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## Occupational stress, anxiety and depression among Egyptian teachers

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## ABSTRACT

Occupational stress (OS) among teachers predispose to depression and anxiety. No study was done to assess these problems among Egyptian teachers. This study aimed to assess the prevalence of OS, depression and anxiety among Egyptian teachers. A cross sectional study was done on 568 Egyptian teachers. The respondents filled a questionnaire on personal data, and the Arabic version of the Occupational Stress Index (OSI), the Arabic validated versions of Taylor manifest anxiety scale and the Beck Depression Inventory (BDI) were used to assess OS, anxiety and depression respectively. The prevalence of OS, anxiety and depression among teachers was (100%, 67.5% and 23.2%) respectively. OS, anxiety and depression scores were significantly higher among teachers with an age more than 40 years, female teachers, primary school teachers, those with inadequate salary, higher teaching experience, higher qualifications and higher workload. A significant weak positive correlation was found between OS scores and anxiety and depression scores. This study indicated the need for future researches to address risk factors of OS and mental disorders among Egyptian teachers, and the need of periodical medical evaluation of teachers and medical and psychological support for the identified cases.

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## 1. Introduction

Occupational stress (OS) is the worker's response when facing work demands and pressures not matched to their resources, needs, abilities and knowledge, and overcome their ability to manage [1].

Teaching is a physically and mentally challenging occupation, as the teacher uses a lot of energy in his daily work in the classroom in addition to his personal and familial commitments, which is a continuous source of stress [2]. This was proved by a study done to assess OS across 26 jobs, and found that teaching was one of the most stressful jobs [3].

OS experienced by teachers is attributed to their work load, as they plan lessons, organize activities, develop curriculums, manage extra-curricular activities, supervise classes, provide information,

maintain discipline, provide cover for teacher shortages and absences, maintain records, administer time-tables, evaluate and assess students' performance, in addition to motivation of students by words and actions [4].

OS generally, reduces the quality of life and the overall mental and physical wellbeing of teachers [2]. It also leads to unpleasant emotions as depression and anxiety which impair the teacher's ability to function at work or cope with daily life [5–7].

Excessive pressure from educational institutions, students and parents, community attitude, work overload, students' poor behavior and role conflict make teachers always confused and this predispose to anxiety [8]. In addition, the workload and the adverse psychological environment at work significantly predict depression among them [9]. OS was found to be a risk factor for depression and anxiety among teachers in previous studies [10,11].

In Egypt, the last estimate of the number of pre-university education teachers was 809892 teachers in 2006/2007. And the teacher workload at the primary education level was 24 classes session per week, 21 classes session in preparatory level, and it ranged from 14 to 18 classes sessions in the secondary education level [12].

The Egyptian education system is facing a lot of challenges including low teachers' salaries [13], shortage of resources at schools and poor organizational climate for teachers [13]. Those

Abbreviations: OS, Occupational stress; OSI, Occupational Stress Index; BDI, Beck Depression Inventory;  $\chi^2$ , Chi-squared test; SPSS, Statistical Package of Social Science.

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problems were expressed by Egyptian teachers through protests and strikes in the past 5 years. They complained about salaries, work environment, work pressure and lack of involvement and supervisor's support [14].

According to stress among Egyptian teachers, the only published study was done on 325 Egyptian teachers in 2015, and showed that teachers had medium to high levels of stress and medium levels of burnout. The teachers reported high work pressure, less engrossment and supervisors' support, less autonomy, less cooperation with colleagues', less innovation and more physical exhaustion. In addition, a significant correlation was found between work environment characteristics and both stress and burnout levels [15]. This study concluded the importance of carrying out future researches to address the effect of work environment on teacher wellbeing in Egypt.

According to the published data and to our knowledge, no study was done to assess the prevalence of occupational stress among Egyptian teachers. In addition, no study was done to determine the magnitude of the problems of depression and anxiety among them. This study was done to assess the prevalence of OS, depression and anxiety among a sample of Egyptian teachers, and to determine the relationship of these three disorders with some of their personal data.

## 2. Materials and methods

### 2.1. Study Design and time frame

A cross-sectional study was carried out on a sample of primary, preparatory and secondary school Egyptian teachers in the time frame from January to March 2017.

