DETERMINANTS OF HYPERTENSION IN RURAL AREA OF CHANDPUR DISTRICT

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Abstract: *This study was carried out to assess the level of awareness about hypertension among hypertensives leaving in Ashikathi and Kollanpur union of Chandpur district. A total of 146 adult hypertensive patients were selected conveniently. Data were collected by face to face interview using a questionnaire. Present study revealed that among 146 hypertensive patients 65.1% were suffering from hypertension for less than 1 year and 61.6% respondents blood pressure is within normal limit. Mean systolic and diastolic blood pressure were 134.25 ± 15.58 and 84.08 ± 8.91 respectively. More than fifty six percent respondents had fair knowledge about the meaning of hypertension. Regarding the risk factor of hypertension 52.7% had fair knowledge. Study findings reflected fair knowledge in 65.1% about signs and symptoms, 45.9% about complication, 47.3 about prognosis, 67.1 about their own blood pressure status and 53.4% about prevention. Regarding self-care practice 50.0% were taking their medicines regularly and 45.9% checked their blood pressure within 3 months. Continuity correction and Fisher's Exact test with two tailed significant showed that occupation, education and marital status correlated with hypertension awareness. To measure the strength of association between different variables multiple logistic regression analysis was done.*

Keywords: *Determinants, hypertension, awareness, Chandpur*

Introduction

Worldwide control of communicable diseases has caused reduction of infectious diseases resulting in a decline in infectious disease mortality. In addition, changes in lifestyle and diet, increase in life expectancy, have resulted in a greatly increased burden of chronic diseases in countries[1]. The rise of non-communicable diseases (NCD) is increasing much more rapidly in developing than industrialized countries[2]. Meanwhile cardiovascular diseases contribute greatly to the burden of chronic disease. Hypertension is one of the most important and modifiable risk factors for cardiovascular and cerebrovascular morbidity and mortality[3].

Hypertension can be defined and classified according to the WHO/ISH guidelines[4]. Hypertension is defined as Systolic Blood Pressure (SBP) greater than or equal to 140 mmHg and/or Diastolic Blood Pressure (DBP) equal to or greater than 90 mmHg[5]. Hypertension was classified thus:
  (i)   Mild: SBP 140–159 mmHg and/or DBP 90–99 mmHg;
  (ii) Moderate: SBP 160–179 mmHg and/or DBP 100– 109 mmHg
  (iii) Severe: SBP = 180 mmHg and/or DBP = 110 mmHg

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Hypertension constitutes to be the main risk factors for cardiovascular morbidity and mortality as well as causing a negative impact on the quality of life[6]. In 2000, the estimated prevalence of hypertension in the adult population worldwide was 26.4% with 972 million of hypertensive individuals [7]. In 2025, according to Kearney 29% of the adult world population will be hypertensive which is approximately 1.56 billion people [8]. The prevalence of hypertension varies around the world with the lowest prevalence in rural India (3.4% in men and 6.8% in women) and the highest prevalence in Poland (68.9% in men and 72.5% in women). Incidence rates of hypertension range from 3% to 18% depending on the age, gender, ethnicity, and body size of the population studied[9]. The global economic burden of increased blood pressure was estimated to consume US$370 billion worldwide and 10% of healthcare expenditures[10]. The goal of concerted public health efforts is based on detecting, treating and controlling hypertension in the community, as shown by the experiences of many countries[11]. One strategy for achieving these objectives is to increase the awareness about blood pressure at the population level. Smith have presented a rule named the 'rule of halves' which predicts that only half of all those with hypertension are detected; half of those detected are treated and half of those treated are adequately controlled[12]. It seems that the awareness of people about their hypertension results in adequate treatment and better control. The degree of awareness and/or control of hypertension depend on several factors including socio-economic and education level, access to medical services, environmental conditions, diet, physical activity and stress [13.]

Information on prevalence, awareness, treatment, and control and self-care of hypertension is poor in Bangladesh. The aim of the present study is to further elucidate the demographic factors that are associated with the awareness about disease.

