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The Preventive Measurement and Causes of Hypertension: A Study on 250-Bedded Hospital

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Abstract:
This study "Assessment of knowledge of patients regarding the prevention and control of hypertension in Feni 250 bedded Hospital." The study's objectives were to assess the patients' socio-demographic characteristics in Feni 250 bedded hospital. To receive health care services, determine the status of knowledge among the patients regarding signs and symptoms of hypertension, know the level of understanding of the respondents' understudy on causes of hypertension, and explore the existing knowledge of the patients regarding the minimum diagnostic procedure of hypertension. A total of 100 respondents were chosen by systematic random sampling and interviewed as well. The study's findings show that the respondents were averagely educated as 34 of them had studied up to class V or below. The major occupations were in the service (42), agriculture (12), small business (18). More than half of the respondents have a history of hypertension (54), and 44 respondents have had other heart diseases. The respondents thought hypertension is derived from their parents, grandparents or so on (76). Respondents knew both of the types of hypertension only; 54 people did not know of either type. Sixty-eight respondents had, at one point, received regular hospital service for hypertension (68). Based on multiple responses, it was seen that symptoms such as headaches (80), blurred vision (50), chest pain (44) and irregular heartbeat (40) were known by most of the respondents. Some also knew factors such as high cholesterol (18) and clinical symptoms (26) of the respondents. Respondents knew of Hypertension complications, including heart attack/ myocardial infection (52) and brain stroke or paralysis (74). An average number of them knew about cardiac failure (22) and renal insufficiency/chronic kidney (26). Fatty foods (82) and salty foods (70) are risky for hypertension. Prolonged step walking was the best form of physical exercise for controlling hypertension (92). A large number knew lifestyle factors such as drinking alcohol (64), consumption of excess protein/fat (46) or salt (46) that affect hypertension of the respondents. Finally, the study recommends that awareness-raising packages need to be developed and implemented using the mass media to aware the people to control and prevent hypertension.

Keywords: *Hypertension, prevention, causes, hospital in Feni*

1. Introduction

Improved recognition of the importance of systolic blood pressure (SBP) has been identified as significant public health and medical challenge in preventing and treating HTN [1]. SBP is a vital independent risk factor for cardiovascular disease, but no information is available on whether patients understand the importance of their SBP level [2], [3]. Further, a recent study looking at uncontrolled HTN in the United States concluded that most cases of uncontrolled HTN were related to mild systolic HTN. Recent reports have suggested that hypertension knowledge is related to BP control. It is essential to assess the extent to which patients are aware of the importance of controlling their SBP levels, as patient awareness and education are components of programs and interventions designed to improve the control of HTN and SBP[4].

Significant progress has been made in increasing the awareness, detection, treatment, and control of Hypertension (HTN); however, studies indicate that about 50%–75% of patients diagnosed with or being treated for HTN do not have adequate control of their blood pressure (BP) [5]. Efforts to control HTN have included increasing public knowledge and awareness, especially about the risks associated with uncontrolled BP. In 1972, the National High Blood Pressure Education Program was launched to further the public's knowledge of HTN and the seriousness of the condition. These efforts have, in part, been successful [6]. Data from the National Health and Nutrition Examination Survey (NHANES II and NHANES III) reported increased BP awareness from 1976 to 1991 from 51% to 73%. Other studies have assessed HTN knowledge and awareness in the general population with some, but not all, showing decreased knowledge and awareness [1]. Studies have been conducted evaluating knowledge and awareness in a hypertensive population. Still, these studies have been relatively small, have not comprehensively assessed HTN knowledge and awareness, and have not attempted to

validate patients' responses. It is important to have access to patients' clinical BP data so that the relationship between their perception of factors, such as BP control and actual clinical BP, can be measured and evaluated in the context of their clinical values [7].

This study's objective was to assess the current status of the knowledge about prevention and control of hypertension among the patients attending the 250 bedded Hospital in Feni.