### 2.2. Sampling methodology

Using a multistage sampling methodology, we selected the participants as follows: The first stage: Menoufiya governorate was chosen from all Egyptian governorates by simple random sampling methodology. The second stage: from the ten districts of the governorate, Shebeen Alkoom district was chosen following the same sampling technique, where the school community of Shebeen Alkoom was the sampling frame. The third stage: following simple random sampling technique, six schools were selected, where one private school was chosen from all private primary schools, and one governmental school from all primary governmental schools. The same technique was followed when choosing the other four schools in the preparatory and secondary educational level. The total number of teachers employed in the selected schools (612) was obtained after contacting every school administration.

Booklets containing the study instruments were distributed to all teachers of the selected schools except those who were absent or refused sharing in the study. The respondent teachers (No. = 568), from primary (n = 236), preparatory (n = 240) and secondary (n = 92) schools returned the questionnaires giving a response rate of 92.8%.

### 2.3. Study instruments

Teachers were asked to complete a questionnaire to collect personal data about gender, age, qualifications, salary, residence, years of experience, teaching load and the educational stage they teach.

To collect data about OS, the Arabic version of the Occupational Stress Index (OSI) was used. It was used in a previous study done in Algeria to assess the occupational stress and its relation to marital adjustment, where its reliability was found to be 0.70 [16]. It is a 46 items scale (28 positive and 18 negative) that were rated on a

5-point Likert scale ranging from 1:(strongly disagree) to 5:(strongly agree). The items are related to relevant components of job conditions that could be sources of stress as work overload, role ambiguity, role conflict, group and political pressure, responsibility for persons, under participation, powerlessness, poor colleges' relations, intrinsic impoverishment, and bad working conditions.

According to the scale total scores, the teachers OS was divided into: low level of stress (total score: 46–122), moderate level (total score: 123–155), and high level (total score: 156–230) [17]. The OSI was used in previous studies where it had high reliability and validity [4].

To determine anxiety levels, the Arabic validated version of Taylor manifest anxiety scale was used. It consists of 50 items, and according to its total scores, teacher anxiety level was divided into: normal level (total score: 0–16), mild (17–20), moderate (21–26), severe (27–29), and very severe level (30–50) [18].

To assess levels of the depression among teachers, the Arabic version of the Beck Depression Inventory (BDI) was used. It is a 21-items scale each item was scored from 0 to 3 according to the symptom severity where the total score ranged from 0 to 63. It was possible to give an answer with a score that ranged from 0 to 3 (absent, mild, moderate and severe), allowing to determine the intensity of the symptom. The patient was diagnosed as normal if having a score less than 26, and the cut-off points used to determine depression levels were as follows: mild depression if the score ranged from (26 to 38), moderate if ranged from (39 to 55) and severe depression if ranged from (56 to 63) [19].

### 2.4. Ethical considerations

Official approvals were obtained from the ethics committee of the faculty of medicine of Menoufia University and from the directorate of education of the Menoufia governorate, where official letters were sent to the directors of the selected schools to facilitate the researchers' task. All teachers were informed about the aim of the study, the way of answering the study instruments, and their right not to participate. Before sharing in the study, verbal consents were obtained from all participants.

### 2.5. Data analysis

Data were coded, tabulated and analyzed using [SPSS] version 20 (Armonk, NY: IBM Corp.). Descriptive data was expressed as numbers and percentages, and Chi-squared test ( $\chi^2$ ) was applied to test the relationship between variables. Fisher exact test was used for categorical variables when the expected value was less than 5. Quantitative data was expressed as mean and standard deviation (Mean  $\pm$  SD), and student's *t*-test was applied to compare means for groups normally distributed. Mann-Whitney test was used for quantitative non-parametric variables. Correlation analysis was performed by the Spearman's test and a *p*-value of <0.05 was considered as statistically significant

## 3. Results

In (Table 1), the mean age of the participants was (39.4  $\pm$  8.7), 58.5% of them were females, 83.1% were married, 87.3% had university education, 59.9% were employed for governmental schools and 52.1% were rural residents. Of the participants, 61.3% had a teaching experience more than 10 years, and 91.5% stated that their salary is inadequate.

