

STUDY OF DEPRESSION AMONG A SAMPLE OF HYPERTENSIVE PATIENTS

By

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Abstract

Hypertension is one of the commonest diseases worldwide. Hypertension (HTN) or high blood pressure, sometimes called arterial hypertension, is a chronic medical condition, which elevated blood pressure in the arteries. This forces the heart to work harder than normal to circulate blood via the blood vessels. Blood pressure is summarized by two measurements, systolic and diastolic, which depend on between beats (diastole). Normal blood pressure at rest is within the range of 100-140 mmHg systolic (top reading) high blood pressure is said to be present if it is persistently at or above 140/90 mmHg of cases are categorized as primary hypertension that means high blood pressure with no obvious underlying medical cause.

Updated studies reported associations between depressive symptoms and hypertensive patients. Depression may be an independent diagnosis, it is also possible that depressive symptoms are secondary to chronic illnesses and their associated complex medication regimens, regardless of the diagnosis being primary or secondary, prior reports have demonstrated that depressive symptoms are associated with inadequate blood pressure control and complications of hypertension.

Key words: Patients, Depression, Hypertension, Marriage, Education, Work

Introduction

Hypertension a disease most common all over the world, and causes a high rate of mortality, with therapeutic costly and over the past few decades has led research intensive widely to educate patients, and with a concerted effort on the part of professionals to make health care to the low rate Deaths and injuries caused by the failure of the member, which occur after several years of high blood pressure, uncontrolled therapeutically (Chobanian *et al*, 2013). Also, depression has become one of the most common mental disorders, the most important features in a depressed emotional or lost interest or have enjoyed in all activities, or most of them in addition to associated symptoms for at least two weeks and represented the symptoms change in functional on past performance, which is fixed most hours of the day and every day through the two weeks (Bhatia and Munjal, 2014).

There associated symptoms include: Disturbance of appetite and weight change and turmoil today and increase locomotors activity or deficiency, lack of energy and a sense of value loss or sense of extreme guilt is appropriate and difficulty thinking or difficulty to think and repeat death idea or suicide attempts (Sadock and Sadock, 2000)

The disorder depression is one of the commonest risk for high blood pressure factors and studies were conducted to determine the depression effect on the incidence of high blood pressure, which has been at the National Center for Medical Statistics of the United States of America, and the purpose was to examine the possibility that the symptoms of anxiety and depression lead to increase the likelihood of developing high blood pressure, and was a longitudinal study of the period ranged from six years to seven years, the study revealed that the symptoms of anxiety and depression are the seriousness

of the injury disease, high blood pressure factors, while other studies suggest that there is a relationship between symptoms of depression and altitude sickness blood pressure (Jonas *et al*,1997). Studies noticed that there is a relationship between high blood pressure and depression (Sscalco *et al*, 2005).

The work studied the correlation between blood pressure and depression among outpatients, Internal Medicine Dept, Hussein University Hospital, to raise awareness of general physicians and private doctors of blood vessels and internal medicine about the impact of depression on blood pressure and urgent need of proper treatment.

Patients and Methods

A total of 60 hypertensive patients attending the outpatient clinic of Internal Medicine, 14 males & 46 females, with ages ranged from 20 to 63 years old were selected from December 2012 to May 2013. Medical sheet was filled out on each patient. The exclusion criteria included those received beta blockers for hypertension, the less than one year diagnosed ones, patients treated for any psychiatric disorder except depression; isolated systolic hypertensive, secondary hyper-

tensive and those who refused to share were excluded. Patients suffered from parasitosis causing depression (Markovitz *et al*, 2015), hypertensive (Gulliver *et al*, 2015) or delusional (Morsy, 2012) were also excluded.

All the patients were subjected to: 1- Clinical medical condition of the patients assessed by internal medicine specialist. 2- Psychiatric interview was done according to items of depression of standardized clinical interview for 4th edition of diagnostic and statistical manual (DSMIV), statistical clinical indicator diagnostic interview (SCIDI) the Arabic version, the depression has considered to be diagnosed if there is 5 score or more positive symptoms of the (SCIDI). 3- Beck depression inventory (BDI-II) the standardized Arabic version to support diagnosis of depression. Application was done by reading it for patient to overcome effort to let them understanding, reading also overcame some patients illiteracy, the depression considered if he had 50 score or more.

