment of essential hypertension have been noted for many years.(16) The recently demonstrated relationships between estrogens and improved endothelial function suggest that hormonal changes may still

be important in the mechanism of hypertension in women. In addition, there are at least two other hemodynamic, non-hormonal differences that may also account for the behaviour of hypertension between the sexes—wave reflections and heart rate.(16) Recent advances in basic science research have identified several possible mechanisms responsible for the observed sex differences in hypertension,including the divergent role of the immune system in hypertensive males and females. (17)

OBJECTIVES

The aim of this study was to describe the socio-demography, various presentations and common clinical symptoms, to assess the prevalence of modifiable and non modifiable cardiovascular risk factors, current pattern of practice of prescribing antihypertensives and patients' knowledge, attitude and practice with regards to hypertension in a cohort of hypertensives.

Methods

Study Design and Setting

This was a cross sectional descriptive study conducted at the Hypertension Clinic and the Professorial Medical Wards (Wards 7 and 8) of the Teaching Hospital Peradeniya, Sri Lanka among female patients who are followed up for chronic hypertension.

Criteria for Eligibility

Female patients who were aged above 20 years and diagnosed to have hypertension where blood pressure was 140/90 mmHg or higher at diagnosis and were on antihypertensive treatment for 6 months or more and were admitted to the Medical Wards or were attending the Hypertension clinic conducted weekly were randomly recruited. The exclusion criteria were patients who had been diagnosed with hypertension within 6 months, amputees, plastered patients in whom blood pressure measurement and anthropometric measurements could not be carried out, pregnant women or those who had given birth within six months of this interview. Individuals with neurological disorders that may interfere with their understanding of the questions regarding the survey interview were also excluded.

Ethical clearance was obtained from the Ethical Review Committee of the Faculty of Medicine, University of Peradeniya, Sri Lanka.

Sample Size

All female hypertensive patients who presented to the Teaching Hospital Peradeniya from August 2015 to December 2015.

Study Instrument, Data Collection and Variables

Demographic data, details of risk factors including family history of hypertension, alcohol consumption, smoking and level of physical activity, past obstetric history including history of PIH, history of contraceptive use, dietary habits and knowledge and attitude regarding hypertension was collected using an interviewer administered questionnaire. Brief physical examination including blood pressure measurement was conducted by investigators using standard techniques (18). Height was measured as the maximum distance from the heels to the uppermost position of the head, with the individual standing barefoot wearing light clothing and in full inspiration using Harpenden stadiometer (Chasmors Ltd., London, UK) to the nearest 0.1cm. Body weight was measured using a weighing scale to the nearest 0.1kg. Results of routine investigations were recorded.

Data Analysis Method

Data were entered in a password protected computer using Microsoft Excel and it was analyzed using SPSS 20.

Results

260 female patients were subjected to the study. Mean age was 64.11 \pm 11.30 and majority were in age group 61-80. Majority was Sinhalese Buddhists, married and house wives. 113(43.4%) had at least one sibling with hypertension while 102(39.1%) had at least one parent with hypertension. Mean BMI was 25.10 kg/m² and mean waist circumference was 90.92cm. 60.3% were either overweight or obese. 67.6% had adequate amount of physical activity. Only one out of 260 had smoked and 2 consume alcohol, prevalence of diabetes mellitus was 32.6% (Table 1).

Mean age at first detection was 53.97 \pm 11.81. Majority had dizziness as major symptom and headache as minor symptom on presentation. (Table 2).

Mean age at first conception is 22.73 and average number of children was 3.64. 90.8% had done breast feeding in the past. History of PIH is reported in 17.69% of patients (Table 3). Majority was currently not on any contraceptives and 74% had never used any contraceptive (Table 4).

Data regarding initially started drugs were available only in 159 patients. ACEI and ARBs were the most frequently used as initial antihypertensives. Majority of the patients were currently on either ACEI or ARBs followed by diuretics (Table 5). Most patients were on multiple drugs rather than a single drug (Table 6).

Mean SBP was 133.35 mmHg and mean DBP was 81.66 mmHg. 70.8% had controlled SBP (<140 mmHg) while 81.66% had controlled DBP (<90 mmHg) while on current treatment.

It is paramount important to inquire about knowledge, attitude and practice of hypertension in population and is very important to manage this chronic disease and to adhere to management plan. We have done KAP study for this female population and total response rate for the KAP study was 93% (Table 7).

Discussion

Hypertension in female is a major concern world wide as it remains the major risk factor contributing for the most prevalent cause of death in female i.e. cardiovascular disease. About 31.5% of female deaths in the world are due to cardiovascular diseases including ischaemic heart disease and strokes (19). This rate is highest in lower middle income countries which include most of the countries in South East Asia (20). Sri Lanka has a cardiovascular death rate close to 40% (21).

