ORIGINAL ARTICLE

e-ISSN: 2349-0659 p-ISSN: 2350-0964
doi: 10.21276/apjhs.2018.5.1.8

Adherence to hypertension management and lifestyle modifications in patient attending general practice outpatient department in tertiary care hospital of eastern Nepal

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ABSTRACT

Background: Hypertension is a huge problem worldwide. It should be managed with a combination of lifestyle modifications and medication. The objective was to find out the level of understanding of hypertensive patients regarding lifestyle modifications; to find their level of application in their daily activities, and to study their effects on the management of hypertension.

Methods: We conducted an observational study with hypertensive patients who presented to GOPD at BPKIHS. We assessed the level of knowledge of those patients with a structured survey. Patients were told about lifestyle modifications following Joint National Committee 7 Guidelines. Patients were reassessed using the same survey at 1 month and 3-month follow-up.

Results: Among the 100 patients included, 6% had prehypertension and 94% had Stage 1 or 2 hypertension. Only 26% of patients knew about lifestyle modifications. After being told about lifestyle modifications, 89% stated that they had adopted them at follow-up. 68 patients came for 1-month follow-up and 51 patients for 3-month follow-up. There was significant weight reduction: Average weight loss 3.54 kg over 3 months ($P < 0.001$). At 1-month the percentage of subjects with controlled hypertension was 13.2% and at 3 months follow-up it fell to 2% ($P < 0.001$). 71% patients' blood pressure (BP) was controlled without medication at 1-month and 77% at 3 months.

Conclusion: A minority of patients knew about lifestyle modifications. After counseling, their implementation was associated with weight reduction and improved control of BP. Good lifestyle counseling is a crucial and effective part of hypertension management.

Key words: Exercise, hypertension, lifestyle modifications

BACKGROUND

Arterial hypertension is the most common cardiovascular disease and is a major public health problem in both developed and developing countries. Many national and international surveys showed that many hypertensive were unaware of their disease, many of the aware were not on treatment, and many of the treated are not controlled particularly in developing countries.[1-3]

It is quiet unfortunate that the number of patients with hypertension is increasing globally and we lack in awareness. The management of hypertension is done with a combination of lifestyle modifications and medication. Essential hypertension, a grossly underestimated condition in rural communities, is likely to be an important public health problem due to changing socio-cultural context and urban influence.

In the context of this knowledge about hypertension, this study was done to know what the patients really know about the lifestyle modifications and whether they implicate it in their routine normal life or not. If a patient is already on a medication for hypertension and they make lifestyle modifications also does this help into reduce the doses of antihypertensive or not.

METHODS

This was a prospective observational study done in the General Outpatient Department at B. P. Koirala Institute of Health Sciences from January 2012 to July 2013. All the patients aged between 16 and 65 years with blood pressure (BP) more than or equal to 130/90 mm of Hg were included in this study. The patients with target organ damage, diabetes, congestive heart failure, angina, and patients having other life-threatening comorbidity were excluded. The ethical clearance was taken from the Institutional Review Committee, and the verbal consent was taken from the patients before interview.

A convenience sampling was done that coincided with the outpatient days of the researchers which was fixed 3 days in a week. All patients

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Received: 12-11-2017 **Revised:** 24-12-2017 **Accepted:** 19-01-2018

were included during the study period of time. All patients either previously diagnosed as a hypertensive or newly diagnosed case of hypertension were interviewed about what they know about the lifestyle modification with a questionnaire. All the participants whether newly diagnosed or previously diagnosed were told once again about the lifestyle modification as stated in Joint National Committee (JNC) VII Guidelines which include dietary changes, exercises, sodium restriction, weight reduction, and moderation of alcohol consumption. The initial BP and weight were recorded. If the patient was already diagnosed as a hypertensive, then the medication was recorded, and needed changes were made in the treatment. All the patients were called for follow-up in 1 month and 3 months. Then, in the next follow-up there was another questionnaire to re-evaluate the patient's knowledge of lifestyle modifications and their BP and weight were recorded.

