

Awareness of the risk factors, presenting features and complications of hypertension amongst hypertensives and normotensives

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Abstract

Objectives: To assess the level of awareness with regards to risk factors, presenting features and complications of hypertension. Moreover, to Compare the level of awareness amongst patients (hypertensives) and non-patients (normotensives) in Karachi, Pakistan.

Methods: This cross-sectional study was carried out on a random sample of 440 people (220-normotensives/220-hypertensives) using an interview based questionnaire. Data entry was performed on Epi-info v 6 and managed and analyzed on SPSS v 14. Proportions were calculated for categorical data, means and standard deviations were calculated for continuous data.

Results: Hypertensives had a higher mean awareness score than the normotensives ($p < 0.001$). It was observed that people below 30 years of age were significantly more aware than people above this age ($p < 0.001$). Patients with higher awareness scores were more compliant to therapy ($p < 0.001$).

Conclusion: Poor levels of awareness regarding the risk factors, presenting features and complications of hypertension were observed in both the groups. The hypertensive population was relatively more aware than the normotensive population (JPMA 58:711; 2008).

Introduction

Hypertension is one of the most common diseases afflicting humans worldwide. It was identified by the world health report 2002 as the third ranked factor for disability-adjusted life years and it is one of the most important risk factors for cardiovascular diseases and stroke, which are the

leading causes of death around the globe.¹ Hypertension has also been attributed as one of the leading causes of death and disability in the developing countries.² It is estimated that by the year 2025, 1.56 billion of the world's population will be suffering from hypertension.¹ Asia is no less with regards to the burden of this disease where the prevalence

rates are as high as 35%.³ Neither is Pakistan; The National Health Survey of Pakistan (NHSP) reported that 18% of adults >15years and 33% of adults >45years of age suffered from hypertension.⁴

Due to this high prevalence, associated morbidity, mortality and huge economic burden, hypertension has become one of the greatest challenges of the modern era.⁵

A comprehensive strategy for reduction in complications, thus mortality and morbidity due to hypertension, must include prevention strategies, increased awareness, early detection, adequate treatment and strict control of blood pressure.⁶ This can be achieved only if the general public is aware of the risk factors, presenting features and complications of hypertension. Hypertension is a multi-factorial disorder but any individual risk factor can contribute to overall increase in blood pressure.⁷ This makes awareness on the risk factors importance. For strict control of blood pressure, compliance to medications is vital. Studies have shown that those who are more compliant have a better mean blood pressure.⁸ This makes disease awareness to be the most important factor for therapy adherence.⁹

There is insufficient documentary evidence with regards to the level of awareness about hypertension in the Pakistani population. Many questions remain unanswered as to what kind of awareness programmes are needed and for whom. There is no doubt that there is a need for multiple community based awareness programmes about hypertension in Pakistan. But to make these programmes effective and successful, the level of awareness has to be assessed. This has also been recommended by a number of previous studies.¹⁰⁻¹² A recent study conducted in Pakistan showed that the knowledge on hypertension was more in the middle-socioeconomic class compared to the lower-income class. The authors attributed this disparity to the education level.¹³

Knowledge on hypertension is not only necessary amongst patients but should also be conveyed to the general population especially in Pakistan, because the family members are actively involved in patient care. It is vital for all to realize the seriousness of hypertension as a disease. Based on the hypothesis that providing information would facilitate awareness programmes, our study was planned.

The objectives were to assess the level of awareness with regards to risk factors, presenting features and complications of hypertension in a Pakistani population and compare the level of awareness amongst patients (hypertensives) and non-patients (normotensives).

Subjects and Methods

A simple questionnaire based cross-sectional study

was conducted on a random sample of 440 patients and attendants visiting the National Institute of Cardio Vascular Diseases (NICVD) in Karachi. Pakistan is a developing South Asian country with a population of about 166 million. Karachi is its largest city and hosts people from all parts of Pakistan. The NICVD is the largest cardiovascular public hospital catering to the population of Karachi.

