

Awareness and behaviour change pertaining to hypertension among the elderly people of Paschim Medinipur District, West Bengal, India

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ABSTRACT

Hypertension is a common ailment among the elderly people which causes health problems, such as heart and cardiovascular diseases (CVDs). Since decades, studies have reported that uncontrolled blood pressure increases the risk of serious health problems, including heart attack and stroke. Reports also suggested that knowledge of healthy lifestyle is one of the most imperative issues that reduces the risk of such life threatened diseases. The principal aim of the present study was to evaluate the awareness and behavioural pattern, in relation to hypertension and its related lifestyle issues, among the elderly people residing in a rural area of Paschim Medinipur District of West Bengal. A total of 200 Bengali speaking individuals of both sexes, aged 60 years and above were selected from rural areas of Midnapore Sadar Block. Data on socioeconomic aspects, dietary practices, physical activity and substance use in terms of tobacco and alcohol use were collected through pretested questionnaires, after taking verbal consent from each of them. Blood pressures were measured following standard techniques. The results depicted a poor awareness about the bad effect of consumption of oily and spicy food among the female study participants ($p < 0.05$). Very few study participants have the awareness that hypertension affects daily lifestyle. Visiting to doctors was found to be very less frequent among them. In conclusion, the present small scale cross-sectional study suggests that rural people still are unaware about the healthy lifestyle required to control over hypertension. Further, to unearth the exact scenario pertaining to hypertension and its lifestyle related correlates and to implement appropriate intervention research, rural-urban comparative study will be of utmost importance.

Keywords: Hypertension, Elderly, Rural, Lifestyle, Awareness, Paschim Medinipur.

INTRODUCTION

Hypertension is the third leading risk factor contributing to death, surpassed only by malnutrition and smoking (WHO, 2010). Hypertension is not curable; however, preventive measures and control of high blood pressure (BP) should be prioritized. A healthy lifestyle remains the cornerstone of the management of BP and all severities of hypertension. It is possible to prevent the development of hypertension and to lower blood pressure levels by simply adopting healthy lifestyles (WHO, 2010). Health care worker can assess and contribute to the management of hypertension with exercise adequately if the patient is educated and convinced that lifestyle changes are essential and indeed the most cost effective method of obviating CVD.

Hypertension is a worldwide epidemic that affects all ages, but occurs predominantly among the adults. It is estimated that there are 3.45 billion adults (above 20 years of age) in the world are hypertensive and moreover, estimating 20% prevalence for hypertension, 690 million people are thought to have hypertension (AIHW, 2019). The World Health Organization (WHO) has identified hypertension as the number one risk factor for mortality worldwide (WHO, 2007a). WHO estimates 5 million deaths per year worldwide due to stroke and another 30 million people is suffering from disabling complications of hypertension. Globally, about 30% or 15 million people a year, die from cardiovascular diseases (WHO, 2007b).

High blood pressure or hypertension is a common condition in which the force of the blood against the artery walls is high enough that it may eventually cause health problems, such as CVD and cerebrovascular diseases. High blood pressure generally develops over many years, and it affects an overwhelming majority of the human population. Uncontrolled high blood pressure increases the risk of serious health problems, including heart attack and stroke (Porapakham et al, 2008). Hypertension is a lifestyle disorder, aggravated by unhealthy diet, adiposity, excessive alcohol intake, and stress.

Term “lifestyle” is a concept often used to denote “the way people live” reflecting attitudes and activities (Blaxter, 1990 & Gu et al, 2012), while describing lifestyle factors in the context of health, it has been proposed that the dietary patterns, substance use (viz. tobacco use and alcohol drinking habits), physical activity and other behavioural traits are significant variables. A lifestyle of risky behaviours, such as smoking and chewing tobacco, consumption of alcohol or exposure to stress, may increase the likelihood of poor health (WHO, 2010).

The prevalence of hypertension is higher in low-income countries than in middle- and high-income countries (Brut et al, 1995), as the risk of dying from hypertension is more than double in low- and middle- compared to high income countries (National Institute for health & Clinical Excellence, 2006).