The valid clinical interview for the fourth copy of the diagnostic and statistical clinical indicator diagnosis interview (SCIDI); the paragraphs of severe depression are given.

MOOD EPISODE - DEPRESSION EPISODE	
Next questions reflect mood of year. Please attention and understand the question well and attention to things underlined and private to temporary periods specified.	
Have you ever felt that you are very depressed & very uncomfortable most of time almost, most days of a week, for two weeks?	1
Have you ever felt that you don't have interest in some or most things or you are not able to enjoy anything most of day for a period of two weeks?	2
If your answer to one of previous questions yes complete questions next	
If your answer to both of previous questions no go to question number A16	
If you answered yes to former question and period wasn't less than two weeks then answer followings:	
Did you notice a marked loss or increase in weight?	3
Did you notice that that your appetite to eat increased or decreased from normal and that was for most of the day almost most days of week?	
Did you notice that there is a difficulty in sleeping (difficulty in entering sleep) or you woke up several times too early?	4
Did you notice that u sleep much more than usual?	
Have you noticed that you can hardly sit in one place most of these days?	5
Have you noticed that you can't talk or walk same as you used to be during that period?	
Did other people notice that you have a problem in walking fast as usual during that period?	
Did you feel that the energy inside you decreased and you were always fatigued and not able to do something during that period?	6
Did you have that feeling that you were fool and without any value during that period?	7
Have you ever felt guilt and remorse for no clear reason during that period?	8
Were you not able to concentrate or think clearly during that period?	9
Were you thinking of death or committing a suicide or hurting yourself anyway?	

Continue if at least 5 from A1- A9 Positive including A1 or A2		This part of psychiatric only	10
No	Yes	Were you not able to do your work or daily things during that period?	11
No	Yes	Were you able to mix with people or you preferred to be alone?	12
No	Yes	Before these symptoms, did you have any disease?	
No	Yes	Before these symptoms, did you take any medication?	
No	Yes	Before these symptoms, did you take any drug?	13
No	Yes	Before this complaint, did you lose anyone close to you?	14
No	Yes	How many times did you feel these symptoms and lasted for two weeks?	15
No	Yes	How old were you when you felt this?	

Beck depression (BDI II), Supplement No. 2

Please read each group, and then put a circle around the number phrase that describes your condition over the past week, including today be sure to read all set phrases before you choose one of them, and make sure you have answered all the groups.

Phrases	No. ferry
Grief: 0 – I don't feel Sad 1. I feel Sad Most Time 2. I feel Sad all the Time 3. I am too sad to stand it.	1
Pessimism: 0-I am not pessimistic about my future. 1- I am very pessimistic about my future in a great way. 2-I don't expect things to be good for me. 3-I feel that I don't have hope for future and it will be even worse.	2
Former failure: 0-I don't feel I am looser. 1-I have failed more than it should be. 2- More I look to the past, the more failure I see . 3- I fell I am completely looser.	3
Loss of joy : 0-I enjoy everything now as I was doing before. 1- I don't enjoy things now the way I used to do. 2-I hardly can enjoy anything. 3- I completely lost joy of things.	4
Feelings of guilt (remorse): 0-I don't feel guilty. 1-I feel guilty for many things I did or things I should have done & I didn't. 2- I feel guilty most of time, feel reproaching conscience most time 3- I feel guilty all time.	5
Feelings of punishment: 0- I don't feel I should be punished. 1- I feel I maybe should be punished. 2- I expect I will be punished. 3- I feel I should be punished.	6
Lack of self-love: 0- I feel the same towards myself. 1- I lost my self-confidence. 2- I am disappointed at myself. 3- I don't love myself.	7
Self-criticism: 0- I don't blame myself more than usual. 1- I criticize myself more than usual. 2- O blame myself for all my faults. 3- I blame myself for every bad thing.	8