Materials and methods

The study was conducted at Ashikathi and Kollanpur union of Chandpur district in between January, 2014 to June, 2014. By purposive sampling method 146 adult hypertensive patients were selected. A pre tested semi structured interview questionnaire was used to collect data and blood pressure was measured by using sphygmomanometer three times and the average value was taken. To measure the level of awareness 5 point Likard scale was used where all the respondents were scored in between 1- 5 according to their awareness level. Informed written consent was taken from all the respondents. Data were analyzed by using MS excel and SPSS 20.0 version. Proper coding for each variable was done. Different statistical analysis was performed like frequency, mean, median, standard deviation, χ^2 test and multiple logistic regression. Before conducting χ^2 test analyses coding and decoding was done to create new variables. Then overall awareness score of all the respondents regarding hypertension and its control was calculated and the average score was taken. Then Benchmark scoring was used. Those who scored <2 were considered as poor awareness and whose who scored $\geq$ 2 were considered as good awareness. Continuity correction with two tailed significant and Fishers Exact test were used for interpretation. Forward method was used for multiple logistic regression analysis. Data were presented by table, graphs, charts and statistical inferences.

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Results

Table 1: Socio-demographic characteristics of the respondents (n= 146)

Variable	Frequency	Percentage
Age (years)		
30 – 39	16	11.00
40-49	31	21.20
50-59	52	35.6
$\geq$ 60	47	32.2
Sex		
Male	55	37.7
Female	91	62.3
Religion		
Muslim	137	93.8
Hindu	9	6.2
Education		
Illiterate	35	24.00
Primary	69	47.30
Secondary	32	21.90
College	9	6.20
Graduate	1	0.70
Occupation		
Farmer	4	2.7
Rickshaw puller	7	4.8
Shopkeeper	3	2.1
Business	16	11.0
Retired	24	16.4
Housewife	81	55.5
Others	11	7.5
Marital Status		
Married	97	66.4
Unmarried	0	0.0
Widow	41	28.8
Divorced	1	0.7
Separated	6	4.1

Source: Field Survey, 2014

Majority of the respondents were between 50-59 years of age group with mean age 53.81 $\pm$ 12.56 years. The female were 63.3% and majority were Muslim (93.8%). Regarding education majority had primary level education (47.3%) and most of them were housewife (55.5%). 97% of the respondents were married.
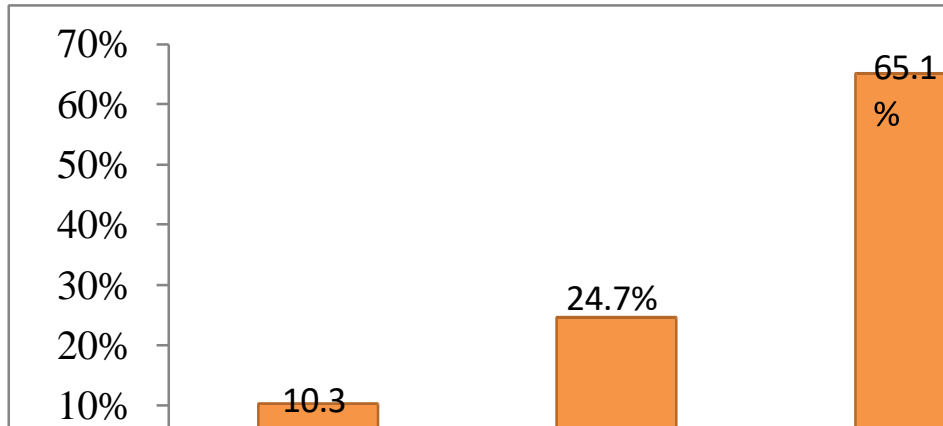

Figure 1: Duration of Hypertension of the respondents (n= 146)

Figure 1 reflects, 65.1% respondents were suffering from hypertension for > 1 years and 24.7% were suffering for 6 months – 1 year. The rest were suffering for < 6 months.

