Original article

Depression Among Resident Doctors: Prevalence and Associated Factors in A Tertiary Institution in South-South Nigeria

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Abstract

Background: Depression is an important contributor to the global burden of disease and it is associated with stress. It has been noted that being a doctor is stressful and residency training further increases the stress. *Objective:* This study determined the prevalence and factors associated with depression among resident doctors in a training tertiary health institution in South-South Nigeria. *Methods:* The study was a descriptive cross-sectional study in which 220 randomly selected resident doctors completed 4-point Likert scale self-administered Beck Depression Inventory-II (BDI-II) and a socio-demographic questionnaire. The BDI is a 21-item, rated on 4-point scale ranging from 0 to 3 totalling 63. The data was analyzed using Statistical Package for Social Sciences (SPSS) version 23. Bivariate analysis was performed using Pearson's Chi square. A p value of < 0.05 was considered statistically significant. *Results:* In this study, 129 (58.6%) were males and 91 (41.4%) females. Majority were between the ages of 31-35 years 95(43.2%). Overall prevalence of depression was 16.8% (mild mood disturbances 9.1%, Borderline clinical depression 2.7% moderate depression 4.1% and extreme depression 0.9%). Sex, marital status and religion were associated with depression which were statistically significant. The proportion of resident doctors with depression was high among male resident doctors, age group 31-35 years, those married, Christian, Junior residents, those in training between 1-5 years and see lesser number of patients weekly. *Conclusion:* This study has demonstrated that about one-fifth of the resident doctors were depressed. Depression was significantly associated with sex, marital status, and religion.

Keywords: *Depression, Resident doctors, Teaching hospital, mental illness*

Introduction

Depression is a common disease with significant morbidity and mortality [1]. It is an important public health issue as it is a major cause of suicide, a main contributor to the global burden of disease and affects people of all age and class [1,2]. The prevalence of depression is on the increase worldwide [1,2]. Globally an estimated 350 million people is said to have depression with major depression constituting about 4.4% [1-3]. Depression occupies the 8th place among the causes of Disability Adjusted Life Years (DALYs) in low-income countries, where communicable diseases, maternal, perinatal and nutritional conditions are dominant [5]. However, depression is projected to increase by 66% by the year 2030, constituting a greater burden of disease than maternal, communicable diseases, nutritional and perinatal conditions in these countries including Nigeria [3].

Depression is a debilitating affective disorder with pernicious cluster of symptoms that may persist for a few weeks, months, or even years. Clinical presentations of depression include

depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, poor concentration and suicidal ideation [4,5]. Other symptoms associated with depression include crying spells, lack of motivation, increased anxiety, feeling isolated, increased perception of pain and irritability. Major depression is a mood disorder consisting of predominantly affective symptoms like persistent sadness, hopelessness, apathy, anhedonia, irritability, subjective feelings of distress with cognitive, volitional, and physical symptoms [4].

While anyone can suffer from depression, there are however, predisposing factors associated with it. These risk factor include genetic predisposition, early traumatic life events, bereavements, illnesses, relationship breakdowns, poverty, unemployment, problems caused by substance use and stress [5,6].

It is more common among females than males and starts at a young age in most people which often reoccurs at different stages of their life [7]. It is known to reduce people's functioning at work, school and in the family [2]. Hence it is the leading cause of disability worldwide in terms of total years lost due to disability [1,5].

Studies have shown that depression affects different occupational groups such as medical doctors, resident physicians, undergraduate medical students and public servants [8-11]. These studies also revealed that doctors suffer from depression more than the general population and other professionals [12].

It has also been observed recently that there is an increased rate of psychological morbidity, for example, depression, anxiety, sleep deprivation and substance abuse amongst doctors [13]. This is because the burden of work in a tertiary hospital is usually heavy. Most of the doctors work almost all through the day especially those in the clinical departments and those on calls. Studies have shown that doctors have a higher level of stress when compared to the general population [8,14,13]. Resident doctors in these tertiary institutions are the mainstay of this whole and clearly overloaded system [15]. Residency is the continuation of training after graduation from medical school. This provides a platform for advancement in a medical or surgical field [13]. During this period, residents work long hours, the combination of a heavy workload and the health risks faced by the doctors put them under a lot of stress [16]. These doctors although in training are involved in teaching and training medical students. The pressure on the residents increases as they are continuously treating patients with varying clinical presentation and severity with the suffering of these patients and their relations affecting the moods of the resident doctor [13,16]. There is also the additional load of coordinating other health workers especially as regard the treatment of their patients in an environment where most things are not working optimally which is normally the case in developing countries like Nigeria. Depression becomes inevitable when these are combined with family, cultural and societal pressures [15,16].