The Statistical Package for the Social Sciences software program was used to analyze data. The sections of the data collection instrument included: (a) Demographic data and (b) hypertension guideline (JNC VII) recommendations. Demographic data included subject's age, gender, and race. Demographic data were summarized by descriptive statistics using totals, percentiles, and measures of central tendency such as mean and mode.

Data were reported according to a range of BP measurement and time to follow-up examination. All data were compiled using descriptive statistics. The BP readings and follow-up time span had been summarized according to mean, and range. Lifestyle recommendation was documented using totals and percentiles. Frequency and percentiles of lifestyle modification prescriptions provided were tabulated. The understanding level of the patient about the lifestyle modifications was recorded.

RESULTS

The demographic status of the studied population is shown in Table 1.

After being asked about the knowledge of patients about lifestyle modification 26% knows about it in the first visit whereas after counseling 76% and 89%, respectively, in 1st and 2nd follow-up. Most of the patients were lost during subsequent follow-up. The patient who was already on treatment during the study period and the percentage of patients in whom the treatment was started in the first visit, and after that, the percentage of patients who needed changes in their treatment is also shown in Table 2. On the first visit, among 45 patients who were already on treatment, only 4 patients needed the treatment readjustment whereas on the 1st follow-up 30 patients among 47 patients needed their treatment to be readjusted. Whereas on the 2nd follow-up, there was not very much changed in the treatment group whom treatment was readjusted. Most of the patients medication's dose was decreased in readjustment.

The BP decreased sufficiently with further visits. The analysis using Chi-square test showed the $P < 0.001$, which is highly significant change.

The weight of the patients was well maintained with the lifestyle modification, and it was showed there was significant weight reduction which further leads to decrease in BP [Table 3]. Chi-square analysis of weight decrease showed the $P < 0.001$ - highly significant decrease in weight.

Table 1: Demographic status of study population

Particulars	*n* (%) *n*=180
Sex	
Male	117 (65)
Female	68 (35)
Age wise distribution	
16–25	9 (5)
26–35	41 (23)
36–45	49 (27)
46–55	52 (29)
56–65	29 (16)
Education status	
Illiterate	50 (28)
Primary school	38 (21)
Middle school	27 (15)
Higher secondary	20 (11)
Intermediate or post high school diploma	14 (8)
Graduate or postgraduate	25 14)
Profession or honors	6 (3)
Weight wise distribution (Kg)	
40–50	14 (8)
51–60	65 (36)
61–70	52 (29)
>71	49 (27)

DISCUSSION

In this study by comparing the person who was diagnosed as hypertension for the first time and the person who was already diagnosed as a hypertensive, there was not much difference in the understanding about lifestyle modifications. In this study, only 26% of subjects knew about lifestyle modification at the first visit. It means that the most of the patients who were previously diagnosed as hypertensive either were not properly counseled about the lifestyle modification and the seriousness of the disease or did not take it very seriously. When they were counseled about the relevant information in this study, they then began to follow the guidelines and showed the expected benefits.

This study indicates that, at least in the short term, a simple cognitive-behavioral self-management intervention can lead to clinically significant reductions in both systolic and diastolic BP. Patients also reduced their waist circumference, body weight, became more active and reduced their blood cholesterol. Although previous trials of behavioral change programs have produced similar benefits for hypertensive patients, this trial did so with a very much lower amount of input.[4]

Most of the people who were included in this study were having increased weight. More than 50% of patients were having increased weight according to their age. In those groups, most of the patients were mixed vegetarian and had the habit of using mustard oil as their cooking oil. Only 22% of patients were doing exercise as their regular habit in this study. After proper counseling, most of the patient started to do exercises in various forms up to more than 45 min. They also changed the cooking oil to refined oil. This could have led to a reduction in weight and a healthier lifestyle. The effect of decreased weight and increased exercise showing benefits with lowering of BP is documented in many other studies.[5]