Table 2 shows the level of knowledge of the respondents about Hypertension. Out of 146 hypertensive patients 56.2% had fair knowledge about the meaning of Hypertension while 52.7% had also fair knowledge regarding the query of risk factors of Hypertension. Most of them (65.1%) had fair knowledge about signs and symptoms of hypertension. On the topic of complications of hypertension 45.9% had fair knowledge and 43.8% had poor knowledge. Greater part of the respondents had fair knowledge about the prognosis of hypertension (47.3%). Majority of the respondents (67.1%) had fair knowledge about how to take medicines of hypertension whereas 21.9% had neither good nor fair knowledge. On the subject of prevention of hypertension 53.4% showed fair knowledge.

Table 2: Knowledge of the respondents regarding Hypertension (n = 146)

| Knowledge on Hypertension	Frequency	Percentage
Meaning		
Poor	56	38.4
Fair	82	56.2
NGNF	8	5.4
Good	0	0.0
Very good	0	0.0
Risk factors		
Poor	40	27.4
Fair	77	52.7
NGNF	29	19.9
Good	0	0.0
Very good	0	0.0
Signs and symptoms		
Poor	13	8.9
Fair	95	65.1
NGNF	38	26.0
Good	0	0.0
Very good	0	0.0
Complications		
Poor	64	43.8
Fair	67	45.9
NGNF	14	9.6
Good	1	0.7
Very good	0	0.0
Prognosis		
Poor	61	41.8
Fair	69	47.3
NGNF	16	11.0
Good	0	0.0
Very good	0	0.0
Regular intake of medicine		
Poor	16	11.0
Fair	98	67.1
NGNF	32	21.9
Good	0	0.0
Very good	0	0.0
Prevention and control		
Poor	25	17.1
Fair	78	53.4
NGNF	43	29.5
Good	0	0.0
Very good	0	0.0

Source: Field Survey, 2014
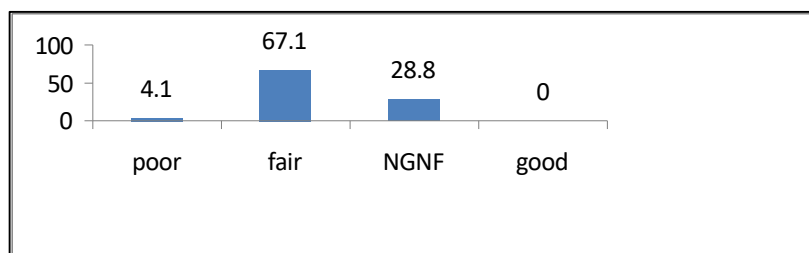
Figure 2: Knowledge of the respondents regarding their own Blood Pressure Status (n=146)

67.1% had fair idea about their own blood pressure status and 28.8% and had neither good nor fair idea which is revealed by figure 2.

Table 3: Practice of the respondents for the prevention and control of Hypertension (n=146)

Variable	Frequency	Percentage
History of Smoking		
Current smoker	22	15.1
Past smoker	32	21.9
Never	92	63.0
Intake of medicine for controlling hypertension	73	50.0
Regular	73	50.0
Irregular		
Ever change the doses of medicine for hypertension by themselves		
Yes	98	67.1
No	48	32.9
Ever discontinued taking medicine for hypertension	117	80.1
Yes	29	19.9
No		
Taking extra table salt		
Regular	58	39.7
Irregular	40	27.4
Never	48	32.9

Source: Field Survey, 2014

Table 3 shows the self-care practices of the hypertensive patients for the control and prevention of hypertension. Only 15.1% of the respondents reported themselves as current smoker whereas 63.0% had never smoked. 100% of the respondents had been prescribed for hypertension and 50.0% were taking their medicines regularly. 67.1% had reported that they had changed their doses of medicine by themselves ever whereas 80.1% had stopped taking medicines ever in their lifetime. On the query of taking extra table salt, 39.7% reported that they used to take extra table salt regularly while 32.9% had never taken extra table salt.
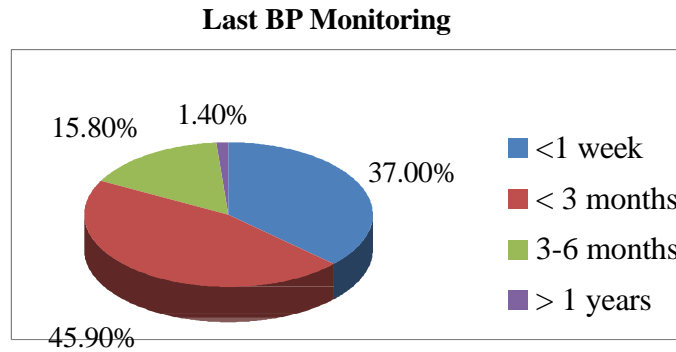
Last BP Monitoring