A global study estimated an overall prevalence of 27% among medical students, 29% among registrars and up to 60% among practicing doctors [17]. Therefore, depression is reported to be common among resident doctors, which may seriously affect their professional function and may lead to serious impacts on health of the general population [13]. Depression among doctors leads to increased medical errors, decreased ability to handle work-related stress, leaves of absence, discontinuation of medical training, career changes, disruption in personal lives and suicide [9].

The tertiary hospital especially the teaching hospital is multifaceted, and doctors respond differently to it. Some resident doctors find it motivating and exciting, whereas others become stressed and burned out from the heavy workload [14]. Even though doctors have lower rates of physical illness than the general population, past studies have highlighted three particular areas of concern: suicide, psychiatric illness, possibly alcohol and drug misuse than the general population [14].

A study conducted to determine the rate of depression among resident doctors in Tehran, Iran reported that 31.2% of the total study population had symptoms of depression (26% of the males and 39% of the females). This study also showed that most of the depressed residents doctors had no history of psychiatry treatment [18].

Recently, there have been reports of suicide by many Nigerians including doctors [18]. These cases are not unconnected with depression and their aftermath pose untoward hardship to the families of such individuals. Most of the time the actual level of depression among resident doctors is not clear, hence the need for this study. This study aimed to determine the prevalence of depression among resident doctors at University of Port Harcourt Teaching Hospital, South-South Nigeria in order to create awareness of the need to screen resident doctors periodically for depression.

Methodology

Study area
This study was carried out among members of the association of resident doctors (ARD) at University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State in the South-south geopolitical zone in Nigeria.

Inclusion criteria and Exclusion criteria
In this study, only residents training in UPTH was recruited and those with chronic illnesses and previous history of mental illnesses were excluded.

Sample size determination
Sample size(n) was determined using the Leslie Kish formula $n = z_\alpha^2 pq/ d^2$ for estimating minimum sample size for descriptive studies when studying proportions with entire population size >10,000.[19]

Where:

n = Minimum sample size
z_α = Confidence level taken as 95% to be 1.96
p = Prevalence of depression among doctors from a previous study in Enugu which is 17.3% (0.173) [13]
q = 1-p. That is 1.0 - 0.173 = 0.827
d= sampling error taken to be 5% (0.05).

Therefore, $n = \frac{1.96^2 \ X \ 0.173 \ X \ 0.827}{0.05^2}$

n = 219.84
The minimum sample size is approximately 220.

Sampling technique
This was a descriptive cross-sectional study conducted during the ordinary general meeting of the Association of Resident Doctors (ARD) which was attended by 415 members at the University of Port Harcourt Teaching Hospital. A total of 415 resident doctors were seated in the auditorium and to select the 220 participants among the ones that are eligible residents, the balloting method of random sampling was employed. All the resident doctors that picked the YES papers were included in the study. Participants were interviewed using the questionnaire which comprised of two sections: Section A comprised of the sociodemographic characteristic and section B was the Beck Depression Inventory-II (BDI-II) questionnaire to assess the prevalence of depression. The BDI is a 21-item self-administered instrument, rated on 4-point scale ranging from 0 to 3 and the total score being 63. Interpretation of scores obtained from Beck Depression Inventory: 1–10-These ups and downs are considered normal, 11–16, Mild mood disturbance;17–20, Borderline clinical depression; 21–30, Moderate depression; 31–40, Severe depression; and over 40, Extreme depression.

Data analysis
Each questionnaire was cross-checked for completeness. The data collected was analysed using Statistical Package for Social Sciences (SPSS Version 23, Chicago, IL, USA). Continuous variables were expressed as mean and standard deviation when normally distributed while median and interquartile ranges were used when skewed. Categorical variables were presented as frequencies and percentages. Bivariate analysis was performed using Pearson's Chi square. A p value of < 0.05 was considered statistically significant.