Despite the high burden of hypertension, most affected persons are not aware of its presence, thus increasing the occurrence of associated complications, particularly among elderly populations (Ong et al, 2007 & Porapakham et al, 2008). Awareness of the diagnosis of hypertension is an important determinant of treatment and medication adherence. Awareness of hypertension is high in developed countries compared to developing nations. For example, in the third National Health and Nutrition Examination Survey (NHANES III), awareness of hypertension approached 73% among the United States adult population, while in Nigeria only about 30% of persons with the condition was aware of it at the time of diagnosis (WHO, 2010; Brut et al, 1995). Optimal control of hypertension has been shown to reduce the risk of cardiovascular complications, particularly that of SBP which is more prevalent among the elderly population (Iyer et. al, 2010; Gu et al, 2012). The knowledge and awareness of the diagnosis as well as of the risks associated with uncontrolled hypertension tend to enhance patients' adherence to lifestyle modifications and to medications (Porapakham et al, 2008; Zhang et al, 2009)

Several guidelines have been proposed to control over hypertension by different authorities on a regular basis. The hypertension clinical guideline from the National Institute for Health and Clinical Excellence (NICE) usefully recommends regular aerobic exercise and reduction of salt, alcohol, and smoking, and advocates 'healthy, low-calorie diets' for 'overweight individuals with raised blood pressure', but simultaneously, gives a rather negative comment about its 'modest effect' and the unexplained variability of effect in trials (National Institute for health & Clinical Excellence, 2006). British Hypertension Society (BHS) guidelines state that advice should be provided for prevention as well as treatment of hypertension and should be given to pre-hypertensives and those with a strong family history of hypertension. They pointed out that effective lifestyle modification can lower blood pressure by at least as much as a single antihypertensive drug (Cook et al, 1995). The diet proposed by "The Dietary Approaches to Stop Hypertension (DASH)" is low in total and saturated fat, red meat, sugar, sugary drinks, and refined carbohydrates, but high in fruits, vegetables, whole grains, fish, poultry, and low-fat dairy products. The DASH diet has been found to lower weight, heart rate, risk of type 2 diabetes, C-reactive protein, apolipoprotein B, and homocysteine and is associated

with a lower incidence of heart failure, all-cause mortality and stroke (Chen et al, 2010; Craddock et al, 2003)

The above brief literature review is indicative of the fact that study on awareness and behavioural change pertaining to hypertension is rarely available in rural settings of West Bengal. Hence, the principal aim of the present study was to evaluate the awareness and behavioural pattern among the elderly people residing in a rural area of Paschim Medinipur District of West Bengal, India.

MATERIALS AND METHODS

The present study was carried out among the Bengali speaking Hindu population. Bengali Hindus are the predominant population throughout the state of West Bengal so as the district of Paschim Medinipur.

The Bengali Hindu people prefer to live in nuclear, joint and extended families where both male and female share members all the domestic works. However, nuclear families are gradually increasing in urban areas. They are predominantly homogenous pertaining to different cultural practices, as well as dietary habit and daily living pattern. “*Bangla*” is the *lingua franca*, while Hindi and English languages were used as and when needed. Bengali language comes under Indo-European group of language. However, it is influenced by many other language groups of Southeast Asia, namely, Tibeto-Burman, Dravidian and Austroasiatic. Monogamy is the general norm of marriage, while cases of polygamy are sometimes being noticed. The rationales behind choosing Bengali Hindus as study population are manifold. Firstly, this particular group is numerically highest in the study area. Secondly, they are homogenous in major aspects, and thirdly, due to operational convenience.

The present cross-sectional study has been carried out among 200 individuals of both sexes (100 each), aged 60 years and above, selected from rural areas of Midnapore Sadar Block under Paschim Medinipur district of West Bengal, India. As the present study aims to evaluate the awareness pertaining to hypertension, those who are having hypertension for at least one year were chosen to participate in the study. The study area has been purposely chosen for a better accessibility to reach the study participants. Verbal consent from each of the study participants was taken prior collecting any data. Data on socioeconomic aspects, dietary practices and physical activity pattern, substance use (tobacco and alcohol) were collected through pretested questionnaires from each of them. Data on awareness about hypertension was also collected through a pretested questionnaire. The study participants were asked about their

view towards dietary practices (including free salt use), habitual physical activity pattern and physical exercise for health, knowledge about the effect of oily, spicy and junk food items, and the effect of tobacco and alcohol use, on high BP. Perceived notion on interrelationship between lifestyle and hypertension, necessity of visiting a doctor frequently was also obtained from each of them. Blood pressures were measured following standard method (Pickering, 2003).