2. Literature Review

Knowledge in our population was insufficient and partly associated with educational level, leaving much room for improvement by educational campaigns. Furthermore, we found a gap between knowledge of the increased risk for stroke in patients with hypertension and awareness of their own risk [8].

Knowledge about hypertension and it's control influences blood pressure control in patients with hypertension. We assessed these parameters in a large cohort of patients with ischemic stroke or transient ischemic attack and analyzed their educational attainment association [9]. Five hundred ninety-one consecutive patients with stroke with a medical history of hypertension were interviewed about knowledge concerning hypertension within a multicenter hospital-based stroke registry. We analyzed answers in relation to educational level with multivariate logistic regression adjusted for age and sex. Seventy-seven percent of the patients stated to have known about hypertension is a risk factor for stroke. Still, only 30% felt at increased risk of stroke. Less than half (47%) could identify 140 mm Hg or less as the maximum tolerated systolic blood pressure, and 53% had their blood pressure only controlled monthly or less often. Knowledge of possible consequences of myocardial infarction, nephropathy, peripheral vascular disease, and retinopathy was 64%, 20%, 11%, and 16%, respectively. Approximately half of the patients were acquainted with the no pharmacologic treatment options of physical activity (49%), reduction of salt intake (54%), and removal of caloric intake (48%) [8].

In contrast, relaxation techniques were only known to 17%. Adherence to those treatment options ranged from 42% to 67%. Educational level was significantly associated with knowledge of increased risk, possible consequences of hyper-tension, and learning about no medication treatment options [10].

A majority of the rural population in India have inadequate access to healthcare. Over half of the outpatient consultations are with indigenous and private practitioners, where regular Hypertension screening is not practised. Clinic-based (Oppor-tunistic) screening of hypertension will not screen and detect a large proportion of adult hypertensives. In turn, they will not seek healthcare from the formal health sector, until seriously ill. Community-based screening can improve the detection and treatment of hypertension. As fewer studies have been undertaken in rural India, it was decided to assess the prevalence, awareness, treatment, and control of hypertension, particularly among the rural population of Davanagere taluk [11].

All societies are confronted with the problem of defining a strategy to control high blood pressure. Large, prospective epidemiologic studies unequivocally show a robust and direct relation between high blood pressure and mortality due to cardiovascular disease (CVD) 1. Although the relative contribution of CVD deaths to total mortality in developing countries is smaller than that in developed countries, developing countries, because of their large populations, contribute nearly twice as much as do developed countries to the global CVD burden 2. Because hypertension is the most common cardiovascular condition globally; its prevention and treatment are essential public health issues [12].

Instead of evaluating individual nutrients or foods' influences, pattern analysis examines the overall diet's effects. Major dietary patterns have been related to CVD risk in studies conducted in Western countries 3-7. Recent intervention in the Dietary Approaches to Stop Hypertension (DASH) trial in the United States found that short-term beneficial effects of the DASH diet (fruit, vegetables, low-fat dairy products, and reduced-fat) blood pressure in hypertensive and borderline hypertensive patients8. However, no extensive epidemiologic studies have systematically evaluated associations of dietary factors or patterns with blood pressure in a low-income population [13].

The prevalence rate of hypertension in the study population was 18.3% (95% CI, 16.7-19.9%). Prevalence of Hypertension was more in males 19.1% (95% CI, 16.7-21.5%) than in females 17.5% (95% CI, 14.9-20.1%); 11.6%, 5.6%, and 1.2% of the total subjects had to Grade I, Grade II, and Grade III, respectively. Only 33.8% of them were aware of their hypertensive status. Hypertensives of 32.1% were on treatment, and 12.5% adequately controlled their BP. About 6.9% of the total hypertensives had severe Hypertension—Statistical Analysis: Proportions, One-way Analysis of Variance, Chi-square test [14].

Nurses play an important role in hypertension prevention and management because of their unique positions in patient education. However, patient education's effectiveness relies mostly on the nurse's awareness of the current hypertension guidelines. This study aimed to examine the level of awareness of hypertension guidelines and associated factors among nurses in Taiwan [15].