A sample size of 437 was calculated assuming the prevalence of Hypertensives to be 40% and taking a bond on error of 6.5%. A sample of 440 was thus taken for mathematical convenience. The study sample was divided in two groups namely, 'Hypertensives', people who had been diagnosed with essential hypertension and 'Normotensives', those who had never been diagnosed or even suspected of having hypertension. There were 220 participants in each group. Participants were selected from the inpatient wards of the NICVD. The bed numbers were randomly selected by simple random sampling and each patient admitted on those beds was approached along with his or her attendants. An interview based questionnaire was administered to each of the participants by the researchers in a homogenous manner to limit interviewer biases. The whole of the survey was completed in a period of two weeks to prevent dilution of the questions.

The only tool used in this study was an interviewer administered questionnaire, developed by the researchers. The first part of the questionnaire dealt with the demographic profile of the participants and then questions pertaining to the co-morbid illnesses and the presence and duration of hypertension was asked. The second part of the questionnaire had questions pertaining to awareness of hypertension which was divided into three parts, awareness about risk factors, awareness about presenting symptoms and awareness about the complications of hypertension. The questions were simple 'yes and no' questions with "do you think that..." or "are you aware that..." used as opening phrases.

Data entry was performed on Epi- info v 6 and managed and analyzed on SPSS v 14. Proportions were calculated for categorical data, means and standard deviations were calculated for continuous data. In the awareness section each question was given one point while each wrong answer was given no point. The total awareness scores were calculated for each participant. There were a total number of 30 questions and hence, the maximum possible score was 30. The means of these scores were compared amongst the two groups (hypertensives and normotensives) using independent samples t test. The test was also used to see if the level of awareness was affected by sex, age, education status and having a family history of hypertension. How the level of awareness effected the compliance of medication was also tested.

Written informed consent was taken from all the participants before the administration of the questionnaires and confidentiality was maintained. The participants were explained about the objectives and benefits of participating in this study and were assured that they could stop the interview at anytime if they wish to do so. Since the study was an interview based cross-sectional study with no sensitive questions asked and no interventions used, the administration of the NICVD approved the study and waived the need for an extensive ethical review.

Results

The demographic profile of the participants is given in table 1. The mean age was 41.6±13.8 years with a roughly equal gender distribution (52.5% males and 47.5% females).

Table-1: Demographic profile of the participants (N=440).

| Variables | N (%) |
|---------------------------|---------------------|
| sex | |
| male | 231 (52.5%) |
| female | 209 (47.5%) |
| education | |
| none | 118 (26.8%) |
| primary | 101 (23.0%) |
| Secondary | 129 (29.3%) |
| High school /intermediate | 47 (10.7%) |
| Graduate | 45 (10.2%) |
| ethnicity | |
| Punjabi | 117 (26.6%) |
| Sindhi | 122 (27.7%) |
| Baluchi | 20 (4.5%) |
| Pathan | 49 (11.1%) |
| Urdu speaking | 132 (30.0%) |
| employment status | |
| Unemployed | 50 (11.4%) |
| Employed | 239 (54.3%) |
| Retired | 37 (8.4%) |
| Housewife | 97 (22.0%) |
| Student | 17 (3.9%) |
| Age | mean = 41.6 (±13.8) |

Amongst the 220 people who had hypertension, 30 (13.6%) had it for 1-2 years, 70 (31.8%) for 3-4years, 90 (40.9%) for 5-10years and 30 (13.6%) for more than 10 years. And only 126 (57.3%) stated that they always took their medicines regularly. A family history for hypertension was present in 229 (52%) of the respondents. Hypertension was thought to be a curable disease by 222 (50.5%) participants (59.1% of the hypertensives and 41.8% of the normotensives).

Table 2 shows the number and percentages of affirmative answers by the participants for every variable. It also compares these responses amongst the hypertensive and normotensive groups.