The mean age of the group was 64 years and 56.1% of the patients were aged 61 – 80. And the clear majority was Sinhalese and Buddhists which is compatible with the general population in Sri Lanka (22). Age at 1st detection of hypertension was 53.97 years and this suggests a possibility of a deficiency of effective screening programmes in early stages.

When enquiring with regards to clinical symptoms which patients have or had in the past, 28.8% revealed that dizziness is the most disturbing symptom followed by headache (18.4%). Also a majority of 60% recalled that they have had headache and 45.38% had chest pain. Body aches and shortness of breath also prevalent in the study group. Even though these symptoms are frequent among female patients they are not commonly attributed to hypertension.

Modifiable risk factors among female such as smoking and alcohol consumption were negligible in this group (n=1, n=2). Similar results were indicated in the WHO report on global tobacco epidemic 2015 and country health profile on alcohol use where smoking among Sri Lankan adult females had been 0.2% and total alcohol per capita consumption had been 2.9L in pure alcohol (23,24). The cultural and ethnic background of the country may have played a major role in this matter. However Diabetes Mellitus was present in 32.4% and high BMI was a significant factor in this group. Mean BMI was 25.11 kg/m² which is in the overweight category for Asian population (25). 60% were either overweight or obese. This should be mainly due to dietary and familial factors as majority (66.4%) claims that they are having adequate level of

physical activity recommended by the American Heart Association i.e. more than 150 min of moderate activity per week (26). There is a large body of experimental evidence showing that lifestyle changes can favourably affect blood pressure and reduce cardiovascular risk. A recent report on 84 129 women participating in the Nurses Health Study has shown that the incidence of major coronary events during a 14-year follow-up was inversely related to the presence of low-risk factors (low risk subjects were women not smoking, with a normal body mass index, performing regular physical activity, drinking less than one-half of an alcoholic beverage per day, and eating a high-fiber, low-unsaturated fat, low-sugar diet).(27)

There are many studies that suggest that breastfeeding reduces cardiovascular risk factors including hypertension however the use of hormonal contraceptives and hormone replacement therapy may induce hypertension (28-31). 93.4% of the subjects have breastfed however only a minority have used hormonal contraceptives and hormone replacement therapy. Pregnancy induced hypertension is associated with a tendency to develop essential hypertension in later life. The chance to develop chronic hypertension afterwards is twofold to 10 times higher in women with hypertensive disorders of pregnancy, compared with women after normotensive pregnancies.(32,33) In this group only 17.7% admitted to have PIH in the past. Family history is also a major contributing factor in this study group as 43.4% claim to have at least one sibling with hypertension and 39.1% to have at least one parent with hypertension. A cross sectional survey done in Sri Lanka by Ranasinghe *et al* showed a family history of hypertension (parents, grandparents or siblings) was present in 48.0 % of patients with hypertension.(34)

Treatment of hypertension includes lifestyle modification which address mainly on diet, weight reduction and exercise and pharmacological treatment with antihypertensives. Initiation of antihypertensives to a patient depends on the age, the level of the high blood pressure and the presence of other co morbidities (35). As hypertension is one of the most prevalent chronic conditions which require a long term and frequently lifelong treatment, antihypertensives use a major fraction of both the government and private health budgets (36). Therefore the selection of the best suitable antihypertensives according to latest guidelines should be a concern to achieve the treatment goals and to optimize the health budget. Majority (57.2%) of the subjects was started on either ACEI or ARBs at the beginning and 86.92% were currently of them followed by diuretics (40%) and CCBs (32.31%). Most of the patients (43.2%) were on two antihypertensive of two classes, mainly an ACEI or an ARB with a diuretic or a CCB. Majority of the patients have needed multiple drugs to achieve a controlled blood pressure. 70.8% have achieved controlled SBP (<140 mmHg) while 81.66% had controlled DBP (<90 mmHg) while on current treatment. Reviewing both the pharmacological and non pharmacological treatment regularly will guild the attending physicians to achieve better disease control without prescribing antihypertensives unnecessarily.

However the control is utterly depends on patient compliance. Therefore it is crucial for hypertensive patients to have an adequate knowledge and awareness about hypertension, its complications and its control in order to build up better attitudes and practice to optimize the treatment goals and prevent complications of hypertension. In our KAP study we have found that 66.39% had a history of hypertension over five years and the majority (59.50%) was diagnosed to have hypertension in routine medical control while 19.42% were at emergency services and 7.02% were at screening programmes. That may indicate a lack of availability or efficiency of screening programmes. 54.55% were diagnosed at and 62.66% were followed up at a tertiary care hospital but this can be done in peripheral units without causing an overloading of patients to tertiary care units. 57.14% undergoes blood pressure checkups once in 3 months while 40.69%, once a month probably only when they attend to the clinics and therefore the control may not be optimum. 64.05% were aware that they have a positive family history of hypertension. 96.69% were aware that they were on antihypertensives and 75% revealed that they take their medications regularly. Among the 25% who do not take medications regularly, 62.5% disclosed that they forget to take them, 10.71% didn't like the side effects and 7.14% take them only when they get symptoms. Compliance of the patients should be increased by stressing out the importance of taking them and allocating a specific time to take medications in order to prevent missing the doses. 59.5% of the patents were aware that they were on lipid lowering drugs, 14.05% that they weren't and 26.45% were uncertain. 38.84% were aware that they were taking

