

*Original Article***Knowledge, awareness, attitudes and practice about hypertension in hypertensive patients referring to public health care centers in Khor & Biabanak***Fakhri Sabouhi\**, *Sima Babae\*\**, *Homayoon Naji\*\*\**, *Akbar Hassan Zadeh\*\*\*\****Abstract**

**BACKGROUND:** Hypertension is one of the most crucial health problems and the most common chronic disease in developed and underdeveloped countries. It is called the silent killer which is usually diagnosed incidentally. Although hypertension is a preventable and treatable condition but without treatment it leads to serious and life threatening complications such as heart, kidney and brain disorders which in most cases result in patient's disability. Prevention, plays significant role in controlling this disease which is achieved by increasing the knowledge and awareness of the public and changing their attitude and practice.

**METHODS:** A cross-sectional, correlation-descriptive study was conducted in one stage, by one group. Two hundred and thirty four patients were recruited by random sampling among hypertensive patients referring to public health care centers in Khor & Biabanak in Isfahan province, IRAN. Data gathering was carried out with a questionnaire.

**RESULTS:** Our findings indicate that there is significant relationship between awareness and knowledge; awareness and attitude; awareness and practice. There is no significant relationship between knowledge and attitude or knowledge and practice. In addition, there is a significant relationship between attitude and practice of the patients.

**CONCLUSIONS:** Although patients relatively had high awareness, knowledge, attitude and practice about their disease but their hypertension was not still under control. Several barriers are associated with uncontrolled hypertension particularly treatment-related barriers. Findings suggest further studies to determine new effective strategies to solve this problem.

**KEY WORDS:** Knowledge, awareness, attitude, practice, hypertension

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**H**ypertension (HTN) is one of the most common health problems in developed and underdeveloped countries,<sup>1, 2</sup> and can be a significant cause of mortality due to coronary artery disease, brain stroke, and renal failure.<sup>3, 4</sup> It is the most common incidentally diagnosed chronic disease.<sup>5</sup>

Although it is a preventable and usually treatable disease but without treatment it leads to serious and life threatening complications such as heart, kidney and brain disorders<sup>1</sup>. Hypertension is a crucial problem in develop-

ing countries where there is movement from communicable disease to chronic non-communicable conditions.<sup>6</sup> In addition, hypertension and its complications (i.e. heart failure, stroke, and renal failure) are increasingly associated with older age.<sup>7</sup> In the developed countries, one out of four people aged 18 years or more have hypertension.<sup>8, 9</sup>

According to statistical reports from medical education and healthcare ministry, hypertension prevalence in Iran is about 27% and 42%, in people aged 45 to 69 years and those over 70

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years of age, respectively. The total hypertension prevalence rate in Isfahan is 17.5% (18.6% for women, 16.4% for men). Among them 46.2% of patients are aware of their condition while 33.9% were under treatment, and 12% had controlled hypertension.<sup>10</sup> In a recent study, its prevalence is reported around 18% in Tehran and Isfahan.<sup>5</sup>

Considering its prevalence and complications, it seems that several factors and barriers are associated with controlling this disease. The most important barrier in diagnosis and control of this condition is the lack of knowledge and awareness about various aspects of hypertension.<sup>11</sup> In addition, there are several reasons for uncontrolled hypertension including undiagnosed hypertension, inappropriate or insufficient medication, and wrong combination of drugs.<sup>5</sup> It is indicated that hypertensive patients had adequate general knowledge and awareness about hypertension but they did not have comprehensive understanding of their condition. For example, they did not recognize the importance of systolic blood pressure (SBP) control and did not care about regular blood pressure (BP) measurement which suggested that an educational and interventional program for hypertensive patients is necessary.<sup>12</sup> Another study showed that poor perception of good health and irregular visits to physician doctor are some of the most important factors for unawareness, untreated and uncontrolled hypertension especially among black men.<sup>13</sup>

Therefore, studies indicate that in 50-75% of diagnosed hypertensive patients, their high blood pressure is not controlled, and is still a significant problem in developing countries.<sup>12</sup> On the other hand hypertensive patients believe that this disease isn't serious and considerable, and hypertensive drugs have many side effects so they must take it only if they feel high blood pressure symptoms such as headache, chest pain, dizziness or after blood pressure monitoring. They believe that it is untreatable which indicates their inappropriate action about this condition. As a result, all efforts are made to improve the knowledge, awareness, attitude, and practice of hypertensive patients, especially

about the risks associated with uncontrolled hypertension,<sup>12</sup> and to plan preventive and control programs regarding this condition.<sup>6</sup>

The aim of this study was to assess the awareness, knowledge, attitude, and practice of hypertensive patients and its relation to demographic data in those referring to public health care centers in Khor & Biabanak.