Most (>70%) hypertensives were aware of stress, obesity, excessive salt intake, smoking and having a sedentary lifestyle as risk factors for hypertension whilst in the normotensive groups most people (>70%) only identified

Table-2: Awareness of risk factors, presentation and complications of hypertension compared between hypertensives and normotensives. n=440 (220 each).

| Risk Factors | Hypertensives | Normotensives | P value | Total N (%) |
|------------------------------|----------------|----------------|---------|----------------|
| | N (%) N=220 | N (%) N=220 | | |
| Age | 120 (54.5) | 84 (38.2) | 0.001 | 204 (46.4) |
| Race | 20 (9.1) | 9 (4.1) | 0.035 | 29 (6.6) |
| Gender | 110 (50.0) | 53 (24.1) | <0.001 | 163 (37.0) |
| Family history | 100 (45.5) | 139 (63.2) | <0.001 | 239 (54.3) |
| Stress | 220 (100.0) | 200 (90.9) | <0.001 | 420 (95.5) |
| Diabetes Mellitus | 100 (45.5) | 78 (35.5) | 0.033 | 178 (40.5) |
| Obesity | 200 (90.9) | 170 (77.3) | <0.001 | 370 (84.1) |
| Sedentary life style | 160 (72.7) | 138 (62.7) | 0.025 | 298 (67.7) |
| Excessive alcohol intake | 40 (18.2) | 60 (27.3) | 0.023 | 100 (22.7) |
| Smoking | 170 (77.3) | 130 (59.1) | <0.001 | 300 (68.2) |
| Excessive salt intake | 220 (100.0) | 168 (76.4) | <0.001 | 388 (88.2) |
| Presenting Complaints | | | | |
| None | 70 (31.8) | 60 (27.3) | 0.296 | 130 (29.5) |
| Nose bleed | 150 (68.2) | 117 (53.2) | 0.001 | 267 (60.7) |
| Headaches | 210 (95.5) | 188 (85.5) | <0.001 | 398 (90.5) |
| Dizziness | 210 (95.5) | 180 (81.8) | <0.001 | 390 (88.6) |
| Insomnia | 130 (59.1) | 112 (50.9) | 0.085 | 242 (55.0) |
| Confusion | 160 (72.7) | 103 (46.8) | <0.001 | 263 (59.8) |
| Syncope | 190 (86.4) | 135 (61.4) | <0.001 | 325 (73.9) |
| Palpitations | 210 (95.5) | 161 (73.2) | <0.001 | 371 (84.3) |
| Frequent urination | 110 (50.0) | 98 (44.5) | 0.252 | 208 (47.3) |
| Weakness | 180 (81.8) | 153 (69.5) | 0.003 | 333 (75.7) |
| Perspiration | 150 (68.2) | 139 (63.2) | 0.269 | 289 (65.7) |
| Muscle cramps | 180 (81.8) | 118 (53.6) | <0.001 | 298 (67.7) |
| Visual disturbances | 160 (72.7) | 117 (53.2) | <0.001 | 277 (63.0) |
| Nausea/Vomiting | 180 (81.8) | 107 (48.6) | <0.001 | 287 (65.2) |
| Complications | | | | |
| Atherosclerosis | 140 (63.6) | 121 (55.0) | 0.065 | 261 (59.3) |
| Stroke | 220 (100.0) | 185 (84.1) | <0.001 | 405 (92.0) |
| Heart disease | 210 (95.5) | 168 (76.4) | <0.001 | 378 (85.9) |
| Kidney disease | 130 (59.1) | 102 (46.4) | 0.008 | 232 (52.7) |
| Eye disease | 120 (54.5) | 110 (50.0) | 0.340 | 230 (52.3) |

Numbers and percentages represent affirmative answers i.e. the number of people who said 'yes' to the respective questions.

stress, obesity and excessive salt intake as risk factors. Both groups did not recognize age, race, family history, gender, co-morbid of diabetes mellitus or excessive alcohol intake as risk factors (Table 2).

Headaches, dizziness, confusion, palpitations, syncope, weakness, muscle cramps, visual disturbances and nausea/vomiting were identified as possible presenting symptoms of hypertension by most of the (>70%) hypertensives, while only headaches, dizziness, palpitation and weakness were identified by normotensives. Nosebleed, insomnia, frequent urination, excessive perspiration were not identified as presenting symptoms. Only a very few people (29.5%) knew that hypertension can present without any symptoms (Table 2).