Ethical approval
Ethical clearance was obtained from the University of Port Harcourt Teaching Hospital Research and Ethic Committee. Permission to

carry out the study was obtained from the President of Association of resident doctors, University of Port Harcourt Teaching Hospital. A written informed consent was obtained from the respondents.

A total of 220 questionnaires were administered, 220 questionnaires were consistent and completely filled, giving a response rate of 100%.
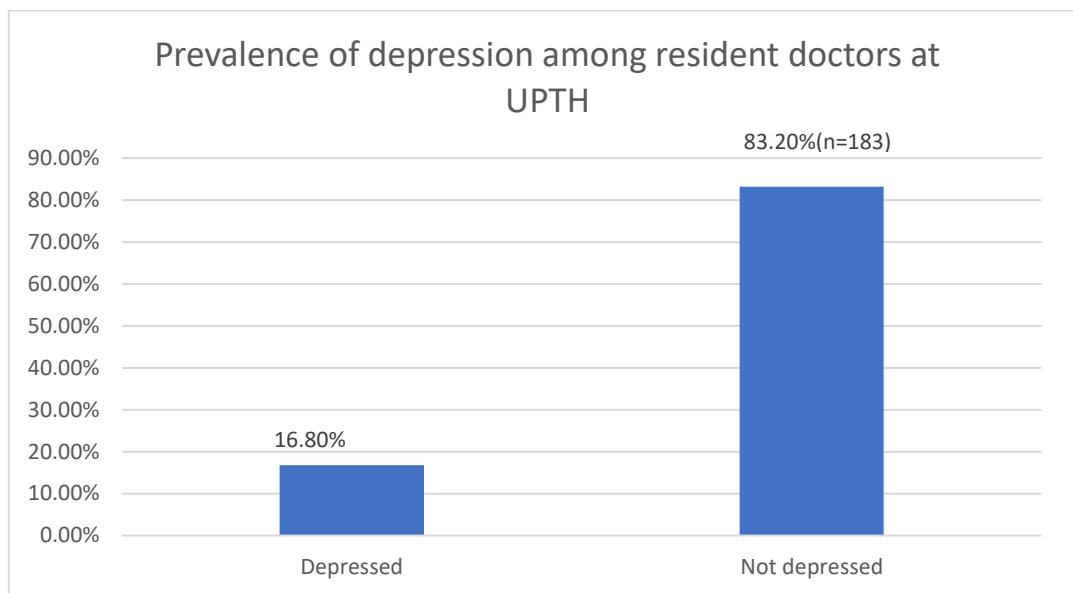
Results

Prevalence of depression among resident doctors at UPTH

Figure 1

Prevalence of depression Among Participants

Figure 1: Among the 220 resident doctors studied, 37 (16.8%) had diagnosis of depression. The various levels of depression showed that 20 (9.1%) had mild mood disorder, 6 (2.7%) had borderline clinical depression, 9(4.1%) had moderate depression and 2 (0.9%) had extreme depression

Table 1: Sociodemographic characteristics of respondents

Variables	Frequency (n=220)	Percentages (%)
Age (years)		
25-30	59	26.8
31-35	95	43.2
36-40	55	25.0
41-50	10	4.5
>50	1	0.5
Total	**220**	**100**
Mean ±SD	*33.85±4.35*	
Sex		
Male	129	58.6
Female	91	41.4
Total	**220**	**100**
Marital status		
Single	77	35.0
Married	139	63.2
Separated	1	0.5
Divorced	1	0.5
Widowed/widower	2	0.9
Total	**220**	**100**
Religion		
Christianity	217	98.6
Islam	3	1.4
Estimated monthly income		
≤ ₦200000	46	20.9
₦201000-₦250000	99	45.0
₦251000-₦300000	28	12.7
₦301000-₦350000	3	1.4
₦351000-₦400000	26	11.8
₦401000-₦450000	14	6.4
₦451000-₦500000	4	1.8

Total	**220**	**100**
Mean ±SD	*₦273568.2±83860.2*	
Median	*₦250000*	

Table 1: The participants were between 25 and 65 years of age with a mean age of 33.85±4.35 years. Majority of the participants were between the ages of 31-35 years (95;43.2%). Most of the participants in this study were males (129;58.6%), Christians (217;98.6%), married (139;63.2%), with an estimated monthly income of ₦201000-₦250000 (99;45.0%), junior residents (152;69.1%), 1-5 years in training (182;82.7%) and numbers of patients seen weekly less than 50 (192;87.3%). The socio-demographic characteristics of the participants.