The prevalence of mild, moderate and severe depressive symptoms among studied teachers was (19.7%, 2.8% and 0.7%) respectively, and the prevalence of little, mild, severe and very severe anxiety was (17.6%, 23.2%, 7.0% and 19.7%) respectively. Regarding

**Table 1**  
Distribution of the studied teachers according to their personal characters.

Variable	Teachers' Total Number = 568	
	No.	%
Sex:		
- Male	236	41.5
- Female	332	58.5
Age (Mean $\pm$ SD):	39.4 $\pm$ 8.7	
- Median	40	
- Range	21–58	
Marital Status:		
- Single	68	12.0
- Married	472	83.1
- Widow	8	1.4
- Divorced	20	3.5
Qualifications:		
- Secondary	32	5.6
- University	496	87.3
- Masters	40	7.0
Salary:		
- Adequate	48	8.5
- Inadequate	520	91.5
Residence:		
- Urban	272	47.9
- Rural	296	52.1
Teaching experience:		
- 1–5 years	172	30.3
- 6–10 years	48	8.5
- >10 years	348	61.3
Class Load:		
- 1–15 classes	204	35.9
- 16–20	200	35.2
- >20	164	28.9
School:		
- Private	228	40.1
- Governmental	340	59.9
Educational level:		
- Primary	236	41.5
- Preparatory	240	42.3
- Secondary	92	16.2
Depression:		
- Normal	436	76.8
- Mild	112	19.7
- Moderate	16	2.8
- Severe	4	0.7
Anxiety:		
- Normal	184	32.4
- Little	100	17.6
- Mild	132	23.2
- Severe	40	7.0
- Very severe	112	19.7
Occupational stress:		
- Mild	36	6.3
- Moderate	148	26.1
- Severe	384	67.6
Depression Score (Mean $\pm$ SD)	16.2 $\pm$ 10.1	
Anxiety score (Mean $\pm$ SD)	21.5 $\pm$ 8.9	
Occupational stress score (Mean $\pm$ SD)	161.2 $\pm$ 22.1	

OS, the prevalence of mild, moderate and severe OS was (6.3%, 26.1% and 67.6%) respectively. The mean OS, anxiety and depression scores for the whole sample was (161.2  $\pm$  22.1, 21.5  $\pm$  8.9 and 16.2  $\pm$  10.1) respectively.

(Fig. 1) shows a significant difference between male and female teachers according to prevalence of OS, as female teachers showed a higher rate of severe and moderate stress (71.7% and 26.5% vs 61.9% and 25.4%) ( $p < 0.001$ ). A significant gender difference was also found according to prevalence of anxiety with females showing higher rates of very severe and severe anxiety compared to males (28.3% and 10.2% vs 7.7% and 2.5%) ( $p < 0.001$ ). The same significant difference was found according to depression prevalence, with female teachers showing higher rates of mild, moderate and severe symptoms (23.5%, 3.6% and 1.2% vs 14.4%, 1.7% and 0.0%) ( $p = 0.004$ ).

Regarding school type, a significant difference was found between private and governmental schools according to the prevalence of OS, with private schools showing a significant higher prevalence of moderate and severe OS compared to governmental schools (31.6% and 68.4% vs 22.4% and 67.1%). The same significant difference was found according to the prevalence of depressive symptoms, while a non-significant difference was found according to the prevalence of anxiety.

(Table 2) shows that OS, anxiety and depression scores were significantly higher among teachers with an age more than 40 years, female teachers, primary school teachers, those who stated that they had inadequate salary, higher teaching experience, higher qualifications and higher workload. According to the type of school, private schools showed a significant higher level of OS scores, while governmental schools showed a significant higher level of depression scores. As for anxiety scores, a non-significant difference was found according to the school type.

Fig. 2 shows a significant weak positive correlation between OS scores and anxiety and depression scores ( $r = 0.21$  and  $0.37$ ,  $p = < 0.001$ ).

Table 3 shows that by doing binary logistic regression analysis to detect the independent predictors for the studied variables (depression, anxiety and occupational stress) among the studied teachers, the present study found that being female, working in governmental schools, teaching for primary grade students, inadequate salary, higher qualifications and workload were independent predictors for depression. According to anxiety disorders, the only independent predictors were being females, working in governmental schools, teaching for primary grade students and having high qualification. No single independent predictor for occupational stress could be detected.

#### 4. Discussion

In the present study, all teachers were suffering from OS at mild or higher level with 67.6% of them suffered severe OS. This figure is somewhat in agreement with that revealed from an Indian study where 65%, 20% and 15% of teachers had severe, moderate and mild OS respectively [20]. The same result was present in another Indian study, where all teachers were suffering from OS, however the percent of those suffering from severe OS in this study was 12.8% compared to 67.6% in the present work [21].