Frequency of each categorical variable was obtained. To see the sex difference between lifestyle related, socioeconomic status and awareness related variables, chi-square analysis was performed for categorical and t-test was carried out for the continuous variables. The effect of age on SBP and DBP was found and regressed out and age adjusted SBP and DBP were used in the inferential analyses. To identify the awareness related associates of age adjusted SBP and DBP, univariate analysis (ANCOVA) was performed. The socioeconomic, perceived notion on daily activity pattern and substance use variables were used as covariates. All the statistical analyses were done with the help of SPSS 16.0 software and the significant level has been fixed at $p < 0.05$.

RESULTS

Table 1 Socioeconomic and demographic distribution of study participants, by sex

Variable	Male (n=100)		Female (n=100)		Total	%
	n	%	n	%		
Marital Status of the Study Participants						
Married	88	44.00	73	36.50	161	80.50
Unmarried	6	3.00	7	3.50	13	6.50
Widow/Widower	6	3.00	20	10.00	26	13.00
Educational Qualification of the Study Participants						
Up to Primary	42	21.00	66	33.00	108	54.00
Above Primary	58	29.00	34	17.00	92	46.00
Working Status of the Study Participants						
Worker	77	38.50	63	31.50	140	70.00
Non Worker	23	11.50	37	18.50	60	30.00
Occupational Status of the Study Participants						
Agriculture and Daily Labour	47	23.50	65	32.50	112	56.00
Petty Business	53	26.50	35	17.50	88	44.00
Monthly Family Income of the Study Participants (in Rs.)						
≤3000	6	3.00	5	2.50	11	5.50
3001-6000	72	36.00	60	30.00	132	66.00
6001-9000	18	9.00	29	14.50	47	23.50

9001 and Above	4	2.00	6	3.00	10	5.00
Monthly Family Expenditure of the Study Participants (in Rs.)						
≤3000	21	10.50	11	5.50	32	16.00
3001-6000	59	29.50	73	36.50	132	66.00
6001-9000	17	8.50	15	7.50	32	16.00
9001 and Above	3	1.50	1	0.50	4	2.00

Table 1 depicts the socioeconomic and demographic profile of the study participants, by sex. About 80% of the respondents were married, 6.5% of the respondents were unmarried and rest 13% of the respondents was widow/widower. The table also illustrates out of the total respondents, 54% has attained primary level of education and rest 46% of the respondents has attained above primary level of education. About 70% of the study participants are worker, while the rest are non-worker. The table also shows that 56% of the respondents, irrespective of sex, are engaged in agriculture and daily labour. The family income and expenditure of majority of the families are between Rs. 3000.00 and Rs. 6000.00.

Table 2 Physical activity pattern of the study participants, by sex

Variable	Subcategory	Sex of the participants				χ^2 Value (df = 1)
		Male (n=100)		Female (n=100)		
		n	%	n	%	
Daily Activity	Heavy	39	39.0	14	14.0	17.549**
	Moderate	45	45.0	65	65.0	
	Light	16	16.0	21	21.0	
Walking	Practicing	52	52.0	29	29.0	10.157**
Physical exercise for health	Practicing	28	28.0	11	11.0	10.581**

Table 2 shows the sex difference in various activity patterns among the study participants. The chi-square values of each category show significant difference ($p < 0.05$) between sex pertaining to all physical activity related variables. For all the activities, males show higher percentage values than their female counterparts.

Table 3 Tobacco use and alcohol consumption among the study participants, by sex

Variable	Subcategory	Sex of the participants				χ^2 Value (df = 1)
		Male (n=100)		Female (n=100)		
		n	%	n	%	
Smoking Habit	Smoker	44	44.0	2	2.0	52.742**
Previous Smoking	Yes	12	12.0	0	-	69.113**

	No	46	46.0	98	98.0	
	Continuing	42	42.0	2	2.0	
Chewing Habit	Chewer	47	47.0	28	28.0	8.794**
Previous Chewing	Yes	3	3.0	5	5.0	10.331**
	No	52	52.0	68	68.0	
	Continuing	45	45.0	27	27.0	
Alcohol drinking Habit	Consumer	54	54.0	23	23.0	21.004**
Previous Drinking	Yes	2	2.0	0	-	21.438**
	No	43	43.0	75	75.0	
	Continuing	55	55.0	25	25.0	

Table 3 demonstrates the sex difference in substance use in terms of tobacco use and alcohol consumption. The chi-square values show significant ($p < 0.05$) sex differences for all the variables related to tobacco and alcohol. Like the previous table, males show higher frequency than that of their female counterparts for all substance use variable.