<p>Suicidal thoughts or desires:</p> <p>0- I don't have any suicidal thoughts.</p> <p>1- Have some suicidal thoughts but I cannot commit them.</p> <p>2- I want to suicide.</p> <p>3- I may suicide if I have chance.</p>	9
<p>Crying:</p> <p>0- I don't cry more than usual.</p> <p>1- I cry more than usual.</p> <p>2- I cry a lot for simple things.</p> <p>3- I feel like crying but I cannot.</p>	10
<p>0- I don't feel more irritated nor excited more than usual.</p> <p>1- I feel more excited than usual.</p> <p>2- I feel so excited that I cannot stop moving.</p> <p>3- I get so excited that I stand to move and to do anything.</p>	11
<p>Loss of interest:</p> <p>0- I did not lose interest in others nor in activities.</p> <p>1- I am interested in others less than usual.</p> <p>2- I lost my interest in most things and in other people.</p> <p>3- It is hard to give interest to anything.</p>	12
<p>Hesitation:</p> <p>0- I make decisions as usual.</p> <p>1- I find a difficulty in making decisions more than usual.</p> <p>2- I have a serious problem in making decisions.</p> <p>3- I cannot make a decision.</p>	13
<p>Lack of value</p> <p>0- I don't feel I am valueless.</p> <p>1- I don't consider myself worth as I used to be.</p> <p>2- I feel valueless compared to others.</p> <p>3- I feel I am completely valueless.</p>	14
<p>Loss of energy:</p> <p>0- I have the same amount of energy as usual.</p> <p>1- I have less energy as I used to have.</p> <p>2- I don't have much energy to do many things.</p> <p>3- I don't have enough energy to do anything.</p>	15
<p>Changes in sleep pattern:</p> <p>0- There is no change in my sleeping system.</p> <p>1- a- I sleep more than usual.</p> <p>b-I sleep less than usual.</p> <p>2- a- I sleep much more than usual.</p> <p>b-I sleep less than usual in a great way.</p> <p>3- a- I sleep most of the time.</p> <p>b-I wake up one or two hours early and I cannot go back to sleep.</p>	16
<p>Susceptibility to anger or annoyance:</p> <p>0- My susceptibility to anger or annoyance has not changed.</p> <p>1- My susceptibility to anger or annoyance has increased.</p> <p>2- My susceptibility to anger or annoyance has increased in a great way</p> <p>3- I have a susceptibility to anger all the time.</p>	17
<p>Changes in appetite:</p> <p>0- There is no change in my appetite.</p> <p>1- a- my appetite has decreased.</p> <p>b-my appetite has increased more than usual.</p> <p>2- a- my appetite has decreased less than usual in a great way.</p> <p>b-my appetite has increased more than usual in a great way.</p> <p>3- a- I don't have appetite at all.</p> <p>b- I have a great desire for food all the time.</p>	18

Difficulty in concentrating: 0- I can concentrate with efficient. 1- I cannot concentrate with the same efficient. 2- It is hard to focus my mind on anything for a long time. 3- I find myself unable to concentrating on anything.	19
Fatigue or stress: 0- I am not more tired or stressed than usual. 1- I get tired and stressed easily than usual. 2- Fatigue or stress prevents me from doing many things I used to do. 3- I am too tired to do anything I used to do.	20
Loss of interest in sex: 0- I have not noticed any change in my interest in sex recently. 1- I am less interested in sex than I used to. 2- I am greatly less interested in sex than I used to. 3- I completely lost interest in sex.	21

Zero to 50 no depression or weak, 51 to 60 mild depression, 61 to 70 average depression, of 71 or above severe depression.

Results

The data entry and analyzed using the computer program SPSS and results were presented in tables; the work of the arithmetic mean and standard deviation of the data quantity and the use of repetition and the

percentage of metadata and the use of Chi square of the differences observed between the studied groups with the odds ratio and confidence interval 95% and the percentage critical to test the significance level and a statistically significant at p-value 0.05%.

Table 1: Relationship between depression high pressure blood

Depression					High pressure	
Total	Extreme	Average	Simple	There is no	Your	Simple (Pre-high pressure blood)
21	3	2	13	3	%	Average (stage 1 high blood pressure)
35.00	37.50	18.18	41.94	30.00	%	Severe (stage 2 high blood pressure)
26	3	2	14	7	%	Total
43.33	37.50	18.18	45.16	70.00	%	
13	2	7	4	0	%	
21.67	25.00	63.64	12.90	.00	%	
60	8	11	31	10	%	
10.00	10.00	10.00	10.00	10.00	%	
16.609					Ka 2	Pretesting congruence
0.011					Denotation	

Relationship between depression and high blood pressure was significant.