Table 2: Training Details of the Resident Doctors

Variables	Frequency (n=220)	Percentages (%)
Rank		
Registrar	152	69.1
Senior registrar	68	30.9
Total	**220**	**100**
Years in training		
1-5	182	82.7
6-10	38	17.3
Total	**200**	**100**
Number of patients seen weekly		
≤50	192	87.3
>50	28	12.7
Total	**220**	**100**
Mean ±SD	**35.08±19.15**	

Table 2 shows that most of the participants were junior residents (152), those that had been in the training between 1-5 years (182) and have a weekly patient load of ≤50 (192).

Table 3: Levels of Depression

Variables	Frequency (n)	Percentage (%)
Normal	183	83.2
Mild mood disturbances	20	9.1
Borderline clinical depression	6	2.7
Moderate depression	9	4.1
Extreme depression	2	0.9
Total	**220**	**100**

Table 3: The various levels of depression showed that 20 (9.1%) had mild mood disorder, 6 (2.7%) had borderline clinical depression, 9(4.1%) had moderate depression and 2 (0.9%) had extreme depression.

Table 4: Relationship between certain factors and depression among resident doctors

Variables	Depressed Frequency (%)	Not depressed Frequency (%)	Total Frequency (%)	df
Sex				
Male	27 (73.0)	102 (55.7)	129(58.6)	1
Female	10 (27.0)	81(44.3)	91 (41.4)	
Total	**37 (16.8)**	**183 (83.2)**	**220 (100)**	
Age (years)				
25-30	11 (29.7)	48(26.2)	59 (26.8)	4
31-35	19(51.4)	76(41.5)	95 (43.2)	
36-40	5(13.5)	50(27.3)	55 (25.0)	
41-50	1(2.7)	9(4.9)	10 (4.5)	
>50	1(2.7)	0(0.0)	1 (0.5)	
Total	**37(16.8)**	**183(83.2)**	**220 (100)**	
Marital status				
Single	18 (48.6)	59 (32.2)	77 (35.0)	4
Married	18 (48.6)	121 (66.1)	139 (63.2)	
Separated	1 (2.7)	0 (0.0)	1 (0.5)	
Divorced	0 (0.0)	1 (0.5)	1 (0.5)	
Widowed/widower	0 (0.0)	2 (1.1)	2 (0.9)	
Total	**37 (16.8)**	**183 (83.2)**	**220 (100)**	
Religion				
Christianity	35 (94.6)	182 (99.5)	217 (98.6)	1

Islam	2 (5.4)	1 (0.5)	3 (1.4)	
Total	**37 (16.8)**	**183 (83.2)**	**220 (100)**	
Rank				
Senior registrar	9 (24.3)	59 (32.2)	68 (30.9)	1
Junior registrar	28 (75.7)	124 (67.8)	152 (69.1)	
Total	**37 (16.8)**	**183 (83.2)**	**220 (100)**	
Years in training				
1-5	33 (89.2)	149 (81.4)	182 (82.7)	1
6-10	4 (10.8)	34 (18.6)	38 (17.3)	
Total	**37 (16.8)**	**183 (83.2)**	**220 (100)**	
No of patients seen weekly				
≤50	34 (91.9)	158 (86.3)	192 (87.3)	1
>50	3 (8.1)	25 (13.7)	28 (12.7)	
Total	**37 (16.8)**	**183 (83.2)**	**220 (100)**	
Departments				
Anaesthesia	3 (8.1)	7 (3.8)	10 (4.5)	15
Anatomical Pathology	0 (0.0)	5 (2.7)	5 (2.3)	
Chemical Pathology	2 (5.4)	3 (1.6)	5 (2.3)	
Community Medicine	0 (0.0)	6 (3.3)	6 (2.7)	
Dentistry	3 (8.1)	5 (2.7)	8 (3.6)	
Ear, Nose and Throat	0 (0.0)	2 (1.1)	2 (0.9)	
Family Medicine	1 (2.7)	35 (19.1)	36 (16.4)	
Haematology	0 (0.0)	4 (2.2)	4 (1.8)	
Internal Medicine	6 (16.2)	24 (13.1)	30 (13.6)	
Medical Microbiology	1 (2.7)	11 (6.0)	12 (5.5)	
Neuropsychiatry	0 (0.0)	4 (2.2)	4 (1.8)	
Obstetrics and Gynaecology	6 (16.2)	29 (15.8)	35 (15.9)	
Opthalmology	2 (5.4)	3 (1.6)	5 (2.3)	
Paediatrics	4 (10.8)	7 (3.8)	11 (5.0)	
Radiology	1 (2.7)	9 (4.9)	10 (4.5)	
Surgery	8 (21.6)	29 (15.8)	37 (16.8)	
Total	**37 (16.8)**	**183 (83.2)**	**220 (100)**	