Table 4 Awareness about hypertension among the study participants, by sex

Variable	Subcategory	Sex of the participants				χ^2 Value (df = 1)
		Male (n=100)		Female (n=100)		
		n	%	n	%	
Frequency of visiting a doctor for blood pressure	Never	19	19.0	29	29.0	13.509*
	Frequently	2	2.0	4	4.0	
	Monthly	1	1.0	9	9.0	
	Every 6 Month	24	24.0	16	16.0	
	Every 3-4 Month	20	20.0	14	14.0	
	Once A Year	21	21.0	15	15.0	
	When Need	13	13.0	13	13.0	
Measuring blood pressure at home	Taking	2	2.0	1	1.0	2.986
Effect of high BP on daily life	Yes	22	22.0	17	17.0	1.628
	No	77	77.0	80	80.0	
	Sometimes	1	1.0	3	3.0	
Changing eating habits	Yes	19	19.0	12	12.0	2.282
	No	61	61.0	71	71.0	
	Sometimes	20	20.0	17	17.0	
Use of salt to control BP	Yes	18	18.0	9	9.0	3.467
	No	65	65.0	70	70.0	
	Sometimes	17	17.0	21	21.0	
Reducing alcohol consumption to control BP	Yes	14	14.0	11	11.0	23.215**
	No	46	46.0	16	16.0	
	Sometimes	40	40.0	73	73.0	

Table 4 depicts the sex difference in high blood pressure related awareness among the study participants. Frequency of visiting to doctor and reducing alcohol consumption showed significant ($p < 0.05$) sex difference among the study participants. This table is indicative of the fact that females are less aware about the fact of association of lifestyle and high blood pressure.

Table 5 Awareness in changing dietary pattern among the study participants, by sex

Variable	Sex of the participants				χ^2 Value (df = 1)
	Male (n=100)		Female (n=100)		
	n	%	n	%	
Avoid oily food	17	17.0	15	15.0	0.843
Avoid spicy food	17	17.0	14	14.0	0.696
Avoid fast food	4	4.0	7	7.0	0.537
Avoid out of home food	7	7.0	5	5.0	0.767
Avoid extra salt with meal	66	66.0	75	75.0	0.214

Change in dietary habit can control hypertension. Data was collected towards the attitude of the study participants pertaining to their opinion about changing in dietary practices and the result has been shown in Table 5. A clear sex difference in changing dietary pattern related variables among the study participants has been noticed, while the differences are not statistically significant. Majority of them, irrespective of sex are aware about the ill-effect of free salt on hypertension.

Table 6 Descriptive statistics of blood pressures and frequency of hypertension among the study participants, by sex

Blood pressure variable	Male (n=100)		Female (n=100)		t-value (df=198)
	Mean	sd	Mean	sd	
SBP	136.22	20.410	133.94	21.465	0.883
DBP	86.01	12.577	83.12	12.234	0.199
Hypertension status					χ^2 - value (df = 1)
Percentage	94.1		84.0		5.326 *

* significant at $p < 0.05$ level

Table 6 demonstrates the mean and standard deviation values of SBP and DBP of the study participants. The t-test does not show any significant sex difference either in males or in females. However, males show significantly higher ($p < 0.05$) percentage of hypertension than their female counterparts.

Table 7a Result of ANCOVA for age adjusted SBP

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	44271.632 ^a	70	632.452	1.660	.006
Intercept	765238.969	1	765238.969	2.009E3	.000
Physical exercise for health	77.584	1	77.584	.204	.653
Visit to a doctor	4892.051	6	815.342	3.140	.043
Change in dietary pattern	366.868	2	183.434	.482	.619
Lifestyle affects high BP	24.811	2	12.405	.033	.968
Sex	1122.826	1	1122.826	2.947	.088
Interaction	33903.743	49	691.913	1.745	.006
^a R Squared = .470 (Adjusted R Squared = .187)					

Table 7a depicts the result of ANCOVA using age adjusted SBP as dependent and hypertension related awareness variables as fixed factors. Socioeconomic, perceived notion on daily activity pattern and substance use variables were used as covariates in the analysis. Visit to a doctor remained the only significant factor associated with high BP among the study population ($p < 0.05$). The interaction between all the covariates was also found to have highly significant association ($p < 0.01$) with adverse profile of SBP among them.