Table 2: Relationship between depression and complications of high blood pressure

Depression					Complications	
Total	Extreme	Average	Simple	No	Your	There is no
37	4	1	25	7	%	Brain
61.67	50.00	9.09	80.65	70.00	%	Heart
7	1	3	1	2	%	Consideration
11.67	12.50	27.27	3.23	20.00	%	Kidney
10	3	4	3	0	%	Total
16.67	37.50	36.36	9.68	0.00	%	
4	0	2	1	1	%	
6.67	0.00	18.18	3.23	10.00	%	
2	0	1	1	0	%	
3.33	0.00	9.09	3.23	0.00	%	
60	8	11	31	10	%	
100.00	100.00	100.00	100.00	100.00	%	
27.660					Ka 2	Pretesting congruence
0.006					Significance	

Relationship between complications and depression was significant.

Table 3: Relationship between depression and work

Depression					Labor	
Total	Extreme	Average	Simple	There is no	Your	Broken
52	7	11	29	5	%	
86.67	87.50	10.00	93.55	50.00	%	Works
8	1	0	2	5	Your	
13.33	12.50	0.00	6.45	50.00	%	Total
60	8	11	31	10	Your	
100.00	100.00	100.00	100.00	100.00	%	
12.398					Ka 2	Pretesting congruence

Relationship between work and depression was statistically significant.

Table 4: Relationship between depression and education

Depression					Education	
Total	Extreme	Average	Simple	There is no	Your	Illiterate
45	6	11	22	6	%	
75.00	75.00	10.00	70.97	60.00	%	Educated (average education)
15	2	0	9	4	Your	
25.00	25.00	0.00	29.03	40.00	%	Total
60	8	11	31	10	Your	
100.0	100.00	100.00	100.00	100.00	%	
7.671					Ka 2	Pretesting congruence
0.053					Denotation	

Relationship between education and depression was not significant.

Table 5: Relationship between high pressure and marital status

High Pressure				Marital Status	
Total	Severe (high blood pressure stage 2)	Average (stage 1 high blood pressure)	Simple (pre-hypertension)	Your	Married
52	12	23	17	%	
86.67	92.31	88.46	80.95	%	Non Married
8	1	3	4	Your	
13.33	7.69	11.54	19.05	%	Total
60	13	26	21	Your	
100.00	100.00	100.00	100.00	%	
1.023				Ka 2	Pretesting congruence
0.600				Denotation	

Married were 86.67% and relationship between high blood pressure and marital status was not significant.

Table 6: Relationship between depression and marital status

Depression					Marital Status	
Total	Extreme	Average	Simple	There is no	Your	Married
52	4	9	29	10	%	
86.67	50.00	81.82	93.55	100.00	%	Non-Married
8	4	2	2	0	Your	
13.33	50.00	18.18	6.45	0.00	%	Total
60	8	11	31	10	Your	
100.00	100.00	100.00	100.00	100.00	%	
10.768					Ka 2	Pretesting congruence
0.013					Denotation	

Relationship between marital status & depression was not significant.

Table 7: Relationship between depression and type (male and female)

Depression					Type	
Total	Extreme	Average	Simple	There is no	Your	Male
14	1	3	5	5	%	
23.33	12.50	27.27	16.13	50.00	%	Female
46	7	8	26	5	Your	
76.67	87.50	72.73	83.87	50.00	%	Total
60	8	11	31	10	Your	
100.00	100.00	100.00	100.00	100.00	%	
5.019					Ka 2	Pretesting congruence
0.170					Denotation	

Relationship between sex, and depression was not significant.

Table 8: Relationship between depression and medication adherence

Depression					Commitment to medicine	
Total	Extreme	Average	Simple	There is no	Your	Committed
28	0	0	22	6	Your	Committed
46.67	0.00	0.00	70.97	60.00	%	
32	8	11	9	4	Your	Non-Committed
53.33	10.00	10.00	29.03	40.00	%	
60	8	11	31	10	Your	Total
100.00	100.00	100.00	100.00	100.00	%	
32.099					Ka 2	Pretesting congruence
0.000					Denotation	

Relationship between medication adherence and depression was significant.