OS prevalence in the present study is also in agreement with results from a study done in another developing African country (Zambia), which showed similar high figures [22]. On the other hand, the prevalence of OS in the present study is much higher than that revealed from a lot of other international studies [6].

The reported high prevalence of OS in the present study could be explained by the challenges faced by the education system in Egypt [13,14]. In addition to the stress challenged by school teachers on facing intensive verbal communications, prolonged standing and high work load due to the daily supervision and teaching students in overcrowded classrooms. A matter that is highly prevalent and experienced by teachers in developing countries [2].

The significant higher prevalence of OS among teachers with older age was reported previously where increased age was a predictor of OS [23]. The gender difference observed in this study regarding OS, where female teachers had higher prevalence of OS compared to their male copartners, was revealed from previous studies [5,24,25]. This was attributed to the type of stressors faced by female teachers, as they have higher total workload and higher conflict between their roles in work and with family [25]. And the greater workload and classroom stress female teachers have from students' behaviors, and their lower ability for classroom

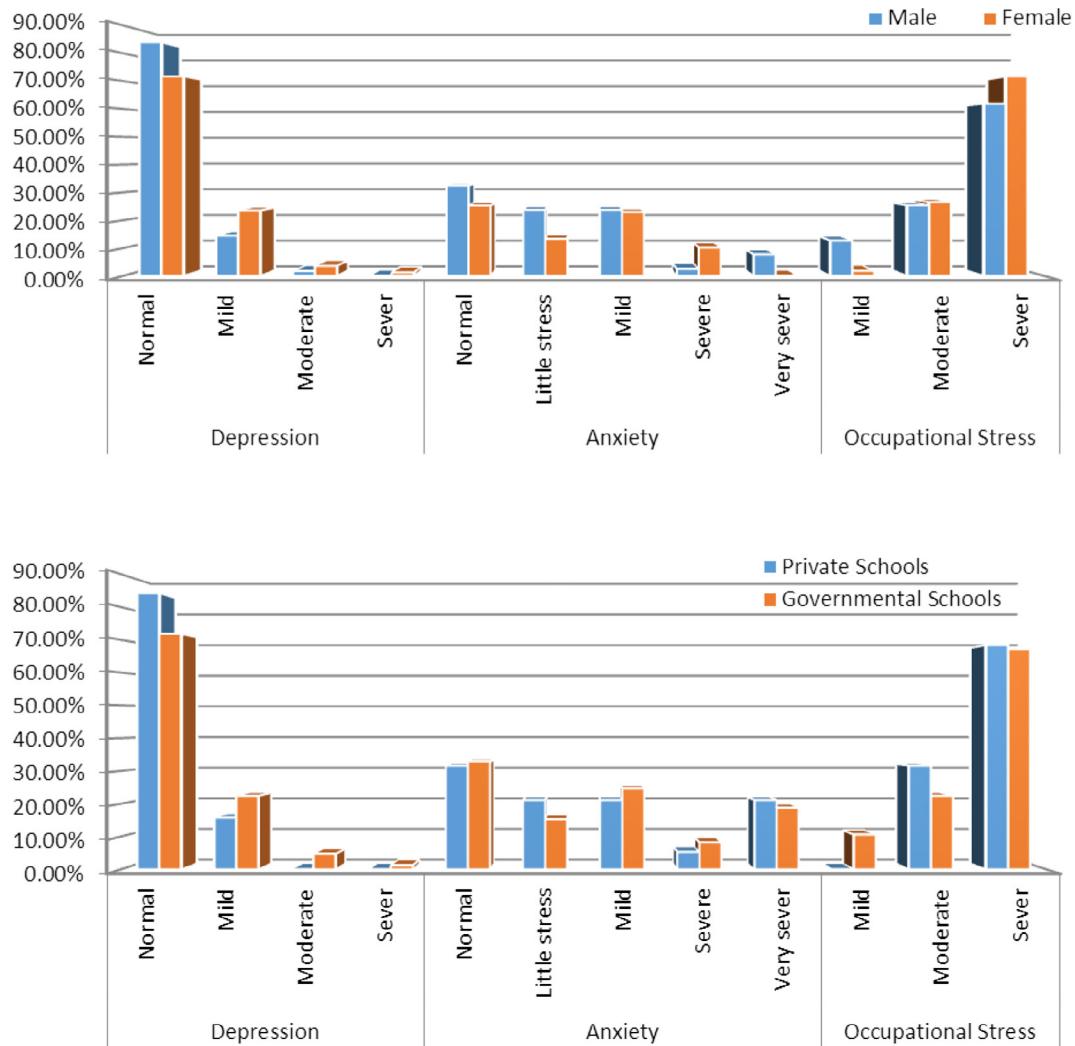


Fig. 1. Distribution of depression, anxiety and occupational stress prevalence according to gender and school type.

management [25]. And the insecurity in terms of safety, and pressure from home and society felt by female teachers [24].