## Methods

A cross-sectional, correlation-descriptive study was conducted in one stage, one group. Main variables were awareness, knowledge, attitude, practice, and hypertension. In addition, we studied some background (contextual) variables including age, gender, educational level and duration of high blood pressure.

Two hundred and thirty four (234) patients were recruited by random sampling among patients referring to public health care centers in Khor & Biabanak (an area in Isfahan province, IRAN). Inclusion criteria were 18-80 years old patients who were diagnosed with hypertension for at least one year, did not have any known psychological problem, and had baseline blood pressure level (i.e. researchers had their blood pressure twice before the study).

Data gathering was done with a two parts questionnaire. First part consisted of eight questions about demographic data (e.g. age, gender, marital status, educational level, duration of high blood pressure,...) and second part consisted of closed-end questions about four aspects including patients' awareness (8 questions), knowledge (11 questions), attitude (11 questions), and practice (20 questions). Four point Likert scale was used for scoring each question and total score of the questionnaire was 100. It was categorized and valued as weak ( $0 < \text{score} < 25$ ), moderate ( $25 < \text{score} < 50$ ), good ( $51 < \text{score} < 75$ ) and very good ( $76 < \text{score} < 100$ ). The study was approved by ethical committee of Isfahan University of medical sciences.

At first, an expert nurse visited all patients who were referring to public health care centers and their blood pressure level was measured. Random numbers were assigned to eligible pa-

tients and those with odd numbers were selected. All patients who agreed to take part in the study filled out the questionnaire. For validity and reliability of the tools, we used a German Richter mercurial blood pressure and a Litman stethoscope. The reliability of blood pressure apparatus was determined by comparing its results with another device. For its calibration all blood pressures were scaled by one system and researcher. Validity and reliability of the questionnaire were calculated using content validity and test-retest method, respectively. As the obtained results had a difference of less than 10%, the reliability of the data collecting tool was approved ( $r = 0.73$ ). Those subjects attending test-retest were left out of the study (10 subjects).

Data analysis was done using SPSS software using both descriptive and inferential statistics (student's t-test, Pearson correlation coefficient and Spearman correlation coefficient).  $P \leq 0.05$  was considered to be statistically significant.

## Results

Based on the study, patients' characteristics are presented in table 1.

Most of the patients (29.8%) used one beta-blocker drug. Fifty-eight percent of the participants reported that they have not their own sphygmomanometer while about 54.07% monitored their blood pressure with their own sphygmomanometer once a week, with mean

frequency of BP monitoring a week of 15.4 (SD = 0.91).

Maximum systolic blood pressure (SBP) ranged from 140-160 mmHg (63% subjects) with mean SBP of 153/0 mmHg (SD = 15.2 mmHg). Minimum diastolic blood pressure (DBP) ranged from 80-100 mmHg (89.5% subjects) with mean DBP of 90/0 mmHg (SD = 9.17 mmHg).

Mean and standard deviation of Patients' knowledge, awareness, and attitude and practice score of HTN are summarized in table 2.

Patients' awareness score of HTN was high (very good/score > 75) in most patients (64.5%) with mean of 79.7 (SD = 15.64). For example most patients (93.2%) reported that the first time they visited a physician or health care provider, they were told that they have hypertension. Eighty-five percent mentioned that it is important to keep SBP under control, while 90.6% mentioned that DBP control is important. Awareness of side effects of antihypertensive medications and hypertension complications were 9.4% and 79.5% respectively.

Patients' knowledge score of HTN was moderate ( $26 < \text{score} < 50$ ) in 49.1% patients with mean of 50.50 (SD = 17.66). For example more than (17.1%) patients knew the meaning of hypertension. Approximately 49.1% knew the meaning of two numbers (values) that are usually reported for blood pressure level. More than fifty percent (57.7%) reported that

**Table 1.** Patients' Characteristics

|  |       |
|--|-------|
| <b>Gender</b>                          |       |
| Male                                   | 44.9% |
| Female                                 | 55.1% |
| <b>Marital status (percentage)</b>     |       |
| Married                                | 97.4% |
| Single                                 | 0.9%  |
| widow                                  | 1.7%  |
| <b>Educational level (percentage)</b>  |       |
| Illiteracy                             | 29.0% |
| Primary school                         | 42.7% |
| High school graduate                   | 24.0% |
| Higher education                       | 4.3%  |
| <b>Duration of high blood pressure</b> |       |
| < 10 years                             | 63.5% |
| 10 < years < 20                        | 1.7%  |
| > 20 years                             | 34.8% |

**Table 2.** mean and standard deviation of Patients' knowledge, awareness, attitude and practice score of HTN

|                                  | Mean  | standard deviation |
|----------------------------------|-------|--------------------|
| Patients' awareness score of HTN | 79.7  | 15.64              |
| Patients' knowledge score of HTN | 50.50 | 17.66              |
| Patients' attitude score of HTN  | 74.54 | 7.48               |
| Patients' practice score of HTN  | 73.7  | 11.27              |

normal top blood pressure level (systole) is equal or more than 140 mmHg, and 50.0% reported that normal bottom blood pressure level (diastole) is equal or more than 90 mmHg. Also 99.1% assumed that hypertension means high blood glucose level (diabetes), and 22.2% of patients reported that hypertension is an asymptomatic condition. Fifty-two percent believed that patients use different methods for lowering their blood pressure (e.g. walking, using herbal drugs, diet therapy etc).