Aspirin and 38.02% were aware that they weren't. 81.4% were aware of the major complications of hypertension and 79.75% revealed that they were informed of them by a doctor or a nurse. 73.14% revealed that they were advised to change their life style in order to control their blood cholesterol level and blood pressure by a health care professional however public education can still be improved.

Conclusions

Hypertension in females is very important chronic risk factor for cardiovascular diseases. This study reveals the delay in diagnosis of hypertension and stresses the importance of early screening. Though modifiable risk factors like smoking and excess alcohol consumption is very minimal in this population overweight and obesity is a significant problem needing attention. It is encouraging to see the majority of patients having target blood pressure control and good awareness about hypertension related complications.

Abbreviations

SBP: Systolic blood pressure, **DBP:** Diastolic blood pressure, **BMI:** Body mass index, **PIH:** Pregnancy induced hypertension, **ACEI:** Angiotensin converting enzyme inhibitors, **ARBs:** Angiotensin receptor blockers, **CCBs:** Calcium channel blockers, **ECG:** Electrocardiogram

Declarations

Ethics approval and consent to participate

Ethics approval was taken from the Institutional Ethical Review Committee (IERC) of the Faculty of Medicine, University of Peradeniya. Informed signed consent was taken from all the participants prior to collecting data.

Consent for publication

Consent for publication was taken from all the participant prior to data collection and from all the authors of the study.

Availability of data and material

The data of the study is available with the authors of the study, and is secured with password protection for which only the authors have access to.

Competing interest

We declare that we have no competing interests.

Financial Disclosure:

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Authors' contributions

UR conceived the research idea and guided it, UR and MB did the literature survey and drafted the paper. MB,UR and ST did data analysis. MB, NW,CD and RB did data collection and entry. All authors made substantial contribution to design acquisition and interpretation of data and writing the manuscript and have given final approval of the version to be published. Also all authors agreed to accountable to all aspect of the work.

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Tables

Table 1. Socio demographics, anthropometrics and risk factors for hypertension- N(%)

AGE GROUPS	<40 years	7(2.6)
	41-60 years	88(33.8)
	61-80	146(56.1)
	>81	19(7.3)
MARIETAL STATUS	unmarried	8(3.0)
	married	152(58.4)
	widowed	95(36.5)
	divorced	5(1.9)
ETHNICITY	Sinhala	242(93)
	Tamil	5(1.9)
	Moor	12(4.6)
	Other	1(0.4)
RELIGION	Buddhist	243(93.4)
	Hindu	2(0.8)
	Islam	12(4.6)
	Christian	3(1.2)
OCCUPATION	House works only	174(66.9)
	unskilled	45(17.3)
	skilled	11(4.2)
	business	6(2.3)
	professional	24(9.2)
BMI CATEGORIES-N (%)	Underweight	14(5.3)
	Normal	75(28.8)
	Overweight	90(34.6)
	Obese	67(25.7)
ACTIVITY LEVEL-N(%)	<150/wk	81(31.1)
	>150/wk	176(67.6)
EVER BREAST FED-N (%)	Never breast fed	12 (4.6)
	Breast feeding	5 (1.9)
	Breast fed in the past	227 (93.4)
PIH-N (%)	PIH-	214 (82.3)
	PIH+	46 (17.7)
FAMILY HISTORY -HT IN SIBLINGS	Non	126(48.4)
	>= one	113(43.4)
	not known	21(8.4)
FAMILY HISTORY - HT IN PARENTS	Neither	127(48.8)
	Father	14(5.3)
	Mother	65(25)
	Both	23(8.8)
	Not known	27(10.3)
SMOKING	Never	259(99.6)
	Have	1(0.4)
ALCOHOL	Never	258(99.2)
	Have	2(0.8)
DIABETES MELLITUS	No	175(67.3)
	Yes	85(32.6)

Table 2. Major and Minor Symptoms

SYMPTOMS	MAJOR-N(%)	MINOR-N(%)
None	55(21.1)	50(19.2)
Chest pain	39(15)	118(45.38)
Headaches	48(18.4)	156(60)
Dizziness	75(28.8)	110(42.3)
LOC	0(0)	28(10.76)
SOB	4(1.5)	61(23.46)
Nose bleed	8(3.0)	33(12.69)
Body aches	5(1.9)	97(37.3)
Fatigue	5(1.9)	31(11.9)
Other	21(8.0)	12(4.6)

