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Research Article

PREVALENCE AND DETERMINANTS OF DEPRESSION AMONG PUBLIC ELEMENTARY SCHOOL TEACHERS IN JEDDAH, SAUDI ARABIA

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Abstract:

This cross-sectional study aimed to ascertain the prevalence of depression among teachers and to pinpoint the contributing variables to its emergence. Data were obtained from teachers working in Jeddah's public elementary schools throughout one academic year using a multistage clustered sample procedure and the probability proportional to size method. Data on depression and cofactors were gathered through a self-administered questionnaire. The survey comprised 406 respondents with a mean age of 39.9 SD=6.3. Of the sample, 54.9% were women, and 45.1% were men. 86.2% were married, with a mean number of kids=3.49±1.48. The prevalence of depressive symptoms in this study was found to be 36.5% (95% CI: 32–41). Multiple factors were associated with increased risk of depressive symptoms, including sex, $\chi^2 = 16.68$; $p = .000$, years of teaching Fisher-exact=7.37; $p = .02$, chronic health problems, $\chi^2 = 12.57$; $p = .000$, and sleep disturbance, $\chi^2 = 25.52$; $p = .000$. After adjusting for all variables, and excluding sleep quality from the regression model for its collinearity with depression, female gender or persons having chronic illness were at higher risk of depression with OR=2.55; $p = .001$ and OR=1.76; $p = .03$ respectively. These findings support earlier research showing that psychological distress is elevated among females having a history of chronic illness or sleep disturbance.

Like their peers worldwide, Saudi teachers go through much stress. This again underlines the significance of early identification and treatment of depression among teachers. Additionally, long-term initiatives for improving the learning environment in schools should be implemented, as well as actions to increase female autonomy in the education sector.

Keywords: depression, teachers, prevalence, Jeddah, Saudi Arabia

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INTRODUCTION:

Depression, referred to as major depressive disorder (MDD) [1], is a prominent cause of disability and adds to the overall burden of the disease. It affects more than 264 million people globally [2], [3]. Assessed for all ages, it is the second most common cause of Disability Adjusted Life Years (DALY) [4]. According to the World Health Organization (WHO), 5.0% of adults and 5.7% of older individuals are affected, totaling 3.8% of the population [2]. Signs of depression include low mood, a sense of guilt or low self-worth, irregular sleeping patterns, loss of appetite and weight loss, exhaustion, and trouble concentrating. Depressed persons may also lose interest in activities they had previously found enjoyable. It might be ongoing or persistent, impairing one's capacity to function and lead a fulfilling life [2], [3].

Many complex interacting factors may lead to depression, including biological, social, and psychological factors. Moreover, negative life experiences such as childhood hardship, unemployment, or job loss may exacerbate depression [2].

Demographic, Work, and Lifestyle Covariates

Globally adult women are at higher risk of developing depression than men, with a ratio of 2:1 [1], [5]. In addition, the incidence of depression was higher among unmarried (Ma et al., 2021) [6]. In the study of Rai et al., 2013, higher odds of depression were associated with being divorced or widowed [7]. Occupational stress among teachers is a well-known predictor of depression and anxiety [8]. Worldwide studies have found that the most common psychosomatic conditions encountered by teachers are depression, anxiety, and stress [9]. Furthermore, teachers are more likely to meet MDD criteria when taught at the elementary level [10]. The lifetime prevalence of depression among teachers ranged between 19.4 to 52.5% [11]. Still lower levels reported from Canada, the annual and lifetime prevalence of depression among adults was 4.7% and 11.3%, respectively [12].

Numerous factors, including workload, classroom indiscipline, physical exhaustion, and, most crucially, lack of appreciation of their work," are cited as the causes of this problem among teachers [13]. In addition, chronic stress can restrain daily activities and emotional stability and become a source of developing anxiety and depression [14]. In turn, depression may result in decreased work quality or absences due to illness, which may reduce their work productivity [10], [15].

The association between the risk of developing depression and physical activities has been studied sufficiently. Consequently, a meta-analysis of prospective studies was conducted by Huang et al., 2020 to identify the relationship between a sedentary life and the risk of developing depression. As a result, a significant association was observed between a sedentary life and the risk of depression [16]. Furthermore, Koo and Kim., 2020 found that physical activities reduce stress and depression among Korean adult women [17]. Ma et al., 2021 studied the connection between chronic illnesses and depression and discovered that those with chronic illnesses and pain had a higher probability of getting depression [6]. Poor sleep quality might raise an adult's risk of depression [18] [19]. In addition, evidence of the strong associations between chronic disease, poor sleep quality, and poor mental health was reported globally [20]. These sleep quality problems are not symptoms of depression; instead, they frequently come before depressive episodes and can linger even when the patient is in remission [21]. Sleep has a complex relationship with emotional health. A person's capacity to control their emotions is directly impacted by the quality and quantity of their nighttime sleep [22]). Poor sleep may interfere with one's executive function systems, directly impacting their capacity to control emotions [18]. It has been found that improving sleep in depressed persons improves outcomes [21].