Another important reason for that gender difference was stated by Kane [26], which is playing multiple roles by female teachers, as they work in school in addition to their second work shift at home, in addition to their roles as wives, mothers, sisters and daughters or daughters in law. That is why they are always exhausted due to the unpaid 'second shift' at home [26].

In the present study, private school teachers showed a higher prevalence of OS, a matter that was demonstrated in other studies which was explained by the more job insecurity felt by private school teachers [24].

The observed significant higher levels of OS scores among primary school teachers compared secondary school teachers was observed in a previous study [2]. This study attributed the high prevalence of OS among primary school teachers to their responsibilities in: lesson teaching and planning, accountability for student performance, classroom management and discipline, supervisory role, extracurricular activity conducting and monitoring, and relationship, marital and family problems [2]. The same results were demonstrated in previous studies [20].

An explanation of the higher prevalence of OS among primary school teachers was stated previously by Kane [26], as those teachers work alone and are totally responsible for the physical, emotional, social and intellectual development of the children in the

class [26]. In addition, they are forced to play multiple roles in their work with children, colleagues and administrators. They are also compelled to be in loco parentis, social worker, counsellor, first aid officer, fundraiser, disciplinarian and sports coordinator [26]. The primary teacher's work is not only limited to the six hours at school, but there is always preparation and homework pertaining to the teaching to be attended to before the next morning. Added to this, is the lack of training for playing these multiple roles at school [26].

The bad situation of primary education in Egypt could explain the significant higher prevalence of OS among primary school teachers in the present study. As according to the Global Competitiveness Report, published by the World Economic Forum which surveyed 148 countries in the 2012–2013, Egypt ranked last among those countries regarding the quality of its primary education, thus, falling behind many Arab, African, Asian and Western countries [27].

The significant lower prevalence of OS among secondary school teachers could be explained by the special situation of secondary education in Egypt as explained by the Population Council. About 23.9% of secondary students reported that one of their reasons for their absence from school was that they do not benefit from school, and about 39.0% of those students reported being absent to study outside of school explaining the mushrooming market for private tutoring [28].

**Table 2**

Distribution of depression, anxiety and occupational stress scores regarding teachers' age, school type and educational level, salary, experience, qualifications and workload.

Variable	Depression Score	Anxiety score	Occupational stress score
Age:			
- ≤40 years (No. = 264)	15.4 ± 9.9	19.8 ± 9.2	160.8 ± 22.9
- >40 years (No. = 304)	17.0 ± 8.6	23.4 ± 8.2	168.1 ± 21.8
- p-value	0.04	<0.001	<0.001
Gender:			
- Male	15.2 ± 6.2	19.8 ± 9.9	158.4 ± 22.4
- Female	16.9 ± 6.6	22.6 ± 8.0	163.1 ± 21.7
- p-value	0.002	<0.001	0.01
School type:			
- Private (No. = 228)	14.8 ± 8.0	21.6 ± 8.1	163.3 ± 25.8
- Governmental (No. = 340)	17.2 ± 11.1	21.4 ± 9.5	157.9 ± 14.3
- p-value	0.003	0.71	0.001
School educational level:			
- Primary (No. 236)	17.7 ± 8.4	22.5 ± 8.9	163.5 ± 24.5
- Secondary (NO. 92)	15.1 ± 6.2	16.1 ± 9.9	155.5 ± 21.4
- p-value	0.007	<0.001	0.006
Teachers' salary:			
- Adequate (No. 48)	12.8 ± 5.6	20.2 ± 5.5	150.5 ± 17.5
- Inadequate (No. 520)	16.6 ± 10.3	22.5 ± 7.2	162.5 ± 22.5
- p-value	<0.001	0.03	<0.001
Teachers' experience			
- 1–5 years (No. = 172)	14.3 ± 10.1	16.2 ± 9.7	160.1 ± 18.6
- 5–10 years (No. = 48)	16.8 ± 9.1	20.3 ± 9.0	160.4 ± 23.6
- >10 years (No. = 348)	18.7 ± 8.9	25.1 ± 7.2	174.4 ± 21.7
- P-value	0.006	<0.001	<0.001
Teachers' qualifications			
- Diploma (No. = 32)	15.6 ± 9.9	20.8 ± 8.9	140.1 ± 10.8
- Bachelor (No. = 496)	19.2 ± 4.3	24.9 ± 8.7	150.1 ± 32.8
- Master and more (No. = 40)	23.0 ± 8.9	27.1 ± 6.9	163.9 ± 21.0
- p-value	<0.001	<0.001	<0.001
Teachers' workload			
- 1–15 classes (No. = 204)	15.4 ± 8.6	20.9 ± 7.9	162.0 ± 22.6
- 16–20 classes (No. = 200)	15.0 ± 10.1	20.7 ± 8.8	162.9 ± 19.7
- >20 classes (No. = 168)	18.8 ± 7.3	23.0 ± 10.2	169.2 ± 24.8
- p-value	<0.001	0.03	<0.001

