

Analysis of effect of blood pressure and hypertension in the risk assessment of heart disease among diabetic patients

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Abstract

Introduction: High blood pressure (HBP) is a leading major risk factor for chronic diseases and deaths. 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. **Objectives of the study:** The main objective of this study is to analyze the effect of knowledge about hypertension on the control of blood in the risk assessment of heart disease among diabetic patients. **Methodology of the study:** This cross sectional study was conducted in Allied hospital, Faisalabad during 2019. The study population was obtained from subjects diagnosed with HT. the data was collected through a questionnaire analysis. Height and weight of all subjects were measured with automatic digital scale at morning times between 08:00 to 11:00 o'clock under casual clothes without shoes. The blood pressure (BP) levels were measured from the right and left arms of the subjects in a sitting position by one trained observer blind to the study at the place of interview. **Results:** It was found that 36.5% of the subjects with HT consumed enough fruit/vegetables (≥ 3 times a day), 31.3% of them exercised sufficiently (at least 3 days and 150 min per week) while 52.0% of the study population did not exercise at all. 25.6% of all hypertensive subjects generally did not consume salt while 34.4% of them claimed usage of low level salt on their diet. 10.5% of hypertensive subjects were a current smoker, 65.2% of the study population had one of the concurrent comorbidities (such 6.7% with diabetes). Ratio of parental HT was 47.4%. **Conclusion:** It is concluded that patients who were aware that elevated BP levels lead to reductions in life expectancy had a higher compliance level with medication use and follow-up visits than patients without this awareness.

Introduction

High blood pressure (HBP) is a leading major risk factor for chronic diseases and deaths. The prevalence of patients with hypertension (HT) had reached from 600 million in 1980 to one billion in 2008. The prevalence of HBP was approximately 40% among adults of 25 years and above in 2008 [1]. Approximately 7.5 million people (12.8% of all-cause deaths) die every year due to HBP. It is estimated that HT is responsible for 45% of deaths due to heart diseases and 51% of deaths due to stroke. HBP consists of 3.7% of Disability Adjusted Life Years (DALY). Even prehypertension (PreHT) increases mortality risk due to cardiovascular and stroke-related diseases [2].

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 [3]. Awareness of the diagnosis of hypertension is an important determinant of treatment and medication adherence [4]. 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 [5]. 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 [6]. The knowledge and awareness of the diagnosis as well as of the risk associated with uncontrolled hypertension tend to enhance patients' adherence to lifestyle modifications and to medications [7].

Objectives of the study

The main objective of this study is to analyze the effect of knowledge about hypertension on the control of blood in the risk assessment of heart disease among diabetic patients.

Methodology of the study

This cross sectional study was conducted in Allied hospital, Faisalabad during 2019. The study population was obtained from subjects diagnosed with HT. the data was collected through a questionnaire analysis. Height and weight of all subjects were measured with automatic digital scale at morning times between 08:00 to 11:00 o'clock under casual clothes without shoes. The blood pressure (BP) levels were measured from the right and left arms of the subjects in a sitting position by one trained observer blind to the study at the place of interview. BP was measured twice with 10 min interval. The systolic BP (SBP) and diastolic BP (DBP) were recorded at the first and fifth Korotkoff phases respectively using a mercury sphygmomanometer. The average of the four BP measurements was used for analysis.

Statistical analysis

The data were analyzed with SPSS package program. Statistical analyses were carried out by the help of simple correlation tests and backward LR model of multiple variables binary logistic regression.

Results

It was found that 36.5% of the subjects with HT consumed enough fruit/vegetables (≥ 3 times a day), 31.3% of them exercised sufficiently (at least 3 days and 150 min per week) while

52.0% of the study population did not exercise at all. 25.6% of all hypertensive subjects generally did not consume salt while 34.4% of them claimed usage of low level salt on their diet. 10.5% of hypertensive subjects were a current smoker, 65.2% of the study population had one of the concurrent comorbidities (such 6.7% with diabetes). Ratio of parental HT was 47.4%

Table 01: Blood pressure levels of the subjects with hypertension according to the factors affecting blood pressure levels.

