

Prevalence of Depression among Hypertensive Patients in Saudi Arabia.

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ABSTRACT

Background: There is a growing interest in exploring the prevalence of comorbid depression in patients with hypertension, and its impact on their physical functioning, quality of life, and healthcare utilization. However, limited data is available from developing countries, particularly Saudi Arabia, on the prevalence of depression in patients with hypertension. Aim: The main objective of our study was to investigate the prevalence of depression and associated factors among hypertensive patients attending a tertiary health care clinic in Jeddah, Saudi Arabia. **Methods:** We conducted a cross-sectional study, with 211 hypertensive patients attending the Out-Patient Department of King Abdulaziz University Hospital in Jeddah, for a period of 1-month commencing from 15th October to 14th November 2016. Hypertensive patients were given a structured questionnaire regarding socio-demographic data, associated risk factors, and the Beck Depression Inventory-1a (BDI) scale (valid in Arabic version) to assess Depression level. Blood pressure was measured using a manual mercury column sphygmomanometer. **Result:** 211 hypertensive patients were studied, 127 (60.2%) patients were males and 84 (39.8%) were female. The mean BDI score for all hypertensive patients in this study was 7.35 ± 11.68 . The proportion of hypertensive patients with depression (BDI score ≥ 20) was 20.7%. **Conclusion:** Depression is highly prevalent in hypertensive patients in Saudi Arabia. Further research into effective management and screening for depression in hypertensive patients is warranted.

Keywords: Becks Depression Inventory scale, Depression, Hypertension, Saudi Arabia.

INTRODUCTION

There is a growing and justified interest in the impact of comorbid psychological disease in patients with chronic diseases. Recently, there has been more focus on the role of comorbid depression in patients with hypertension. Studies have suggests that the impact of comorbid depression on patients with hypertension may have a major bearing upon physical functioning, quality of life, and healthcare utilization.^[1-3] It is well known that both hypertension and depression emerge from a complex interaction of social, biological, and behavioral factors.^[4-5] When depression co-exist with hypertension, there is higher risk for reduced quality of life, increased risk of cardiac diseases and stroke,

Decrease therapeutic compliance for anti-hypertensive therapy, increase use of limited health care resources, and increased risk of suicide in future.^[6-9] Although depression is a burdensome disease of global importance and prevalent, it is mostly undiagnosed in patients with hypertension.^[10-11] Community-based epidemiological studies in Saudi Arabia have found that the prevalence of depression ranges from 17% to 46%¹² and prevalence of hypertension ranges from 25.5% to 26.1%.^[13-15] Some previous studies in Saudi Arabia have explored the association between hypertension and depression, based on clinically relevant symptoms, but to the best of our knowledge there has no study specifically designed to explore the prevalence of depression among hypertensive patients in the region. The aim of this study was to explore the prevalence of undiagnosed depression among hypertensive patients in Saudi Arabia.

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MATERIALS AND METHODS

A cross-sectional study was conducted in the Out-Patient Department (OPD) of King Abdulaziz

University Hospital (KAUH) in Jeddah, Saudi Arabia, during one-month period, from 15th October to 14th November 2016. A total of 211 (127 male and 84 female) hypertensive patients were included in the study. All Participants were interviewed using a structured and pre-tested, questionnaire regarding socio-demographic information (i.e. age, sex, ethnicity, marital status, family members, education, monthly income, co-morbidities, family history of hypertension and depression, medication history, physical activity, diet, and life style factors e.g. smoking and alcohol intake) and associated risk factor. For the assessment of the prevalence of depression, a structured validated Arabic version of Beck Depression Inventory-1a (BDI) scale was used.^[16] The BDI-1a is a popular scale is used to diagnose depression, which consists of 21 set of questions in which each question includes 4 response options scored from 0 to 3. The scale assesses depression symptoms in a given period of time (the last 14 days). So, patients were asked to recall events from the last 2 weeks before the interview. The cut point to diagnose depression was a score of 20 or above.^[18] A BDI score between 20 and 30 suggests moderate depression symptoms, and a BDI score higher than 30 suggests severe depression with the need for mental health intervention. Therefore in this study, we refer BDI of ≥ 20 as “depression” and BDI < 20 as “non-depression” in categorical analyses.^[19] Hypertension was considered by measuring blood pressure or taking anti-hypertensive drugs or previously diagnosed by health care workers. For the purpose of measuring blood pressure, we used a standard manual mercury column sphygmomanometer, and hypertension was defined as systolic blood pressure (SBP) ≥ 140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg. Only patients above 25 years of age and previously diagnosed with hypertension for a duration of at least six months were included in the study. Patients who have a prior history of clinically diagnosed depression or currently taking anti-depressant medication were excluded from the study. All participants provided a written informed consent. Statistical analysis of the data was done using SPSS version 16.0. Descriptive statistics i.e. mean \pm standard deviation for numerical values and frequencies along with percentages for categorical variables were used to describe the data. Linear regression analysis was used to explore the association between BDI-1a scale scores and other variables. A P value of <0.05 was considered statistically significant.