Table 3. Obstetric history

EVER BREAST FED-N (%)	
Never breast fed	12 (4.6)
Breast feeding	5 (1.9)
Breast fed in the past	227 (93.4)
PIH-N (%)	
PIH-	214 (82.3)
PIH+	46 (17.7)

Table 4. Contraceptive use

Contraceptives	Currently using -N (%)	Most commonly used in the past - N (%)
None	177(71.9)	185(74)
Pills	2(0.8)	24(9.6)
IUD	3(1.2)	14(5.6)
Surgery	60(24.3)	16(6.4)
Barriers	2(0.8)	2(0.8)
Other	2(0.8)	2(0.8)

Table 5. Pharmacological treatment

	STARTING- N / ()	CURRENT - N / ()
ACEI/ARBS	91 (57.2)	226 (86.92)
Beta Blockers	11 (6.9)	49 (18.85)
CCB	23 (14.4)	84 (32.31)
Diuretics	31 (19.5)	104 (40)
Alpha Blockers	3 (1.9)	20 (7.69)

Table 6. Number of antihypertensives currently using (N/%)

0	14	5.6
1	67	26.8
2	118	43.2
3	53	21.2
4	8	3.2

Table 7. Knowledge, Attitude and Practice with regards to hypertension

Question	Response	%
1.How did you come to know about your hypertension	in a routine medical control	59.50
	screening programme	7.02
	emergency service	19.42
	other	13.64
	I do not know	0.41
2.When were you diagnosed	first time	0.41
	<5 years	33.20
	>5 years	66.39
3.Where were you first diagnosed as having hypertension	Primary health center	6.20
	Other primary care clinic/physician	14.88
	secondary care hospital	23.14
	Tertiary care hospital	54.55
	at a pharmacy / drug store	0.00
	other	1.24
	I do not know	0.00
4.Where do you regularly go for routine follow up to check your blood pressure	Diagnosed on this visit	2.90
	This health centre	62.66
	nearby primary health care clinic	7.47
	nearby hospital(secondary)	14.11
	Tertiary care hospital	7.47
	I do not do any routine follow up	5.39
5.When was your blood pressure last measured by a health professional	within the past 12 months	99.17
	1-5 years ago	0.83
	not within the past 5 years	0.00
6.How often do you see your doctor for blood pressure checkups	monthly	40.69
	every 3-4months	57.14
	every 6 months	1.30
	once a year	0.87
7.When was your blood cholesterol last measured	within the past 12 months	53.31
	1-5 years ago	24.79
	not within the past 5 years	19.83
	I do not know	2.07
8.Are you currently taking medication prescribed by a doctor to lower your blood cholesterol level	Yes	59.50
	No	14.05
	Uncertain	26.45
9.Has a doctor in the past year ordered you to change your way of life in order to lower your total blood cholesterol	Yes	68.18
	No	24.38
	Uncertain	7.44
10.Are you currently taking Aspirin or equivalent acetylsalicylic acid containing medication to prevent or treat heart disease or stroke	Yes	38.84
	No	38.02
	Uncertain	23.14
11.Are you currently using hormone replacement therapy	Yes	1.24
	No	98.76
	Uncertain	0.00
12.Do you have blood relatives with history of hypertension	Yes	64.05
	No	28.93
	Uncertain	7.02
13.Have you had any complications from your hypertension	No	11.74
	renal disease	3.48

	strokes	6.96
	retinopathy	3.04
	cardiovascular	37.39
	other	1.74
	I do not know	35.65
14.Has a doctor in the past year ordered you to change your way of life in order to lower your blood pressure	Yes	73.14
	No	26.45
	Uncertain	0.41
15.Have you been prescribed any medication to lower your blood pressure	Yes	96.69
	No	0.00
	Uncertain	3.31
16.Do you take all your prescribed medications	Yes	75.00
	No	25.00
17.If you don't take your medications regularly, why don't you take them as directed	I cannot offered the cost	1.79
	My medications sre not easily available	3.57
	I do not like to take medications	5.36
	I only take them when I feel that I need them	7.14
	I do not like the side effects of the medications	0.00
	I prefer alternative medicine	10.71
	I forget	62.50
	I do not know	0.00
	Other	8.93
18.Are you aware of any complications of hypertension	Yes	81.40
	No	18.60
19.If you are aware have you been informed by the doctor or nurses or someone by the health centre about these complications	Yes	79.75
	No	20.25
20.Have you been told that stroke is related to hypertension	Yes	80.58
	No	19.42