Diagnosis

For the diagnosis of major depressive diseases, there are two commonly practiced methods [23]. The first method, the "gold standard" referred to as strictly-defined or detailed diagnosis, is the *Symptom-based diagnosis* which uses a structured or semi-structured questionnaire to request participants to self-report specific symptoms (Davis et al.) [24]. Then, to assess whether the participant meets the criteria for a diagnosis, their responses are compared to diagnostic criteria, the Diagnostic Statistical Manual (DSM-5(American Psychiatric Association, 2013)) [25]. The second method is the *Self-reported diagnosis* which utilizes a single question in which participants are asked whether they have received a clinical diagnosis from a health professional for a psychiatric disorder during their lifetime (Davis et al., 2019) [24]. There is a high agreement between the two diagnostic methods, broadly used in anxiety and depression research [23].

Aim

Occupational stress and its effect on the well-being of teachers have increasing prominence in the research agenda. Although many studies were conducted in Saudi Arabia on depression and anxiety among school

adolescents and university students [26]–[30], there is a lack of similar studies among teachers. Thus, the current study aims to evaluate the prevalence of depression and associated factors among elementary school teachers living in Jeddah.

Materials, sampling, and statistical methods

This analytic cross-sectional study was conducted among teachers working in Jeddah's Saudi public elementary schools throughout one academic year. Participants were selected using a multistage clustered sample procedure and the probability proportional to size method. Data were collected from 9 female and eight male schools. Teachers completed a validated self-administered questionnaire during one teaching day. Descriptive analysis was performed using frequencies and proportions. Prevalence of depression was calculated as the proportion of teachers having MDD, defined as the participant's self-report of any prior diagnoses of depression from medical professionals. The independent variables included; demographic data, school-related activities, health-related behavioral characteristics, chronic illnesses, and sleep quality. The *Pittsburgh Sleep Quality Index* (PSQI) was used to measure subjective

sleep quality throughout the previous 1-month period. PSQI scores of 5 or higher were considered bad [31]. Differences among teachers concerning depression were tested for each co-variate using Chi-square analyses and tested at an $\alpha = 0.05$. Differences between dependent and independent variables were further tested through logistic regression analyses. Sleep quality was excluded from the regression model because of its strong collinearity with depression.

The predicted percentage correct of the developed logistic model was 68%, and the overall goodness of fitness measured by the Cox-Snell R^2 was .074. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS), version 24.0 (IBM Corporation, Armonk, United States)

Institutional Review Board Approval and Participants' Consent

The study was carried out with the authorization of the school director, the Ministry of Education, and the Institutional Review Boards (IRBs) at the Public Health Department in Jeddah Directorate, Log No. A01554. Finally, before teachers participated in the study, their informed consent was sought.

RESULTS:**Table 1: participants characteristics**

Variable	Number	%
Age* (n=350)		
<40 years	150	42.9
≥40	200	57.1
Sex (n=406)		
Male	183	45.1
Female	223	54.9
Marital status (n=405)		
Single	30	7.4
Married	350	86.4
Divorced	21	5.2
Widow	4	1.0
Number of Kids† (n=406)		
No kids	93	22.9
1-3	157	38.7
>3	156	38.4
Years of teaching (n=399)		
<1	6	1.5
1-5	40	10.0
>5	353	88.5
Number of classes per week (n=381)		
<9	50	13.1
9-15	113	29.7
16-24	218	57.2
Extracurricular activities (n=385)		
Yes	261	67.8
No	124	32.2
Hours of physical exercise (n=406)		
No physical exercise	249	61.3
≤ 1 hour	95	23.4
> 1hour	62	15.3
Current Smoking (n=396)		
Yes	109	27.5
No	287	72.5
Associated comorbid condition‡ (n=391)		
Yes	139	35.5
No	252	64.5
Sleep Quality during last month (n=389)		
Score > 5	200	69.2
Score ≤5	89	30.8
*(Mean= 39.8743) (n=350) †mean number of kids3.49±1.48 (n=403) ‡Type 2 diabetes mellitus, High blood pressure, Hypercholesteremia, Arthritis, Bronchial Asthma, Psychological problem, food regurgitation, and sleeping Apnea		