RESULTS

Socio-demographics characteristics of the participants

All hypertensive patients who participated in the study completed the questionnaire with a response

rate of 100% [Table 1] presents the socio-demographics characteristics of the participants. 211 hypertensive patients were studied, 127 (60.2%) patients were males and 84 (39.8%) were female. The age group of the studied population ranges from 20 to 80 years with a mean of 51.8 years and standard deviation of ± 18.7 years. The mean systolic and diastolic blood pressure was 146.31 ± 12.62 mmHg and 85.39 ± 13.81 mmHg respectively. The average period of diagnosed hypertension among the studied patients was 5 ± 7.16 years. Sixty-six (31.3%) hypertensive patients were current smokers. Only 49 (23.2%) patients reported regular practice of physical exercise. Almost one third of them were illiterate 36 (17%) and 80 (38%) were university graduate. Twenty-nine patients were governmental employee (13.7%). The average monthly income of participants was $5000 \text{ SR} \pm 210$.

Blood pressure was controlled ($\leq 140/90$ mmHg) among 119 (56.4%) hypertensive patients and uncontrolled ($>140/90$ mmHg) among 92 (43.6%) patients. Number of blood pressure follow-ups over the last year was 6-3 times. Number of antihypertensive drugs that patients used was 4-2 drugs. The commonest antihypertensive drugs that were used by patients were; ACEI 107 (50.7%), diuretics 86 (40.8%), Beta-blockers 70 (33.2%).

Family history of depression was reported by 12 (5.7%) of hypertensive patients enrolled in the study while personal past-history of depression was reported by 15 (7.1%) of them.

Depression status among participants

The mean BDI score for all hypertensive patients in this study was 7.35 ± 11.68 . Male score was 6.16 ± 7.43 and female score was 10.22 ± 9.92 . The proportion of hypertensive patients with depression (BDI score ≥ 20) was 20.7%. Females showed larger prevalence rate for depression compared to males, 23% and 10% respectively. Higher prevalence rate of depression was observed among old age groups (≥ 60 years, 34.2%). High prevalence rate of depression was also observed among patients with higher average systolic and diastolic blood pressure, low income, and a longer duration of hypertension, although the results did not reach statistical significance.

Associated risk factors of hypertension and their relation to depression status

There was no significant association between age of hypertensive patients and depression, although older patients had higher BDI scores. Depression was significantly reported more among female hypertensive patients, p-value <0.01 . Table 2 illustrates basic clinical characteristics and health behaviors of the participants grouped in relation to depression status. It showed that higher intake of fast food and frequent smoking were statistically

significant risk factors of depression (p= 0.012) and (p<0.01) respectively.

Bivariate regression analysis between BDI score and associated risk factors of hypertension showed that smoking ($\beta = 5.83$; 95% CI: 0.28; 9.96), being female ($\beta = 4.18$, 95% CI: 2.53; 8.15), older age ($\beta = 0.21$, 95% CI: 0.11; 0.72), and being illiterate ($\beta = 7.13$; 95% CI: 3.77; 9.70) were associated with a higher BDI score. In the other hand, we found that taking anti-hypertensive medications was significantly associated with a lower BDI score ($\beta = -3.19$; 95% CI: -5.95; -2.11).

Table 1: Socio-demographics characteristics of the participants.

Variable	No.	Percent (%)
Sex		
Male	127	60.2%
Female	84	39.8%
Age		
20 - 40	66	31.3%
40 - 60	107	50.7%
> 60	38	18%
Nationality		
Saudi	133	63%
Non-Saudi	78	37%
Marital status		
Single	19	9%
Married	137	65%
Divorced	11	5.2%
Widowed	44	20.8%
Educational status		
Illiterate	36	17%
Less than university	95	45%
University and higher	80	38%
Monthly Income		
<3000 SR	51	24.1%
3000-5000 SR	78	37%
5000-10000 SR	60	28.4%
>10000 SR	22	10.4%
Habits		
smoking	66	31.3%
Drinking alcohol	30	14.2%
Job		
Employed	85	40.3%
retired	52	24.6%
Housewife	40	47.6%
Non-employed	34	16.1%
Physical exercise		
Yes	49	23.2%
No	162	76.8%

Table 2: Basic clinical characteristics and health behaviors of the participants in relation to depression status.