A cross-sectional survey was conducted in 10 hospitals in northern Taiwan. The Hypertension Management Questionnaire was developed based on the Taiwan Hypertension Guidelines and the seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure [16].

Hypertension is one of the main risk factors for cardiovascular diseases. Nursing carries a large responsibility in care delivery to hypertensive individuals. Thus, the goal was to assess a nursing team's knowledge of hypertension and its treatment before and after educational interventions. A questionnaire was used, addressing theoretical aspects of hypertension knowledge among nurses (5), technicians (2), auxiliaries (11) and community agents (37) at two Basic Health Units in São Paulo City, Brazil. For statistical analysis, Student's T-test was used, as well as variance analysis and $p < 0.05$. A knowledge increase was verified after the educational interventions for the group constituted by nurses, technicians and nursing auxiliaries (84.6 +/- 12.0% vs. 92.7 +/- 15.0%, $p < 0.05$), while no significant change occurred for

community health agents (80.8 +/- 12.2% vs. 83.5 +/- 24.0%). Thus, it was concluded that the educational actions were effective and must be put in practice in the nursing team, which they can influence the improvement of care delivery for hypertensive patients [17]

This study was done on 219 randomly selected 'healthy' subjects aged 18 years or older (mean 36 yrs.) in Rajghat village in Tetuljhora union of Savar, Dhaka, as a part of a coronary heart disease risk factors survey. Two male health assistants (with 12 years of schooling but unacquainted with blood pressure measurement) who work for primary health care and two male doctors (MBBS) were trained under the study protocol before data collection. The training included a lecture, videotape (developed by the Emory University, Atlanta, USA) exercise, live practice and testing components. The videotape presented a series of scenes displaying the fall of mercury in the sphygmomanometer column, accompanied by the simultaneously recorded Korotkoff sounds [18], [19]. The observer recorded the manometer readings at the first sound sequence indicating systolic and the last sound in a sequence indicating diastolic pressure. Known values were practised repeatedly until proficiency was attained in agreement with the reference values determined by an experienced reference observer [20].

Initially, the cuff was inflated rapidly approximately 20 mm above the level at which the radial pulse became impalpable. The cuff was then deflated at a constant rate of 2 mm/sec to the point 10 mm below the threshold of the disappearance of sounds. Two measurements were taken at least one minute apart, but their mean was used for this analysis. For each subject, one health assistant and one doctor's readings were obtained on two different occasions (crossover design applied for a block of 10 issues). The two readings were considered a pair, and the doctor's reading minus the health assistant's reading was considered the paired difference. Its mean and 95% confidence interval were used to evaluate the health assistants [21], [22].

3. Methodology of the Study

3.1. Principle Method

Quantitative in nature and social survey method was apply for conducting the study

3.2. Research Area

This study was conducted at 250 bedded Hospital, Eni.

3.3 Population and Unit of Analysis

The study populations were the patients attending in Feni 250 bedded hospital for receiving health services. The unit of analysis was individual patients.

3.4. Sample and Sampling

The sample size was 100 patients. Sampling respondent was select who are available and interest in the interview.

3.5. Techniques of Data Collection

By using interview and observation technique, through purposive sampling, 124 respondents were indemnified from 250 bedded Hospital, Feni. All the nurses were included under the study because a smaller number of Patients in 250 bedded Hospital, Feni. The observation was watching and recording behaviour and characteristics.

3.6. Data Processing and Statistical Analysis

A software package of SPSS used to research the data. Descriptive statistics were expressed as percentage performance, mean, standard deviation table, graph charts, and interpretation.

3.7. Ethical Consideration

Before starting this study, the research committee approved the research protocol (Local Ethical committee). The study's aims and objectives, along with its procedure, risks, and benefits of this study, were explained to the respondents in an easily understandable local language. Then informed consent was taken from each patient. Then it was assured that all information and records were kept confidential, and the procedure was used only for research purpose.