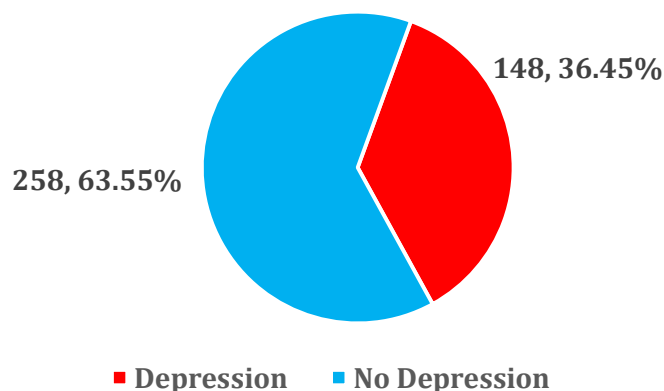


Figure 1: prevalence of depression among participants

Table 2: Association between depression and co-variables among elementary school teachers

Variable	Depressed		χ^2	p value
	Yes (n(%))	No (n(%))		
Age				
< 40	52 (34.7%)	98 (65.3%)	.203	.653
≥ 40	74 (37.0%)	126 (63.0%)		
Sex				
Male	47 (25.7%)	136 (74.3%)	16.683	.000
Female	101 (45.3%)	122 (54.7%)		
Marital status				
Single	9 (30.0%)	21 (70.0%)	5.679*	.128
Married	133 (38.0%)	217 (62.0%)		
Divorced	3 (14.3%)	18 (85.7%)		
Widow	2 (50.0%)	2 (50.0%)		
Number of Kids				
No kids	33 (35.5%)	60 (64.5%)	.145	.930
1-3	59 (37.6%)	98 (62.4%)		
>3	50 (35.9%)	100 (64.1%)		
Years of teaching				
< 1 year	4 (66.7%)	2 (33.3%)	7.370*	.025
1-5 years	8 (20.0%)	32 (80.0%)		
>5 years	134(38.0%)	219 (62.0%)		
Number of classes per week				
<9	16 (32.0%)	34(68.0%)	2.327	.312
9-15	38 (33.6%)	75 (66.4%)		
16-24	82 (37.6%)	136 (62.4%)		
Extracurricular activities				
Yes	102 (39.1%)	159 (60.9%)	3.112	.078
No	37 (29.8%)	87 (70.2%)		
Physical exercise				
Non	95 (38.2%)	154 (61.8%)	.803	.669
≤ 1 hour	32 (33.7%)	63 (66.3%)		
> 1hour	21 (33.9%)	41 (66.1%)		
Smoking				
Yes	38 (34.9%)	71(65.1%)	.146	.702
No	106 (36.9%)	181 (63.1%)		

Associated chronic health problems				
Yes	67 (48.2%)	72 (51.8%)	12.572	.000
No	76 (30.2%)	176 (69.8%)		
Sleep quality				
Score ≤5	13 (14.6%)	76 (85.4%)	25.518	.000
Score > 5	91 (45,5%)	109 (54.5%)		
* Fisher exact test				

Table 3: Logistic regression for predictors of depression among elementary school teachers

Predictor	β	SE	OR	P	95% CI	
					UL	UL
Age	.210	.284	1.233	.460	.707	2.152
Sex	.937	.281	2.551	.001	1.470	4.427
Marital status	.164	.319	1.178	.608	.630	2.203
Number of kids	.031	.072	1.031	.665	.896	1.187
Years of teaching	.025	.339	1.025	.942	.527	1.992
Number of curriculum classes	.328	.189	1.388	.083	.958	2.011
Number of Extracurricular activities	.284	.291	1.329	.329	.751	2.350
Physical activities	.121	.150	1.128	.420	.841	1.514
Smoking	.465	.295	1.592	.115	.893	2.837
Comorbid conditions	.564	.266	1.757	.034	1.044	2.957

DISCUSSION:**participants characteristics**

Since depression is one of the most common health problems that have impacted teachers, this study looked at prevalence and associated factors of MDD among elementary school teachers in Jeddah. This study included 406 teachers in total. Over half of participants (57.1%) were 40 or older. There were 183 men and 223 women (45.1% and 54.9% respectively). The majority of participants (86.2%) were married, followed by 7.4% single people and 6.2% widowed or divorced people. Teachers were more inclined to have at least one child, 38.7% to have one to three kids, and 38.4% to have more than three.

Large proportion (88.5%) of teachers spent more than 5 years in teaching, 10.0% spent between 1-5 years and only 1.5% spent less than one year. More than half (53.7%) reported having class assignments between 16-24/ week, 27.8% had 9-15 classes/week, and 12.3% had less than 9 classes/ week, and around two third (67.8%) had extracurricular activities. In terms of everyday activities, the majority of respondents

(61.3%) did not engage in physical activity; just 23.4% did so for an hour or less, and only 15.3% did so for an hour or longer. Only 27% of teachers admitted to smoking. Around one third of the them (35.5%) reported having at least one health-related issue, and a sizable percentage of teachers, 69.2%, had a bad overall sleep quality score (>5) on the PSQI scale, and (Table 1).