Table 7b Result of ANCOVA for age adjusted DBP

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10347.674 ^a	70	147.824	1.291	.105
Intercept	319172.599	1	319172.599	2.788E3	.000
Physical exercise for health	49.589	1	49.589	.433	.512
Visit to a doctor	2754.346	6	459.058	4.010	.001
Change in dietary pattern	369.309	2	184.654	1.613	.203
Lifestyle affects high BP	522.574	2	261.287	2.282	.106
Sex	31.988	1	31.988	.279	.598
Interaction	9247.882	49	188.732	1.782	.004
^a R Squared = .408 (Adjusted R Squared = .092)					

Table 7b shows the result of ANCOVA using age adjusted DBP as dependent and hypertension related awareness variables as fixed factors. Like the model of SBP, socioeconomic, perceived notion on daily activity pattern and substance use variables were also used as covariates in the analysis. The result shows exactly the same trend as has been found in case of SBP.

DISCUSSION

High blood pressure generally develops over many years, and it affects an overwhelming majority of the population (Oparil et al, 2018). Uncontrolled high blood pressure increases the risk of serious health problems, including heart attack and stroke (Gu et al, 2012). Various lifestyle factors are associated with CVD and hypertension, such as smoking, obesity, diabetes, dyslipidemia, and others (Porapakham et al, 2008). Hypertension is a lifestyle disorder, aggravated by unhealthy diet, obesity, excessive alcohol intake and stress (Beilin et al, 1999; Jiang et al, 2016). WHO has identified hypertension as the number one risk factor for mortality in the global aspects. Numerous studies have shown increasing tendency in the prevalence of hypertension and its awareness regarding treatment and control rates from 2004-2014, though present study, irrespective of high prevalence of hypertension among the study participants, indicated that very few study participants have the awareness that hypertension affects daily lifestyle and vice-versa, and also found less tendency in visiting a doctor for undiagnosed hypertension. The results also demonstrated that the participants are less aware about the bad effect of consumption of oily and spicy food, which is found to be significantly higher among the females. A study revealed that increased physical activity and reduced salt intake were associated with successful blood pressure control (Yang et al, 2017), but the present study identified that reducing salt intake is not significantly associated with hypertension, irrespective of sex.

The overwhelmingly high prevalence of hypertension among the study participants, irrespective of sex, might be as a result of the sampling procedure of the present study. However, the univariate analysis shows significant effect of interaction between certain awareness variables, viz. physical exercise for health, visiting a doctor, changing food habit and effect of high BP on daily life, after controlling for covariates like socioeconomic status, perceived notion on daily activity pattern and substance use. The analysis has used sex of the participants as one of the factors to see its effect of on age adjusted SBP and DBP. Visiting a doctor was found to be an independent significant associate for both SBP and DBP. The beneficial effect of frequent visit to a doctor to control high BP was demonstrated by Rahman et al. (2015) among different Southeast Asian population. Marshall et al. (2012) also suggested that if one visits to a doctor after being diagnosed with hypertension, (s)he may avoid future CVD related complications. The elderly of the present study remained somewhat languid in visiting doctors for a couple of reasons. Majority of them were unaware about the importance of visit, while very few opined distance as a factor for such behaviour.

An earlier studies exposed that regular alcohol consumption and blood pressure has a relation (Puddey et al, 1997). Few studies have also indicated that the consumption of oily and spicy food affects obesity-related human health outcomes, such as hypertension, irritable bowel syndrome, cancers and even mortality (Li et al, 2017), while the present study revealed that the awareness of avoiding spicy and oily food items to maintain a better blood pressure profile is substantially less.

From this small scale study we can conclude that the rural people are unaware about the healthy lifestyle required for controlling hypertension. The present study is suggestive of the fact that regular awareness programmes are necessary for the aged population of the rural area for their better understanding pertaining to hypertension and other chronic illnesses. Chronic disease related education is very much necessary among aforesaid age group. Further, to unearth the exact scenario pertaining to hypertension and its lifestyle related correlates and to implement appropriate intervention research, rural-urban comparative study will be of utmost importance.

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