Table 9: Relationship between high blood pressure and complications of high blood pressure.

A pressure rise				Complications	
Total	Severe (high pressure blood phase 1)	Average (pre-stage 1 high blood pres- sure)	Simple (pre- hypertension)	Your	There is no
37	2	18	17	Your	There is no
61.67	15.38	69.23	80.95	%	
7	3	3	1	Your	Brain
11.67	23.08	11.54	4.76	%	
10	6	2	2	Your	Heart
16.67	46.15	7.69	9.52	%	
4	1	2	1	Your	Consideration
6.67	7.69	7.69	4.76	%	
2	1	1	0	Your	Kidney
3.33	7.69	3.85	0.00	%	
60	13	26	10	Your	Total
100.00	100.00	100.00	100.00	%	
19.134				Ka 2	Pretesting congruence
0.014				Significance	

Relationship between high blood pressure and complications was significant.

Discussion

Depressive disorder is one of the most important risk factors for having high blood pressure. Many studies have been conducted to determine the effect of depression on the incidence of high blood pressure. The National Center for Medical Statistics (NBS) in America was adopted in the study. The purpose was to examine the possibility that the symptoms of anxiety and depression lead to increased risk for high blood pressure. The longitudinal study was for up to 7 to 16 years. The objective of the study answer the question "Are the symptoms of anxiety and depression risk factors of the disease?", while other studies said there is no link between symptoms of depression and high blood disease (Jonas *et al*, 1997). Some studies noticed a relationship between high blood pressure and depression (Scalco *et al*, 2005). Despite the importance of studies of the subject, the present authors noted the

scarcity of Egyptian studies examining the relationship between depression and blood pressure.

In the present study, most participants patients were married, the number of the married was 52 with a ratio of 86.67% and the number of the unmarried was 8 with a ratio of 13.33% because the age of the study sample ranged from (20-65) years and that most of the sampled patients were the residents of the slums and were uneducated and the female of this category of Egyptian society gets married in a young age.

Most patients were illiterate, their number was 45 with a ratio of 75% and there were 15 learners with a ratio of 25% and it is probably due to the fact that all patients were from randomized areas. As the number of patients having pre-hypertension was 21 patients with a ratio of 35% and the number of patients with high blood pressure first stage was 26 patients with a ratio of 43.33%

and the number of patients with high blood pressure, a second stage, was 13 patients with a ratio of 21.67%.

The number of patients with complications of high blood pressure was 23 with a ratio of 38.34% and most of the complications was heart disease with a ratio of 16.67%, followed by brain diseases with the ratio of 11.67%, followed by complications of the eye with a ratio of 6.67% and kidney disease with 3.33%.

All of the patients (Tab.1) who suffered from high blood pressure, a second phase suffered from depression, and it was often mild depression and patients who were suffering from high blood pressure first stage were mostly suffering from slight depression as well as patients who were suffering from pre-hypertension. it was also clear that most of the sample's patients were suffering from high Blood pressure stage 1 (mild hypertension) and mild depression and from all this the relationship between depression and high blood pressure was statistically significant. This agreed with Mukherjee *et al.* (2014) as young people who significantly suffered from high blood pressure in times of exposure to pressure are more exposed to be diagnosed with depression.

The patients (Tab. 2) who suffered from complications, mostly suffering from mild or severe depression, while patients who did not suffer from complications, mostly did not suffer from depression or suffering from simple depression, thus there was a relationship between the complications of high blood pressure and depression. This agreed with Sobański *et al.* (2014) who found that traumatic events and circumstances relating to sexuality turned out to be connected with the risk of dysfunctions in a sexual life and lifestyle led to risky depression.