Prevalence overview

A total of 148 participants have been diagnosed with MDD, making the prevalence of depression among teachers 36.5% (95% CI: 32-41) (Figure 1). According to numerous multi-country studies, there are significant regional disparities in the prevalence of depression [5] [32]. In a review study, the reported prevalence of depression in teachers ranged from 4% to 77%. (Agyapong et al., 2022) [14]. These findings may properly reflect regional differences in the prevalence of depression. It is also likely that various persons may react differently to inquiries about mental health. The contradictory findings of two surveys on mental health conducted in China utilizing various techniques and equipment for data collection served as evidence of this (Rai D et al., 2013) [7].

Like their peers worldwide, Saudi teachers experience significant levels of stress. Based on our comparison of these results with research studies using designs that are comparable to ours, we found that the result of our study was lower than a multidisciplinary, cross-sectional survey of public school teachers in Ethiopia in 2020, which revealed a prevalence of depression symptoms of 44.7% [11]. On the other hand, lower results were reported for depression among teachers (23.2%) in a study of occupational stress, anxiety, and depression among Egyptian teachers (Desouky & Allam, 2017) [8].

Locally a national survey among adults in Saudi Arabia found that 12.5% were at risk of depression [33], but studies of particular populations have revealed higher prevalence rates. For example, health professions students had an *overall prevalence rate of 47.0%* [34]. Similarly, a high rate (49.9%) of point prevalence of depression was reported among patients visiting primary care centers (Al-Qadhi et al., 2014) [35]. The higher prevalence rate of depression among this group is likely caused by the study's context, where more patients are expected to have diagnoses of depression in a health setting than the general population.

Correlates

Sex is one of the elements that influence depression. In our sample, the Univariate Chi-square $\chi^2=16.683$; $p=.000$ (Table 2), and the final regression outcome $OR=2.551$; $p=.001$ indicated that the demographic factor of female gender was linked to greater chances of depression (Table 3). Numerous earlier investigations have proven this outcome [1][35]. It seems that biological factors, including menopause, hormone changes, pregnancy, and childbearing, strongly influence this difference [17].

A review conducted by Agyapong et al., 2022, indicated that years of teaching were correlated to depression [14], and according to (Rai D et al., 2013), lower years of teaching increased the likelihood of depression [7]. Our study revealed a similar association between years of teaching and depression, with the Univariate Chi-square result of $\chi^2=7.370$, $p=.025$. However, the regression model revealed no association $p>.05$, possibly the influence of other components in the regression model disguised this link.

In alliance with the literature, where ample evidence suggested that patients were more prone to experience depression if they had a history of chronic illnesses [6][36][37]. The results of this study indicated a substantial relationship between depression and suffering from chronic illness. Univariate Chi-square resulted in $\chi^2=12.572$, $p=.000$ (Table 2), and the logistic regression resulted in $OR=1.757$; $p=.034$ (Table 3). In addition, these findings support earlier research showing that psychological distress is elevated by chronic illness or a self-assessment of poor health [38].

Poor sleep quality might raise an adult's risk of depression [18] [19]. Evidence of the strong associations between chronic disease, poor sleep quality, and poor mental health was reported globally [20]. Our study showed that bad sleep quality with a PSQI score of more than five was strongly correlated with the development of depressive symptoms ($\chi^2=25.518$, $p=.000$). Sleep problems are among the symptoms used to identify a major depressive illness, even though they are not necessary for a diagnosis [19]. Because of this, and due to its substantial collinearity with depression in the initial logistic regression model, it was omitted from the final model. The relevance of sleep disturbance as a predictor of depression in this context is that the ongoing sleep issues may increase the risk of relapse, recurrence, or suicide and need the prescription of additional effective drugs [39].

CONCLUSION:

This study has identified the prevalence and essential factors influencing depression among teachers. These results could substantially impact the literature on the relationship between depression and demographic and teaching characteristics. Being a female and having chronic illnesses were unconfounded predictors of depression. Comparative research across the nation utilizing similar methodologies is crucial for a deeper comprehension of the personal and teaching determinants of depression.

Giving attention to the quality of sleep among teachers is crucial in the early detection and management of depression among teachers. Long-term measures for enhancing the school learning environment should be launched. Initiatives to boost female autonomy in the education sector should also be implemented.

Limitations

First, the causative connections could not be demonstrated because this is a cross-sectional study. Second, the use of self-reported depression as a measure of MDD in this study may be criticized because of the limited insight into the depression subtypes and severity. However, details of depressive symptoms are beyond the scope of this study.

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