4. Results

The hospital was established on 10 acres of land in 1982 and started its operation with 50 beds. Besides the six Upazilas of the district, patients from nearby Ramgarh Upazila of Khagrachhari district, Mirsarai Upazila of Chittagong district, Chowddagram Upazila of Comilla district, and Senbag and Companyganj Upazilas of Noakhali district also come here for treatment. To meet the increasing demand, the then government in 1999, upgraded the Feni 50-Bed Hospital to a 100-bed one, and in 2009, upgraded it again to a 250-bed one. The hospital restarted its operation with the new 250-bed capacity from February of 2015. Meanwhile, the written test for employing 146 staff-members of third and fourth classes was held on May 8 of 2015, but the result is yet to be published. As a result, field and administrative works are getting hampered for lack of necessary manpower.

Though around 2,500 patients get treatment here daily, still the healthcare services have not been improved. The hospital authority informed the matter to the health department more than once, but still, there is no response. Maleka

Begum, 55, a patient coming to get treatment at the hospital said a lack of sufficient machinery at the hospital. So, the patients do their tests from private diagnostic centers and clinics.

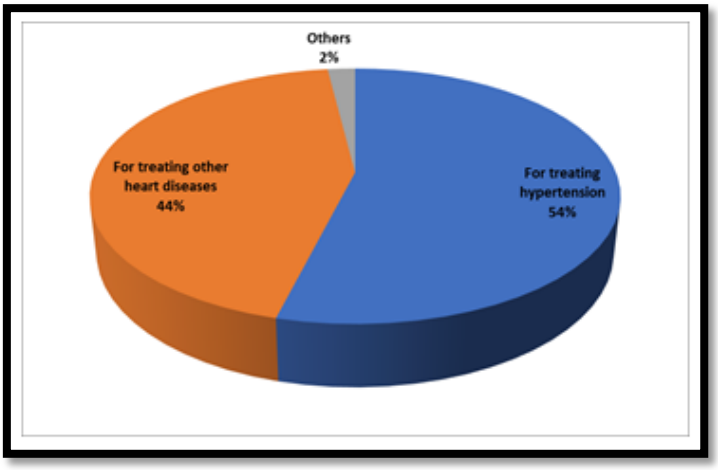

Figure 1: Distribution of the Respondents by Coming to the Hospital for Treating Hypertension or Other Heart Diseases

Figure 1 shows that More than half of the respondents have a history of hypertension (54), and 44 respondents have had other heart diseases.

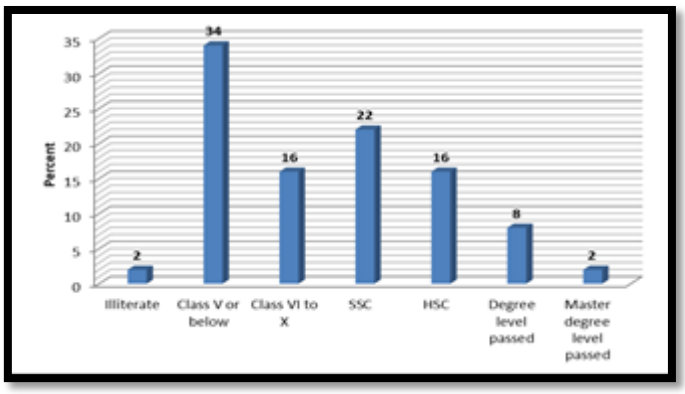

Figure 2: Distribution of the Respondents by Education

Figure 2 represents the respondents were not much or averagely educated as 34 of them had studied up to class V or below, 16 of them had studied to between Class VI to X, and 16 of them had passed their SSCs. Not many of them had achieved higher education, and 2 of them were incompletely illiterate.

According to Figure 3, many of the respondents had at least one family member with hypertension cases (58). The rest of them (26) don't. Sixteen of the respondents do not know whether there is such a situation.