Figure 3: Practice of the respondents regarding their last BP monitoring (n=146)

Figure 3 tells 45.9% hypertensive patients had checked their blood pressure within 3 months whereas 37.0% had monitored their blood pressure level within 1 week.

Table 4: Relationship of Socio-demographic Characteristic and Awareness level of Hypertensive Patients (n=146)

Variable	Awareness				Total	χ^2	*p* value
	Poor (n=112)		Good (n=34)				
	Frequency	Percentage	Frequency	Percentage			
Age*							
< 50 years	36	76.6	11	23.4	47	0.00	1.00
>=50 years	76	76.8	23	23.2	99		
Education*							
Literate	79	71.2	32	28.8	111	6.717	0.01
Illiterate	33	94.3	2	5.7	35		
Occupation*							
Employed	26	63.4	15	36.6	41	4.655	0.031
Unemployed	86	81.9	19	18.1	105		
Marital status*							
Married	69	71.1	28	28.9	97	4.147	0.042
Others	43	87.8	6	12.2	49		
Duration of HTN*							
<1 years	40	78.4	11	21.6	51	0.024	0.877
>=1 years	72	75.8	23	24.2	95		

***Continuity correction with two tailed significant**
****Fisher's Exact test with two tailed significant**

Table 4 shows that among the respondents who were aged <50 years 36.6% and 23.4% had poor and good awareness respectively while among the respondents aged $\geq$50 years the frequency is 76.8% and 23.2% respectively with $\chi^2 = 0.00$ and p> 0.05. Regarding education, among the literate hypertensive patients 28.8% had good awareness. On the subject of occupation, among the respondents who were employed 36.6% had good awareness. The corresponding figures for unemployed were 18.1%.These differentials in awareness according to occupation were significantly associated as $\chi^2 = 4.655$, p-value <0.05. Concerning marital status among the hypertensive patients who were married 28.9% had good awareness while for other marital status groups 12.2% had good awareness. Relating to the duration of HTN, among the respondents who had hypertension for <1 year 21.6% had good awareness while the corresponding figure for others who had hypertension for $\geq$ 1 years is 24.2 with $\chi^2 = 0.024$ and p> 0.05.

Table 5: Results of multiple logistic regression analysis**

Variable	Exp B	*p* value
Age		
<50 years	1*	
>50 years	0.99	0.98
Education		
Illiterate	1*	
Literate	6.68	0.01
Occupation		
Unemployed	1*	
Employed	2.61	0.02
Marital status		
Unmarried	1*	
Married	2.91	0.03
Duration of HTN		
<1 year	1*	
>1 years	1.16	0.72

Source: Field Survey, 2014

* Reference value
**Forward method was used for analysis

Table 5 shows, that awareness is 6.68 times higher among literate individual than illiterate while awareness is 2.61 times higher among employed individual than unemployed. Married respondents were 2.91 times more aware than other marital status group.

Discussion

The study showed that more than half of the respondents (56.2%) had fair knowledge about the meaning of hypertension which was higher than a study done in Tribhuvan University Teaching Hospital, Kathmandu, Nepal (56%) [14], and another study done in China (26.5%) [15]. In Europe the rates of awareness of hypertension vary from 33 to 83%

[16, 17]. In Asia the percentages of awareness range between 24.6 and 48.5% [18, 19] in Latin America, these indexes ranged from 20 to 78% [20, 21]. African countries, the mean levels of awareness are about 40% except in South Africa where the index reaches 67% [22, 23]. All these findings can be compared with the current study. The study also reflected poor knowledge in 38.4% which is much lower than a study where more than 80% answered that they did not fully understand what hypertension was [24].