Patients' attitude score of HTN was good ( $51 < \text{score} < 75$ ) in 58.2% patients with mean of 74.54 (SD = 7.48). For example about 38.9% believed that measuring SBP is more important, while 53.8% told that measuring DBP is more important. Approximately (80.8%) mentioned that reducing blood pressure (even a little bit) is effective in health promotion. About 56.6% named hypertension as a serious disease, and 44.4% believed that it is manageable with medications. Less than fifty percent (42.3%) told that the type of diet is effective on blood pressure, 39.7% identified it as an inherited disease. About sixty percent (60.3%) identified it as a cause of diabetes and renal dysfunction. 41.5% told that it is related to age. Less than fifty percent (40.2%) had serious concern about their blood pressure rising. The most important reported factors to control hypertension were taking medication (73.1%), lowering stress (63.7%), diet (62.4%), quitting smoking (58.5%), losing weight (54.7%) and exercise (45.7%).

Patients' practice score of HTN was high (very good/score > 75) in 49/2% patients with mean of 73.7 (SD = 11.27). For example 70.1% of

the participants mentioned that they have referred monthly to a doctor or health care provider for BP checkup. About eighty percent (80.3%) consumed their prescribed medications as ordered and 53.8% had never ceased or decreased their hypertensive medications when they felt better. 47.0% reported that they have often adhered to the doctor or health care provider's recommendation about hypertension management. Forty-four percent rarely have forgotten to take their drugs and 59% reported that they have never quitted their medications even if they felt bad after taking it. Fifty-three percent reported that there was always somebody at home to remind them to take their medications. About fifty percent (44.9%) reported that sometimes they had regular exercise while 31.6% rarely had regular exercise. Thirty six percent (36.8%) had always used low salt diet (15.4% have often adhered it). Thirty six (36.3%) have tried to decrease their stress according to doctor or health care provider's recommendation. And 70.9% report that that they have rarely quit medications base on family or friend's recommendation.

In addition, data analysis showed that there is significant relationship between awareness and knowledge ( $P = 0.003$ ), awareness and attitude ( $P = 0.0001$ ) and awareness and practice ( $P = 0.0001$ ). There is no significant relationship between knowledge and attitude or knowledge and practice. In addition, there is a significant relation between attitude and practice ( $P = 0.0001$ ). These findings are summarized in table 3.

There was a significant relationship between

**Table 3.** Correlation between Knowledge, Awareness, Attitudes and Practice about Hypertension in Hypertensive Patients

|           | Knowledge |       | Awareness |        | Attitude |        | practice |        |
|-----------|-----------|-------|-----------|--------|----------|--------|----------|--------|
|           | p         | r     | p         | r      | p        | r      | p        | r      |
| Knowledge | -         | -     | 0.191     | 0.003  | 0.630    | 0.346  | 0.077    | 0.246  |
| Awareness | 0.191     | 0.003 | -         | -      | 0.403    | 0.0001 | 0.319    | 0.0001 |
| Attitude  | 0.63      | 0.346 | 0.403     | 0.0001 | -        | -      | 0.404    | 0.0001 |
| practice  | 0.077     | 0.246 | 0.319     | 0.0001 | 0.404    | 0.0001 | -        | -      |

knowledge score and age of the participants ( $p = 0.002$ ), but not between age and awareness, attitude and practice score ( $p > 0.05$ ). In addition, a significant relation was observed between length of disease, knowledge and practice score ( $p < 0.05$ ). Although there is no significant relationship between educational level and awareness, attitude and practice score ( $p = 0.001$ ) but there is a significant relationship between knowledge score and educational level ( $p < 0.05$ ). There is a significant difference between men and women's awareness score ( $p < 0.005$ ), but this difference is not seen in other aspects (knowledge, attitude or practice) ( $p > 0.05$ ). And finally women's awareness score was more than men ( $p = 0.0007$ ).