Characteristics	Current blood pressure level			
	Normal	PreHT	HT	Total
HT medication	n (%) ^a	n (%) ^a	n (%) ^a	n (%) ^b
Using regular	94 (22.9)	188 (45.9)	128 (31.2)	410 (84.5)
Using irregular	11 (14.7)	36 (48.0)	28 (37.3)	75 (15.5)
HT training	$X^2 = 2.80$ P = 0.247			
Not received	73 (23.4)	140 (44.9)	99 (31.7)	312 (64.3)
Received	32 (18.5)	84 (48.6)	57 (32.9)	173 (35.7)
Alternative or complementary medicine	$X^2 = 1.61$ P = 0.447			
Not admitted	65 (22.4)	126 (43.4)	99 (34.1)	290 (59.8)
Admitted	40 (20.5)	98 (50.3)	57 (29.2)	195 (40.2)
Exercise level	$X^2 = 2.24$ P = 0.327			
Not exercising	52 (20.6)	116 (46.0)	84 (33.3)	252 (52.0)
Inadequate	17 (21.0)	40 (49.4)	24 (29.6)	81 (16.7)
Adequate	36 (23.7)	68 (44.7)	48 (31.6)	152 (31.3)
Fruit and vegetable consumption	$X^2 = 0.96$ P = 0.916			
Not eat every day	23 (20.4)	51 (45.1)	39 (34.5)	113 (23.3)
One meal per day	19 (18.1)	55 (52.4)	31 (29.5)	105 (21.6)
Two meals per day	17 (18.9)	35 (38.9)	38 (42.2)	90 (18.6)
≥ 3 meals per day	46 (26.0)	83 (46.9)	48 (27.1)	177 (36.5)
How to continue BP	$X_2 = 1.61$ p = 0.807			
Normal	84 (25.8)	163 (50.0)	79 (24.2)	326 (67.2)
High	11 (8.7)	43 (34.1)	72 (57.1)	126 (26.0)
Unstable	10 (30.3)	18 (54.5)	5 (15.2)	33 (6.8)
HT duration	$X_2 = 52.69$ P < 0.001			
< 5 years	33 (21.0)	69 (43.9)	55 (35.0)	157 (32.4)
5–9 years	38 (31.7)	47 (39.2)	35 (29.2)	120 (24.7)
10–14 years	20 (20.4)	46 (46.9)	32 (32.7)	98 (20.2)
≥ 15 years	14 (12.7)	62 (56.4)	34 (30.9)	110 (22.7)

Discussion

Our results suggest that patients are knowledgeable about HTN in general, but are less knowledgeable about specific factors related to their condition, and specifically their own level of BP control. The median duration of HTN was 14 years, suggesting that even though

these patients have had this condition for a long duration their knowledge is inadequate. Patients were unaware that SBP is important in BP control and reported that physicians did not emphasize the significance of high SBP levels. Further, many patients (41%) did not know their BP value nor could they accurately report whether it was elevated [8].

Patients were knowledgeable about the meaning of HTN, and the seriousness of the condition to their health. Ninety-six percent knew that lowering BP would improve health and 96% thought that people can do things to lower their high BP [9]. Nearly 70% of patients knew that high BP could lead to congestive heart failure. Almost all patients were aware of their HTN with 91% reporting that a doctor or health care provider had told them that they have HTN. These findings are consistent with NHANES III data suggesting that there has been an increase in BP awareness [10].

To understand patients' perception with respect to BP levels, we compared self-reported BP to actual BP as recorded in the medical record. Many patients did not know their BP level nor could they accurately classify their level as elevated or normal. These findings suggest that patients' perception of their BP level does not reflect their actual readings except for the majority of those with controlled BP. Further, 41% of patients reported that their values were in the normal range, but in fact they were elevated [11].

Conclusion

It is concluded that patients who were aware that elevated BP levels lead to reductions in life expectancy had a higher compliance level with medication use and follow-up visits than patients without this awareness.

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