In the present study, prevalence of OS was significantly higher among teachers who stated that they had inadequate salaries. This result is going with that revealed from previous studies where teachers with low income experience more OS compared to teachers with higher income level [2]. The bad status of teachers' salaries in Egypt could explain this observed result, as Egyptian teachers earn an average annual salary of 460 \$, which is less than half the country's average annual per-capita income [13].

The significant higher prevalence of OS among teachers with higher experience was observed in previous studies, where teaching experience was found to be one of the most significant predictors of OS [23]. This result is in line with that found in a study done on head teachers with higher experience which found that the phenomenon of OS among them is a real problem [29]. The significant higher prevalence of OS among teachers with higher qualifications in the present study could be explained by the results revealed from a previous study, where postgraduate teachers had significantly less job satisfaction compared to the undergraduate and graduate ones [30].

The relationship found between OS and workload in this study was observed in previous studies, where the workload, was one of the main predictors of OS among teachers, and the quantity of work not the quality was the source of stress for them [31].

In the present study, the reported prevalence of both anxiety and depression among the studied sample is higher than the estimated prevalence among Egyptians reported in the last national survey of prevalence of mental disorders done in Egypt in 2009 [32].

As for anxiety, the prevalence among the studied teachers (67.5%) is 14 folds higher than that reported in that survey (4.75%) [32], and the depression prevalence in this study is eight

folds (23.2%) higher than that reported in the survey (2.7%) [32]. This is in line with a previous study where teachers were found to be at a higher risk for psychological distress and lower levels of job satisfaction compared to general population [33]. And with a study done in Hong Kong, where the percent of teachers suffering from anxiety and depression was 2–3 folds higher than that for general population [34]. The reported figure of anxiety prevalence among teachers in the present study is also much higher than that found in other studies [6,7].

This high level of anxiety among studied teachers was explained previously by the social constraint that disturbs their teaching practices and their emotional experiences at work [35]. In addition to the inadequate administrative support, poor working conditions, lack of involvement in decision making, educational, legislation, school reform policies, relationships with parents and other teachers, class sizes, noise levels and lack of resources [4].

In the present study the observed significant higher prevalence of anxiety among female teachers, was demonstrated in previous studies where female teachers always suffer from higher level of anxiety compared to their male counterparts [6,36]. This was explained by their higher workload and higher conflict between their roles in work and at home with their families [25]. In addition, the emotional abilities of female teachers could be blamed, as they are individuals' internal resources with a big role in protection and maintenance of emotional health and dealing with the threatening situations [36]. This gender difference in anxiety and depression prevalence was found also in the national survey done in Egypt in 2009 [32].

The significant higher level of anxiety and depression among primary and preparatory school teachers compared to secondary school teachers in the present study, is in agreement with results