### Discussion

Based on our findings, subjects had high awareness (score  $> 75$ ). It seems that technology advancement, availability of multiple media (such as TV or radio that gives information about health issues especially the healthy heart project) have a significant role in increasing awareness in Khor & Biabanak desert area in Isfahan province, IRAN. Oliveria et al showed that most patients believe that decreasing DBP is effective on health promotion. All subjects were aware of their hypertension and two third of the patients knew that hypertension could lead to congestive heart failure. Less than 50% of patients mentioned that DBP monitoring is more important than another BP values. Less than one third of patients told that SBP monitoring is more important, and finally more than two thirds of the patients reported that both SBP and DBP are important while less than 50% of patients had no information in this subject.<sup>12</sup>

Khosravi et al concluded that almost fifty percent of the patients knew that they have hypertension, and most cases were on antihypertensive medications.<sup>5</sup> Egan et al recognized that most hypertensive patients have concerns about their condition. Most cases agreed that decreasing blood pressure (even a little bit) could be effective on health. In addition, they are aware of hypertension complications and advantages of lowering blood pressure.<sup>7</sup> Victor et al's study indicated that most patients had high awareness, more than half were under treatment but had uncontrolled hypertension. These findings showed that despite high awareness, patients had poor and inappropriate practice for hypertension management.<sup>13</sup>

According to our findings, patient's knowledge of hypertension were moderate ( $26 < \text{score} < 55$ ). Despite that Khor and Biabanak is a small desert area, they have a high school since about 60 years ago; so they were educated people. This can play a significant role in increasing people's knowledge and attitude in this area. Oliveria et al identified that patients overall HTN knowledge were good but subjects had little information about particular factors (especially normal BP and HTN management). In addition, most subjects knew the meaning of HTN, and the effects of decreasing BP in health promotion. They believed that hypertensive patients apply different methods for decreasing HTN.<sup>12</sup> Viera et al report the same findings. Their findings indicated that most patients know that high blood pressure is life threatening, and its most common reason is using rich salt diet; but some patients, which were elderly and African-American ethnicity, did not agree to this idea. Most patients reported that they

often do not feel HTN and have no symptom. A little percent did not know or were not sure that BP > 140/90 is called HTN<sup>11</sup>. Victor et al's study also indicated that patients believed that HTN have signs and symptoms and it is not asymptomatic and silent killer.<sup>13</sup>

Patient's attitude were good (51 < score < 75). In Oliveria et al's report less than 50% of hypertensive patients did not accept HTN as a serious health problem and they believed that it is unavoidable. Almost half of them were not aware of their blood pressure level, and could not express correct categories of high blood pressure.<sup>12</sup> Victor et al concluded that most patients believed that medication prescription was an effective treatment and garlic, herbs, or vitamins were also effective treatments. Having diabetes mellitus that attracts patient's attention to medications was also associated with a greater likelihood of HTN awareness and treatment but not controlling their disease.<sup>13</sup>

In this study, patients' practice score were very good (score > 75). It seems that in Khor and Biabanak some factors interrupt physical exercise (i.e. cold weather, having an old population with arthritis and its related pain). Moreover, salty water in this area is an unavoidable factor.

In Aubert et al's study, most patients believed that salty diet, obesity and smoking are important factors in hypertension. They mentioned that physical activity and exercise are very important factor in hypertension management. More than half aware patients mentioned that taking antihypertensive drugs is a life-long necessity. Patients with more awareness often had regular physician/health care provider ( $p = 0.001$ ), monitored their blood pressure monthly ( $p < 0.001$ ), decreased salt consumption ( $p = 0.001$ ), and had less exercise and physical activity than others did. This study showed that patients with more awareness had better attitude than patients with less awareness, but

both group had the same action.<sup>6</sup>

## Conclusion

According to our results, in spite of having good knowledge, awareness, attitude, and practice, blood pressure of our participants is not under control. This suggests that there are other barriers. For example, physician turn over, non adherence to a fix protocol or guideline, prescribing antihypertensive drugs from one category, or choosing two drugs from the same category (e.g. beta blockers), side effects (such as bradycardia, sudden decrease of blood pressure leading to drug withdrawal) combining several drug inappropriately, not having a fixed physician are the most important barriers to hypertension control. These findings mean that we need more evidence on this subject. Khosravi et al concluded that prescribed medication regimen for most hypertensive patients is not based on a standard protocol, so such regimen not only is not effective for hypertension management but also results in side effects, and noncompliance. Therefore, it is necessary to focus on more education about hypertension and its management for physician and other related health care providers.<sup>5</sup> Midlov et al reported that some physicians believe that we cannot use the same stable protocol to manage hypertension in elderly and adulthood; some believed that they prefer to use alternative ways especially in the first year after diagnosis. Fernandez et al concluded that many factors are effective in uncontrolled hypertension including patient related factors (e.g. age, life style, BMI, yearly physician appointment, ...), treatment related factors (such as noncompliance to the same protocol, ineffectiveness of applying one category of antihypertensive drug, ...), clinical assessment related factors (BP monitoring technique and its time, e.g. morning, evening, before/after drug taking), and equipment related factors (type of sphygmomanometer).<sup>15</sup>

The authors declare no conflict of interest in this study.

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