The study found out Most of them (65.1%) had fair knowledge about signs and symptoms of hypertension which is lower compared with the findings found in another study where most of them (84%) were aware about sign and symptoms of hypertension[14]. The observation of the study regarding prognosis of hypertension was majority had fair knowledge (47.3%) whereas another study reflected regarding prognosis, 62% of the respondents thought it is controllable whereas 4% had no knowledge about it[14].
Regarding complications of hypertension 45.9% had fair knowledge and 43.8% had poor knowledge which in lower than the study done in Tribhuvan University Teaching Hospital, Kathmandu, Nepal where 62% of them knew about complications of hypertension[14]. Most of the respondents (67.1%) had fair idea about their own blood pressure status and 28.8% had neither good nor fair idea which can be compared with the study conducted in Brazil where it is estimated that, on average, 68.9% of individuals are aware of their hypertensive status[13]. Another study showed 97% did not know if they had high blood pressure[24]. A study done at Karen ethnic rural community, Thasongyang, Thailand reported that most of the hypertensive (84.44%) and prehypertensive (72.97%) participants did not know that they had hypertension risk [24] whereas study done at Urban Population of Kerala (South India) found out 33% of the hypertensive individuals were unaware of their condition[25].

Majority of the respondents (39.7%) used to take extra table salt regularly which can be compared with another study that showed 80% of the patients knew they should limit their salt intake, only one third always avoided salty foods[26]. Another study done in rural population of Bangalore rural district reported among the study subjects 92 (6.1%) were in the group "additional dietary salt intake" meaning that they added extra salt to the salted cooked food [27]. In this study among the hypertensive patients 63.0% had never smoked which is lower than a study shows 80% had no habits of smoking[15]. In a study in the Karen ethnic rural community, Thasongyang, Thailand showed among the hypertensive patients 67.79% of participants were current smokers, 6.71% were ex-smokers and 23.18% were nonsmokers[24].

In this study 50.0% were taking their medicines regularly. 67.1% had reported that they had changed their doses of medicine by themselves ever and 80.1% had stopped taking medicines ever. These findings can be compared with the study which found out 92% of them were taking their medication regularly and more than 90% never change their drug by themselves and 70% of them did not discontinue their medication[14]. This study showed awareness according to education were highly significantly associated as $\chi2 = 6.717$, p-value = 0.01. Another study in an Urban Population of Kerala (South India) found out that the awareness of hypertension was higher among persons with higher

educational status[25], in contrast to observation from a recent study from Spain[28] whereas similar results of awareness were observed among the respondents of different levels of education in a Brazilian city[29].

Conclusion

Despite the limitations, this study provides an insight to the epidemiological patterns of major risk factors, risk behaviors, and risk awareness regarding hypertension and presented a comparison between hypertensive patients in a rural community. Awareness of Hypertensions among the respondents was fair. The results of the current study may be useful for devising an interventional strategy for prevention of the cardiovascular disease epidemic. Because hypertension is emerging as a major public health problem in many developing countries undergoing epidemiological transition, it is essential to gather both epidemiological and KAP data on hypertension as crucial steps in the design of sound prevention and control programs. Various factors might have contributed to this rising trend, attributable to several indicators of economic progress such as increased life expectancy, urbanization and its attendant lifestyle changes including increasing salt intake and the overall epidemiologic transition many developing countries like Bangladesh are experiencing currently. Epidemiological studies to assess the prevalence and awareness regarding hypertension are urgently needed in developing countries like Bangladesh to determine the baseline against which future trends in risk factor levels can be assessed and preventive strategies planned to promote health among all sections of the populations including reducing obesity, increasing physical activity, decreasing the salt intake of the population and a concerted effort to promote awareness about hypertension, its risk factors, and risk behaviors. These efforts have the potential to reduce the emergence or minimize the prevalence of pre-hypertension and hypertension in different regions of Bangladesh.

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