Also, most of the patients (Tab. 3) who were working do not suffer from depression and the relationship between work and depression was statistically significant, as well as the relationship between education and depression (Tab. 4) was not significant and this disagreed with Mirowsky *et al.* (2008)

who proved that the greater the level of education, the lower the incidence of depression because education reduces the incidence of depression in the two genders, but with bigger ratio in females than males, men with low education feel depressed with a ratio of 80% more than owners of high education, while women with low education feel depressed with a ratio of 17% more than the owners of high education, because the high level of education reduces the rate of unemployment incidence and gives to the people a great opportunity to get good jobs with high economic income, this will contribute to improving the health and psychological condition of each of the two genders (Mirowsky *et al.*, 2008). The difference in the absence of a statistical significant may be due to the small number of patients, and most of them were housewives of slum areas with low or none education level of the Egyptian society. The relationship between high blood pressure and marital status (Tab. 5) was not significant, and disagreed with Haijiang (2005) who found that women who never married, divorced or widowed or separated from their husbands for any reason were more susceptible to high blood pressure than others.

The percentage of those (Tab. 6) who suffered from severe depression and were married were 50% and the unmarried were 50% and the proportion of the married who did not suffer from depression was 100%, while all unmarried suffered from depression and also, most married couples did not suffer from depression or even slight depression, while most non-married couples suffered from severe depression, which agreed with Ross *et al.* (1990), they found that the marriage is very important to the mental health for men and women, especially for men, and that the incidence of depression decreases in married men and women as well as the divorce and widowhood are more effective on women than men, and marriage contributes to improving the nostalgic mood despite the side effects. Booth (1999) compares the incidence of mental disorders among the married people of the same age with people who

were not married or divorced or widowed, he found that unmarried couples have a high level of mental disorders in comparison with other married couples, and also he proved that the rate of depression decreases among married than divorced,

The percentage of those (Tab. 7) who were suffering from severe depression of males were 12.5%, females 87.5% and males who suffered from depression was 50% and females 50%. The relationship between male & female and depression was not significant, which was contrary to Abdel Fattah (1997) who found that the depression incidence in females (20%) was more than (10%) males. Kessler *et al.* (2005) in USA found that the prevalence of serious depression among young aged people (between 15 to 24) was 20.6% in females, and 10.5% in males. Also Fournier *et al.* (2010) found that the prevalence of depression was 20% in women and 12% in men, with a ratio of 2:1 respectively that was equal proportions in children and adults for boys and girls. The difference in results may be due to small sample size and/or small number of males compared to females.

All cases (Tab. 8) suffered from severe or mild depression were not committed to the drug, while most of cases who did not suffer or suffer from simple depression were committed to the drug, and that the relationship between commitment to medication and depression was significant, which was consistent with Dimatteo *et al.* (2000), Wang *et al.* (2002), Kim *et al.* (2003) and Shoenthaler *et al.* (2009) studies in which they have proven the direct correlation between the depressive signs and symptoms, on one hand and poor adherence to the antihypertensive drugs on the other hand.

The relationship (Tab. 9) between hypertension and its complications was significant agreed with Bianchi *et al.* (1999) and Haijiang (2003) as severe high blood pressure resulted in severe organ failure, of the Nervous system as the intracranial tension increased and blood vessels blockage led to cerebral infarction, and subarachnoid hemor-

rhage occurs, or intracranial hemorrhage, and cardiovascular as ischemia or infarction of the heart left ventricle, aortic dissection, or unstable angina. Moreover, acute renal failure or anemia, or retinopathy may occurred or pre-eclampsia (Hajjar *et al.*, 2003).

Conclusion

The relationship between high blood pressure and depression was a positive relationship and the more severe hypertension, the more severe depression and vice versa. The commonest complications of high blood pressure are heart disease, brain disease and strokes. Undoubtedly, Marriage reduces the incidence of depression, Work also reduces the incidence of depression, Depression affects negatively the patient's commitment to treatment, depressed patients are less committed to the treatment than the non-depressed and therefore they are more exposed to severe hypertension and its complications, Less adherence to treatment the more severity of high blood pressure and the more increase of incidence of complications, Education and marriage affect commitment to medication positively.

Consequently, the marriage and the educated are more committed to medication than the others.

Recommendations

The outcome results suggested the following: 1- Extensive studies on relation between depression and chronic disease. 2- Compliance treatment and factors affecting the patient's compliance. 3- More society awareness by negative effect of depression especially on hypertensive patient. 4- Routine examination of depressive symptoms in hypertensive patients for early diagnosis to reduce complications. 5- More awareness of all physicians especially Internal Medicine & Cardiovascular specialists about depression symptoms and its effects on patients especially hypertensive ones.

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