Table 4 shows that there was statistically significant association observed between sex, marital status and religion with depression among resident doctors.

Discussion

The overall prevalence of depression among resident doctors was 16.8%, 9% had mild mood disorder and 0.9% had extreme depression. Similar findings were also noted in the studies done in south east Nigeria and India where the prevalence of depression among resident doctors were 17.3% and 17% respectively [2,13]. This could be attributed to the fact that the resident doctors were exposed to increased patients load without concomitant increase in the number of resident doctors and with the need to pass their professional examinations at the stipulated time to avoid disengagement from the training program. On the contrary, the prevalence of depression in this study was lower than 27.7% in the study by Dave et al. This difference could be attributed to the different tools used in these studies [20].

This study showed that male residents were more depressed than the female (73.0% compared to 27.0%). This agrees with a study done in Iran that showed depressive symptoms were significantly higher in male than female medical students [21]. However, a study on depression showed that it is more frequent among women [13]. The finding in this present study with respect to sex may be accounted for by the small proportion of female resident doctors recruited (91 female vs 129 male). Also, the high prevalence of depression among males may be as a result of cultural, societal and financial pressure on the men as he is expected to play his role as the head of his extended family and the bread winner in his immediate family during the training. On the other hand, a study which looked at the prevalence of depression among trainee doctors in Ziauddin Hospital, Karachi, Pakistan had documented that there was no gender difference in the prevalence of depression among resident doctors [22].

Also, in this study, marital status was significantly associated with depression. The proportion of single residents that were depressed was similar to the married in this study. Although, the pressure of work from residency training is not dependent on marital status, the married residents may get comfort and share other burdens with their spouse which can help reduce the incidence of depression in this group. This is similar to a study done among resident doctors in South-East Nigeria which reported that single residents were more depressed than the married ones but is in contrast to that done in Tehran, Iran which documented that married physicians were significantly more depressed than single ones [13,18]. The above authors had attributed this difference to financial pressures and additional responsibilities usually associated with marriage. A hundred percent of the separated resident were also depressed. The small number of separated doctors in the study could have accounted for this finding and also, separation can predispose to depression ordinarily. Religion was a significantly attributing factor to depression among resident doctors in this present study. The proportion of depressed Christian resident doctors was high compare to the Islam despite the commitment to spirituality. This was similar with a study done in Iran where religious attitude was found to be significant with decreased proportion of depression among medical students [21].

Age, residency rank, years in training and number of patients seen weekly were not significantly associated with depression among the resident doctors. More than half of them (73.2%) were above 30 years of age and the rest (26.8%) below 30 years. However, higher proportion of residents aged between 31-35 years were depressed than the rest. Higher proportion of Junior residents, those in training for less than 5 years and weekly number of patients seen less than 50 were depressed. In another study, it was reported that age was not significantly associated with depressive symptoms. However, a study in Iran showed positive relationship between depression and increased number of patients seen [23].

Strength of the study

The strengths of this study are that the study included the Beck Depression Inventory questionnaire to assess the level of depression which is the most commonly and widely accepted tool for the same.

Limitation of the study

The limitation is that our study did not differentiate the level of depression among the residents of different specialty which makes the generalization of the study difficult.

Conclusion

In conclusion, our study found that nearly one-fifth of the resident doctors had depression. Sex, marital status and religion were associated with depression among the resident doctors and these were statistically significant.