Both groups were aware that hypertension can lead to stroke and heart diseases, while most of them were unaware of the other major complications of hypertension such as

Table-3: Categorized awareness scores of the participants.

| | | Hypertensives N (%) | Normotensives N (%) | Total N (%) |
|----------------------------------|-------|------------------------|------------------------|----------------|
| Level of awareness in categories | 1-5 | 0 (0) | 20 (9.1) | 20 (4.5) |
| | 6-10 | 0 (0) | 10 (4.5) | 10 (2.3) |
| | 11-15 | 30 (13.6) | 73 (33.2) | 103 (23.4) |
| | 16-20 | 100 (45.5) | 54 (24.5) | 154 (35.0) |
| | 21-25 | 70 (31.8) | 58 (26.4) | 128 (39.1) |
| | 26-30 | 20 (9.1) | 5 (2.3) | 25 (5.7) |

nephropathy, atherosclerosis, and eye diseases (Table 2).

The mean awareness score in the hypertensive group was calculated to be 19.6 (maximum possible score = 30) with a range of 14 to 28, while the mean score in the normotensive group was 16.3 with a range of 3 to 26, and this difference was found to be highly significant after t test ($p < 0.001$). For tabulation purposes the awareness scores were divided into categories of 5 each and are presented in Table 3, only 5.7% of the total had a score above 25.

The level of awareness was not affected by gender ($p = 0.171$) or education status ($p = 0.215$). It was observed that people below 30 years of age (19.8%) were significantly more aware than people above this age (80.2%) ($p < 0.001$). People who had a family history of hypertension (52%) were more aware than those without a family history with a marginal significance ($p = 0.054$). It was seen that those with higher awareness scores were more compliant to therapy ($p < 0.001$) (Table 3).

Discussion

Decreasing and preventing the complications arising from hypertension is an issue of great importance.¹⁴ The morbidity and mortality caused by hypertension and cardiovascular disease alone has such a big impact on a country's economy and health care system¹⁵ that decreasing this has become absolutely necessary. This can be achieved if it is diagnosed early and thus prompt and adequate management can be started. A good control of blood pressure will lead to a lower incidence of complications.¹⁶ For this it is extremely vital that the general public is aware of the risk factors, presenting features and complications of hypertension, to enable better and earlier care seeking behaviour and thus earlier diagnosis. This will make prevention easy to achieve.¹⁷ The predictors of hypertension include increasing age, ethnicity, female gender, having a family history of hypertension, uncontrolled diabetes mellitus, obesity, stress, sedentary life style, smoking, and excessive salt and alcohol intake.¹⁸ Awareness will help in moulding the modifiable risk factors in themselves and in those around them, as besides age, race, gender and family

history, all the other risk factors are modifiable.

It was very reassuring to see that the participants of our study were well aware of stress, excessive salt intake and obesity as risk factors of hypertension. But there was poor awareness with regards to uncontrolled diabetes mellitus, excessive alcohol intake, smoking and a sedentary lifestyle. The trend of alcohol consumption is increasing in the Pakistani population and there are already many adults¹⁹ and children²⁰ who smoke regularly. Protective factors as a good glycaemic control in people with diabetes,²¹ and regular exercise^{22,23} need to be considered. The non-modifiable risk factors are the main precipitating ones for hypertension and people belonging to this group should be made aware to get themselves checked periodically.

Hypertension does not have symptoms which is not were known. It is evident from table 2 that headaches and dizziness were commonly attributed to high blood pressure.

People were quite aware of the fact that hypertension can lead to Stroke and Heart disease but not many knew that Eye Diseases, Renal Problems and Atherosclerosis are also complications of hypertension. The awareness about heart diseases might be overestimated as the study was conducted in NICVD. This poor level of awareness on complications of hypertension prompts education of masses and people with hypertension so that drug compliance improves. A poor level of unawareness has been reported by other researchers also.²⁴

Awareness scores were significantly higher in younger people (<30 years of age) and in those with a family history of hypertension. This is due to the fact that younger people are more educated. Relatives of hypertensive patients experience the disease in their family members and learn about it more. Compliance to medications was higher in those with higher awareness scores. This has been reported by many previous studies^{9,25} and further highlights the importance and benefits of increasing awareness.

Conclusion

The awareness regarding hypertension is very poor amongst patients and normal people. Through this study we identified areas of importance that need to be considered by awareness programs. Masses should be educated on the risk factors, presenting features and complications of hypertension. This is possible through awareness programmes designed by health professionals and the government.

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