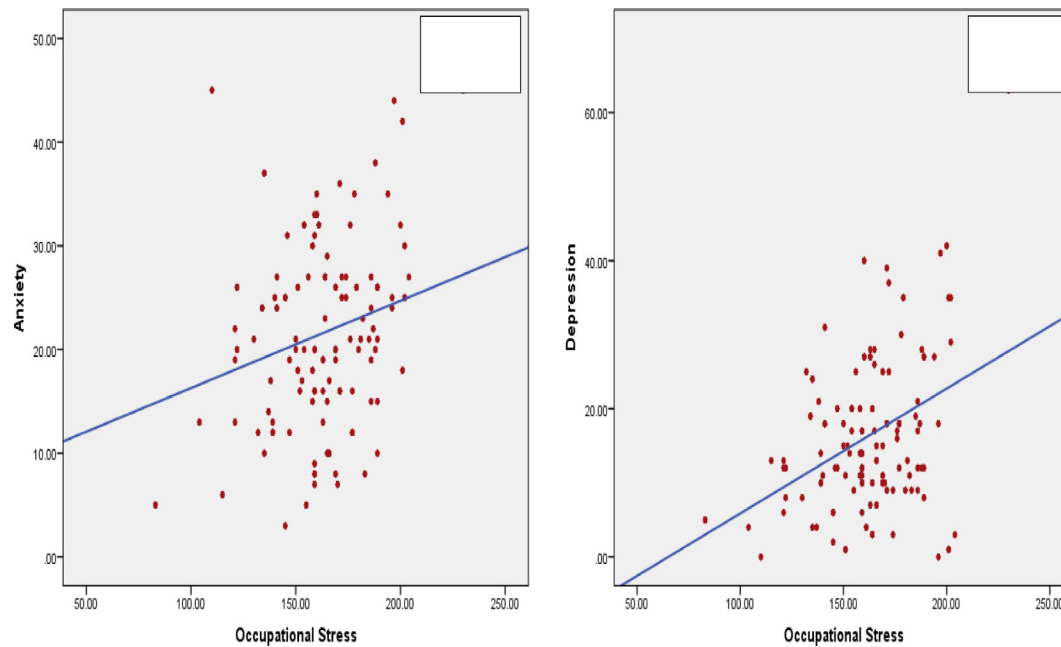


Fig. 2. Scatter plot of occupational stress scores against anxiety and depression scores.

Table 3

Multivariate regression analysis regarding the risk factors for Depression, Anxiety and occupational stress among the studied teachers.

Parameter	Depression			Anxiety			Occupational Stress		
	Beta	Wald	Odd's Ratio	Beta	Wald	Odd's Ratio	Beta	Wald	Odd's Ratio
Age	-0.29	0.47	0.82 (0.46–1.45)	-0.43	3.06	0.65 (0.41–1.05)	0.67	2.71	1.96 (0.88–4.37)
Gender	0.35	1.87	1.42 <sup>†</sup> (1.86–2.33)	0.48	5.18	1.62 <sup>†</sup> (1.07–2.45)	0.39	1.01	1.48 (0.69–3.18)
School type	1.62	21.18	5.05 <sup>**</sup> (2.54–10.07)	0.80	7.63	2.23 <sup>**</sup> (1.26–3.93)	0.08	0.87	0.73 (0.56–1.43)
School educational level	1.47	13.34	2.22 <sup>**</sup> (2.1–3.51)	0.47	7.87	2.35 <sup>**</sup> (1.14–4.12)	0.29	1.05	1.34 (0.77–2.33)
Teachers' salary	2.01	11.92	7.48 <sup>**</sup> (2.39–23.47)	-0.63	2.94	0.53 (0.26–1.09)	0.49	1.02	1.63 (0.63–4.19)
Teachers' experience	0.31	2.34	1.36 (0.92–2.00)	0.46	2.32	1.59 (0.88–2.89)	0.02	0.01	0.97 (0.34–2.75)
Teachers' qualifications	-0.53	6.38	1.58 <sup>†</sup> (1.38–1.89)	-0.41	6.37	1.66 <sup>†</sup> (1.48–1.91)	-0.57	2.35	0.56 (0.27–1.17)
Teachers' workload	0.49	11.92	1.63 <sup>**</sup> (1.23–2.14)	0.01	0.02	1.01 (0.79–1.29)	0.59	2.49	0.56 (0.36–1.78)

found in previous studies. This was attributed to the excess pressure on primary and middle school teachers from educational institutions, students, parents, community attitude, work overload, students' poor behavior and role conflict which make them always in confusion [8].

In the present work, a significant higher prevalence of anxiety among teachers with higher experience was observed in previous studies, which demonstrated the relationship between increased years of experience and challenges faced by teachers on their job [37]. In addition, years of teaching experience was found to be a significant and positive predictor of job satisfaction [12]. The significant higher prevalence of anxiety among teachers with inadequate salaries was reported in another study, where teachers with poor economic situation showed higher levels of anxiety [38].