Table 2: Knowledge, treatment status and BP monitoring on subsequent visits

Particulars	Percentage of patients on 1st visit *n*=180 (%)	Percentage of patients on 1st follow-up *n*=159 (%)	Percentage of patients on 2nd follow-up *n*=139 (%)
Knowledge of patients about lifestyle modification			
Knows	47 (26)	121 (76)	124 (89)
Don't knows	133 (74)	38 (24)	15 (11)
Treatment status			
No treatment	135 (75)	112 (70.6)	96 (69)
Already on treatment	45 (25)	47 (29.4)	43 (31)
Treatment started	43/135	27/112	11/96
Treatment changed	4/45	30/47	11/43
Changes in BP across visits			
BP>130/90	169 (94)	46 (29)	24 (17)
BP between 120/80 and 130/90	11 (6)	99 (62)	97 (70)
BP<120/80	0 (0)	14 (9)	18 (13)

BP: Blood pressure

Table 3: Changes in weight across follow-up visits

Particulars	Mean±SD	*P*
Frequency on 1st visit	63.6±9.55	<0.001
Frequency on 1st follow-up	62.88±9.47	<0.001
Frequency on 2nd follow-up	60.06±9.43	<0.001

SD: Standard deviation

The beneficial effect of habitual physical exercise, and physical fitness, on BP has been reported in the past. However, the fall in BP in this study cannot be attributed directly to the physical exercise. Exercise results in loss of body fat, a redistribution of fat stores, and weight loss. All of these are associated with a concomitant reduction in BP.[5]

Talking about the context of lifestyle modification in the case of hypertension one cannot forget the role of sodium. As stated in JNC VII guidelines about the recommendation of daily sodium intake and its effect in hypertension I also found that limiting the total intake of dietary sodium up to 100 mmol/day, i.e., not having habit of extra added salt in the way of papad, achar, or by adding salt in cooked vegetables from outside was agreed to by the subjects. A decreased intake of dietary sodium has been demonstrated to have a hypotensive effect, both alone and as an adjunctive measure to pharmacologic therapy. Sodium consumption has long been associated with hypertension. Many studies such as Weinberger, Beard *et al*., and Messerli *et al*. all support the consensus of the relationship between sodium intake and hypertension.[6-8]

Reduction in smoking was one of the important interventions in this study. When given information about the serious impact which can be due to smoking in hypertensive patients, all of the smokers either left smoking or decreased the number of cigarette use/day. By decreasing the number of cigarettes or by quitting one can also decrease the BP. However, it is still to be proved whether quitting smoking by itself lowers BP.

In our study, it has been shown that by limiting the daily intake of alcohol consumption to not more than two standard drinks or by quitting alcohol, as part of general lifestyle change, BP decreases. Most of the people who drink alcohol excessively are likely to suffer from hypertension. However, the literature for JNC VI (1997) recommendations covering alcohol consumption is not quite as convincing as that of smoking cessation. However, in JNC VII it had recommended that by limiting the alcoholic consumption to no more than two standard drink one can decrease the BP up to 2–4 mmHg. Itoh *et al*. with Jerez and Coviello, show a relationship with alcohol consumption and hypertension.[9,10] Cushman *et al*. reported that their data did not find the same results, thereby refuting this premise.[11] Whereas, other study shows that a consistent relationship has been noted between consumption of alcohol and increased BP, and reduced intake of alcohol has been shown to decrease BP significantly.

The limitation of this study is that the sample is specifically limited to the patients attending one GOPD in eastern Nepal. Findings are limited because they are based on a limited population at one site. Other obvious serious limitation in this study is the short follow-up period. The third serious limitation is common to all studies that use self-reporting of behavior. There is no simple method of verifying patients' reports about things such as diet and exercise.

CONCLUSION

A minority of patients knew about lifestyle modifications. After counseling, their implementation was associated with weight reduction and improved control of BP. Good lifestyle counseling is a crucial and effective part of hypertension management. Patients with elevated BP should follow a weight-reducing diet, take regular exercise, and restrict alcohol and salt intake. Available evidence does not support relaxation therapies, calcium, magnesium, or potassium supplements to reduce BP.

ACKNOWLEDGMENT

We would like to thank all the patients who agreed to be part of this study.

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How to cite this Article: Gupta PP, Moore MJ, Bhandari R, Giri S, Gupta S. Adherence to hypertension management and lifestyle modifications in patient attending general practice outpatient department in tertiary care hospital of eastern Nepal. Asian Pac. J. Health Sci., 2018; 5(1):35-38.

Source of Support: Nil, **Conflict of Interest:** None declared.