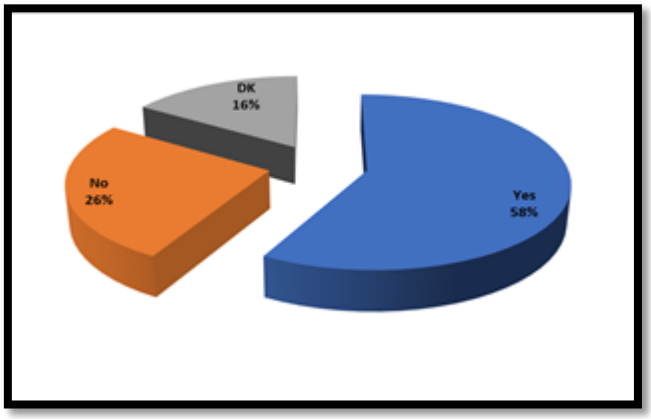

Figure 3: Distribution of the Respondents by Family Members Suffer from Hypertension

Based on Figure 4, the majority of the respondents had relatives who suffered from heart diseases (68). Out of the others, 24 did not, and 8 had no idea.

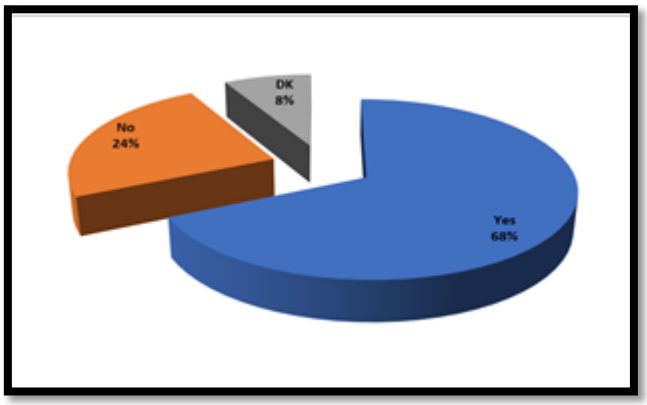

Figure 4: Distribution of the Respondents by First Blood Relatives Suffer from Hypertension

Based on multiple responses of Figure 5, respondents mostly knew of important diagnosing factors such as measuring BP (78) and high blood pressure (36). Some also knew factors such as high cholesterol (18) and clinical symptoms (26) of the respondents. 2 others did not know, and another two knew of other factors.

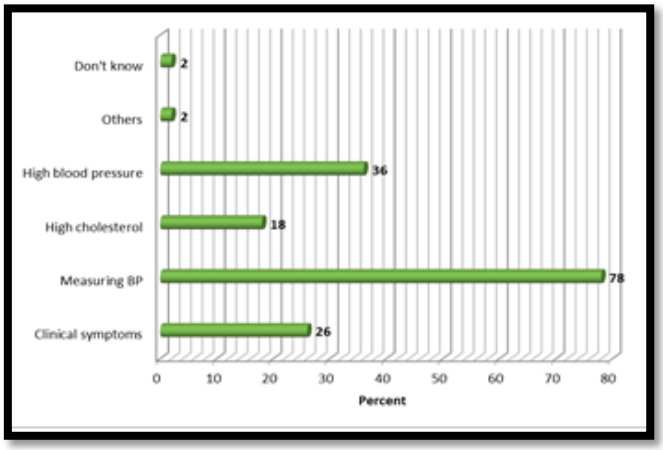

Figure 5: Distributions of the Respondents by Their Knowledge on Factors Are Important to the Diagnosis of Hypertension

According to Figure 6, most respondents said that hypertension could be prevented by preventing any complications (64) and controlling hypertension (74). Some said mental freshness could prevent it (28) and very few said it could prevent by getting the right information (10) and disseminating the message to control BP (6). 6 people knew no such methods.