Variable	Total	No Depression (BDI < 20)	Depression (BDI ≥ 20)	p-value
Sex				
Male	127 (60%.2)	109 (85.8%)	18 (14.2%)	0.001
Female	84 (39.8%)	55 (65.5%)	29 (34.5%)	
Age				
20-40	66 (31.3%)	60 (90.1%)	6 (9.9%)	<0.001

40-60	107 (50.7%)	87 (81.3%)	20 (18.7%)	
>60	38 (18%)	25 (65.8%)	13 (34.2%)	
Habits				
Smoking	65 (31%)	45 (69.2%)	20 (30.8%)	<0.001
Drinking Alcohol	30 (14.2%)	27 (90%)	3 (10%)	
Frequent intake of fast food	34 (16.1%)	14 (41.2%)	20 (58.8%)	0.012
Monthly income				
<3000 SR	51 (24.1%)	31 (60.8%)	20 (39.2%)	0.021
3000-5000 SR	78 (37%)	62 (79.5%)	16 (20.5%)	
5000-10000 SR	60 (28.4%)	45 (75%)	15 (25%)	
>10000 SR	22 (10.4%)	20 (90.9%)	2 (10.1%)	
Physical activity				
<150 minutes/week	58 (27.5%)	49 (84.5%)	9 (15.5%)	0.757
≥150 minutes/week	153 (64%)	138 (90.2%)	15 (8.8%)	
Blood Pressure				
Controlled (<140/90 mmHg)	119 (56.4%)	102 (85.7%)	17 (14.3%)	0.822
Uncontrolled (≥140/90 mmHg)	92 (43.6%)	54 (58.7%)	38 (41.3%)	
Duration of Hypertension (years)				
< 5 years	57 (27%)	52 (91.2%)	5 (8.8%)	
5 – 10 years	110(52.1%)	95(86.4%)	15 (13.6%)	
>10 years	44 (20.9%)	31 (70.5%)	13 (29.5%)	

DISCUSSION

Although many studies had reported increased prevalence of depression among hypertensive patients, our study considered the first cross-sectional study from Saudi Arabia exploring the prevalence of depression among hypertensive patients. We found that the prevalence of depression among our hypertensive population is lower than that observed in other studies. In Rabkin et al. study the prevalence of depression in hypertensive patients was 3 folds higher than the prevalence observed in our study. In another study using Beck scale, the prevalence of depressed hypertensive patients was found to be 25% with a mean BDI score of 21.75.^[21] This had been observed in other studies, where they found an increased frequency of depression in hypertensive patients and depression symptoms has been associated with higher BP levels.^[22-23] In the current study, high BDI was observed among high age groups, females, smokers, and patients with longer hypertension duration. Similar to our study, other studies have found that increasing age is a predictor of depression among hypertensive

patients.^[24-26] In the other hand, In Nigeria, a study had found no significant correlation between age and incidence of depression among patients attending the hypertensive clinic.

Women hypertensive patients were found to experience depression at a higher rate than men in several studies.^[23-26] In the present study, the prevalence of depression among female patients was significantly higher than male patients.

Taking antihypertensive medications has been previously found to be significantly associated with high BDI scores. In the present study, no association was found, due to complexity of antihypertensive therapy as most of the patients were treated by more than one drug. We also could not find a statistically significant association between drinking alcohol and BDI scores. Previous study suggested an association between depression and alcohol use.^[27]

Our study had some limitations. First, we used subjective self-report measures. Participants may give responses that are considered socially acceptable, instead of providing actual practices. Second, this study would underestimate the total prevalence of depression because we excluded patients with prior history of clinically diagnosed depression or those patients currently taking antidepressant medication. Finally, we used BDI scale to measure depression and not the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Although BDI scale was not designed for diagnostic purposes, its epidemiologic utility has been evaluated in several studies, which concluded that it is a reliable and valid instrument for detecting depressive disorders in adolescents and adult populations.^[28,29]

CONCLUSION

Depression was highly prevalent in hypertensive patients in Saudi Arabia. The prevalence of depression among hypertensive patients in Saudi Arabia was 20.7%. Many factors were found to have significant association with depression, including; age, sex, smoking, and duration of hypertension. Our results suggest a need for screening and treatment of depression in hypertensive patients and a need for implication of programs that address modifiable factors associated with depression in hypertension, such as smoking.

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