Abbreviations

BDI-II: Beck Depression Inventory-II
DALYs: Disability Adjusted Life Years
ARD: Association of Resident Doctors
SPSS: Statistical Package for Social Sciences

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None

Conflict of interest

None

Authors' contributions

FC analyzed and interpreted the patient data regarding the hematological disease and the transplant. RH performed the histological examination of the kidney, and was a major contributor in writing the manuscript. All authors read and approved the final manuscript."

References

[1] Marcus M, Yasamy MT, van Ommeren M, Chisholm D, Saxena S. Depression: A global public health concern. 2012

[2] Shashikantha S, Sheethal M. Prevalence of depression among post graduate residents in a tertiary health care institute, haryana. International Journal of Medical Science and Public Health. 2016;5:2139-2143

[3] Salihu AS, Udofia O. Prevalence and associated factors of depression among general outpatients in a tertiary institution in kano, north-western nigeria. Open Journal of Psychiatry. 2016;6:228

[4] Organization WH. The icd-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines. Geneva: World Health Organization; 1992.

[5] Organization WH. Depression and other common mental disorders: Global health estimates. 2017

[6] Yrondi A, Sporer M, Schmitt L, Arbus C. Major depressive disorder: An organic disorder! 2018

[7] WHO U, Mathers C. Global strategy for women's, children's and adolescents' health (2016-2030). Organization. 2017;2016

[8] Wible P. Doctors and depression: Suffering in silence. URL: https://neuronews. com. ua/ru/issue-article-1919/Depresiya-likari-strazhdayut. 2017

[9] Joules N, Williams DM, Thompson AW. Depression in resident physicians: A systematic review. Open Journal of Depression. 2014;2014

[10] Quince TA, Wood DF, Parker RA, Benson J. Prevalence and persistence of depression among undergraduate medical students: A longitudinal study at one uk medical school. BMJ open. 2012;2

[11] Birnbaum HG, Kessler RC, Kelley D, Ben-Hamadi R, Joish VN, Greenberg PE. Employer burden of mild, moderate, and severe major depressive disorder: Mental health services utilization and costs, and work performance. Depression and anxiety. 2010;27:78-89

[12] Gerada C. Doctors, suicide and mental illness. BJPsych bulletin. 2018;42:165-168

[13] Gu A, Onyeama G, Bakare M, Igwe M. Prevalence of depression among resident doctors in a teaching hospital, south east nigeria. International Journal of Clinical Psychiatry. 2015;3:1-5

[14] Sahasrabuddhe AG, Suryawanshi S, Bhandari S. Stress among doctors doing residency: A cross-sectional study at a tertiary care hospital in the city of mumbai. National Journal of Community Medicine. 2015;6:21-24

[15] Cohen JS, Patten S. Well-being in residency training: A survey examining resident physician satisfaction both within and outside of residency training and mental health in alberta. BMC medical education. 2005;5:1-11

[16] INTeReSTS DO. Burnout in physicians. JR Coll Physicians Edinb. 2015;45:104-107

[17] Outhoff K. Depression in doctors: A bitter pill to swallow. South African Family Practice. 2019:13-16

[18] Sadeghi AE, Navidi M, Sadeghi M. Depression among resident doctors in tehran, iran. Iranian Journal of Psychiatry. 2007:50-52

[19] Araoye MO. Research methodology with statistics for health and social sciences. Ilorin: Nathadex Publisher. 2003;115

[20] Dave S, Parikh M, Vankar G, Valipay SK. Depression, anxiety, and stress among resident doctors of a teaching hospital. Indian Journal of Social Psychiatry. 2018;34:163

[21] Sahraian A, Mani A, Rezaee V, Javadpour A, Mahjoor A. Relation between religious attitude and depression among medical students. World Applied Sciences Journal. 2013;22:1426-1430

[22] Haqqi S, Areeb S, Haseeb A, Ali NF, Hashim H. The prevalence of depression among resident doctors in a teaching hospital. Pak J Med Dent. 2013;2:16-20

[23] El-Hamrawya L, Hegazy N, El-Halawany S. Prevalence of depressive symptoms among healthcare providers in shibin el-kom city in menoufia governorate. Menoufia Medical Journal. 2018;31:708-715