Teachers can develop depression as psychological consequence of stressors at work [39]. The reported prevalence of depression among teachers in the present study is much higher than that reported from other studies [6,7,40]. This could be explained by the high prevalence of OS observed in this study, as OS was found

to be a risk factor and precipitator for depression and anxiety among teachers [10,11].

The observed prevalence of depression in this study is eight folds (23.2%) higher than that reported in the 2009 Egyptian national survey (2.7%) [36]. This high figure could be explained by the work related stressors related to work load, repetitive work, stressful work environment, continuous supervision and superiors' pressure, which are considered as predisposing factors for the development of depression and anxiety among teachers [41].

The significant gender difference in depression prevalence in the present study was also present in other studies which showed a significant higher prevalence of depressive symptoms among female teachers [5,25,36]. This was explained by stresses faced by female teachers in their job which make them more vulnerable to depression [41].

The significant weak positive correlation between OS, anxiety and depression scores in the present study was observed in a previous study, which showed that depression among worker is directly related to stressors in the work environment [42], which

is a finding that was in line with other studies [43]. This was explained by the relationship between work related stressors in the school environment and the development of both anxiety and depression among teachers [8,9], which is in line with studies which showed that OS was a main predictor of depression and anxiety among teachers [10,11].

In the present work, one of the risk factors of depression was being a female teacher, a finding that was revealed from previous studies [5,25,36]. This finding was explained by the classroom stress faced by female teachers from students' behaviors, and the female teachers' lower ability for classroom management [25]. This result is in agreement with the literature where females always suffer higher prevalence of depression more than men [44]. Working in governmental schools was another risk factor for depression, a finding that can be explained by the poor quality of the Egyptian governmental schooling system, which led to the emergence of the national problem of private tutoring [45]. In governmental schools, the problems of over crowdedness with classes containing between 40 and 50 children, and the poor facilities are not appropriate to create a suitable environment for effective learning, and were found to directly affect the daily performance of teachers [46].

Teaching for primary grade students, inadequate salary, higher qualification and workload were also found to be risk factors for depression among the studied school teachers. This finding could be explained by the occupational stress caused by those factors, and the direct association between depression and stressors in the work environment observed in previous studies [8,9,42,43].

In the present study, one of the risk factors of anxiety disorders among the studied teachers was being a female teacher, which is a finding that was found in previous studies [6,25,36], and also explained previously by the higher prevalence of anxiety among females [44]. Other risk factors for anxiety included working in governmental schools, which is a finding that were explained previously by the deteriorating nature of the Egyptian governmental schooling [45,46]. Another risk factor was teaching for primary grade students, which could be explained by the great responsibilities of the primary school teachers [2,8,20,26], and the deteriorated situation of the primary education in Egypt [27]. Other risk factor for anxiety was having high qualifications, which is a finding explained previously by the less job satisfaction experienced by postgraduate teachers with higher qualifications [30].

As for occupational stress, the present work showed that no risk factor could be detected for OS, a finding that could be attributed to the multifactorial origin of occupational stress, as all these risk factors are working together to induce occupational stress.

## 5. Conclusion

The aim of the present work was to assess the prevalence of OS, anxiety and depression among Egyptian teachers. Based on the results, our sample showed a high prevalence of OS (100%), anxiety (67.5%) and depression (23.2%). Occupational stress, anxiety and depression scores were significantly higher among teachers with an age more than 40 years, female teachers, primary school teachers, those with inadequate salary, higher teaching experience, higher qualifications and higher workload. In this study, teaching was found to be a highly stressful job for Egyptian teachers with a significant weak positive correlation between OS scores and anxiety and depression scores. This study calls for appropriate interventions taken by the relevant Egyptian authorities to prevent or reduce teacher stress and to address cause of OS and mental disorders among them. These interventions should include periodical medical evaluation of teachers, and medical and psychological support for the identified cases. The study calls for future studies focusing on risk factors of OS and other mental disorders among teachers as it is vital for teachers to have a sound mental health

for better quality of the teaching process and better students' educational outcomes.

## 6. Study limitations

One of the limitations of this work was the use of a cross-sectional study where the causality and the direction of relationships couldn't be determined. Another limitation was the use of self-reported questionnaires where the responses to questionnaires could be affected by personal or social values leading to the probability of recall bias. The self-reported questionnaire requires a psychiatric evaluation through structured clinical interview for final diagnosis.

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## Competing interests

None.

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