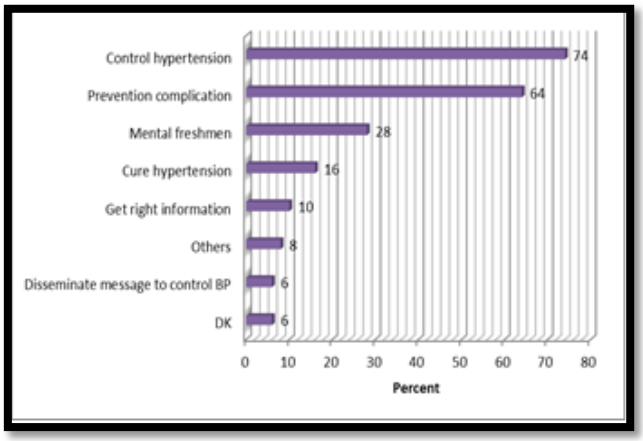

Figure 6: Distributions of the Respondents by Their Knowledge on the Important Factors of Counselling for Preventing Hypertension

Based on Multiple responses of Table 1, Lifestyle factors such as drinking alcohol (64), consumption of excess protein/fat (46) or salt (46) that affect hypertension was known by a large number of the respondents. Too much stress and lack of exercise are two factors that some respondents also knew (20 and 24).

Terms	Frequency	Percent
Drinking alcohol	64	64.0
Excess dietary sodium	46	46.0
Lack of exercise	20	20.0
Stress	24	24.0
Sleeplessness	8	8.0
Eat excess protein and fat	46	46.0
Others	14	14.0
Don't know	6	6.0

Table 1: Distributions of the Respondents by Their Knowledge on Lifestyle Factors Are Explicitly Relating to Hypertension

From the multiple responses of Table 2, after they received counselling for hypertension, the respondents understood aspects of hypertension and what should be done to keep at a minimum such as regular exercise (52), refraining from smok-ing (78) and abstaining from drinking alcoholic beverages (60)

Terms	Frequency	Percent
Do regular exercise	52	52.0
Take less carbohydrate	12	12.0
Avoid stress	22	22.0
Don't smoke	78	78.0
Don't drink alcohol	60	60.0
Don't take pill/ steroid/ pill/ steroid/ another hypertensive drug	2	2.0
Attend to hospital	28	28.0
Others	8	8.0
NA	4	4.0

Table 2: Distributions of the Respondents by Their Knowledge of the Topic of Counselling Provided to Them

5. Recommendations and Limitations

After analyzing the findings, the following recommendations are made.

- The respondents were found knowledgeable about the signs and symptoms of hypertension. To increase this knowledge level, tremendous awareness-raising campaigning needs to be designed and implemented through mass media like TV and print media.
- Respondents were aware of the importance of physical exercise to control hypertension, but due to the shortage of available open space, it is impossible to have the exercise. So, available open space needs to be ensured to control hypertension in the city like Dhaka.
- Causes of Hypertension include food factors, and the respondents are aware of this factor, safe food needs to be marketing which should help control hypertension. The inter-ministerial effort could be effective in this regard.
- Diagnostic procedure of hypertension need to be available to diagnose hypertension at an early stage to reduce mortality and morbidity. A huge technician could be developed to make this facility available in all the country's possible health facilities.

The study was conducted among small number of populations, and the area was selected purposively. As a result, it might not represent tile whole population. I had to depend on the memory of the respondents so memory lapses about the events that had occurred before, might limit the results in some cases.

6. Conclusion

In our community-based urban sample of the lean population, (mean BMI 20), around 75% of the elderly subjects were hypertensive. Awareness of HTN was low despite physician office visits, and control of high blood pressure was uniformly poor. Our findings emphasize the need for community-based measured of increased awareness of HTN and in the general population, and to promote measurement of BP, and knowledge of current HTN guidelines among physicians of Bangladesh.

Everywhere we turn today, we are bombarded with advertisements and public health announcements about hypertension, high blood pressure. It should come as no surprise that this a major public health problem. The effects of hypertension are felt throughout every organ system in the human body. Fortunately, with early detection, many cases can be controlled, and the long-term devastating effects mitigated.

Hypertension is a broad disease with both primary and secondary causes. Primary Hypertension is also referred to as essential hypertension. Secondary causes of hypertension are diverse. Our future plan is to use machine learning techniques to minimize the risk of the hypertension [21], [23], [24]. Based on the accuracy level of prediction using machine learning can be useful to do treatment in advance.

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