

# Prevalence of stress, anxiety and depression in the context of climate change among newly recruited contract teachers in Morocco

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**Abstract.** Teaching has been identified as one of a highly stressful jobs. As known, this job is linked to development of neuropsychiatric. However, there is a little background about the assessment of these problems among Moroccan teachers. This study aims to measure the prevalence of stress, anxiety and depression among 150 newly recruited contractual primary teachers in *KHEMISSET* city using three international scales. The perceived stress scale (PSS) for stress, the hospital anxiety and depression scale (HADS) and The Mini International Neuropsychiatric Interview (MINI) for anxiety and depression. The results show that 95.9% of the teachers are stressed. In contrast, among these teachers newly recruited 94.9% and 72.4% do not suffer from depression and anxiety, respectively. Additionally, there was no significant difference in the stress, anxiety and depression scores between male and female teachers ( $p > 0.05$ ). The prevalence of stress, anxiety, and depression among newly recruited contract teachers in Morocco, specifically in the context of climate change, can be influenced by various factors. In conclusion, this study suggest that teachers are more susceptible to stress, depression and anxiety and suitable steps should be taken to enhance the mental health of these teachers, thus guaranteeing good quality education.

**Key words:** Depression; Stress; Anxiety; Contractual teachers; Psychometric tests.

## 1. Introduction

The presence of stress in working environments can produce adverse returns for workers by favoring spaces that impact on quality of life [1]. Persistent stress can produce a number of undesirable physical manifestations such as increased susceptibility to stroke and higher blood pressure and decreased immune system [1]. In addition, other manifestations have also been reported in the literature, including alteration of learning and memory functioning as well as the development of depression and anxiety. In this sense, many works established a correlation between stress, anxiety and depression [2–4].

In the last two decades, teaching has become one of the most difficult works in the world. It is one of the jobs most prone to the development of stress, anxiety and depression, due to a complex and multi-faceted combination of aspects linked to professional activity (workload, adverse psychological environment and the operating system) [1]. Recently, some studies found a very high prevalence of stress (100%), anxiety (67.5%) and depression (23.2%) among teachers [2], which can impact their performance and lead to decreased work satisfaction, energy consumption and burnout syndrome [5]. Recognition of this problem is needed, in order to draw up a list of preventive strategies for dealing with it.

The current state of the art in Morocco reveals that these dimensions have not received the same international interest. From this perspective, the present study aims to determine the prevalence of stress and signs indicative of anxiety and depression among newly recruited contractual primary teachers in the KHEMISSET region using international scales. It is important to note that individual experiences may vary, and further research specific to the context of newly recruited contract teachers in Morocco is necessary to understand the prevalence and factors influencing stress, anxiety, and depression in relation to climate change. Implementing supportive measures such as providing training, resources, and mental health support can help address these challenges and promote the well-being of contract teachers in the context of climate change.

## **2. Materials and Methods**

### **2.1 Participants**

This study was conducted with a total sample of 150 primary school teachers recently recruited with contract in the province of *KHEMISSET*. The minimum age was 22 years and the maximum was 38 years. Of these teachers, 83 were women (M age = 29.61; S.D. = 7.15) and 67 were men (M age = 31.05; S.D. = 7.01). The participants were selected according to the inclusion criteria: to practice the teaching function during the results collection period. All the participants then answered questions in two sections: (1) sociodemographic characteristics (results not shown); (2) the prevalence of stress, anxiety and depression. Data collection took place in the Regional Center of Trades of Education and Training, Rabat, Morocco.

### **2.2 Instruments**

To obtain the data, three validated instruments were used.

#### *2.2.1 The perceived stress scale (PSS)*

To evaluate stress level in the teachers in this study, the PSS questionnaire [6] was used. PSS is a scale that assesses the frequency with which life (or work) situations are generally perceived as "threatening, unpredictable, uncontrollable and distressing". It is based on a 5-point Likert scale ranging from 1 (= never) to 5 (= very often), with a range of 0 to 40 which are obtained by adding up all the elements on the scale. It was approved that the "low perceived stress" is indicated by score of 0–13, 14–26 is indicated as "moderate" and 27–40 as "high perceived stress" [7].

### **2.2.2 The hospital anxiety and depression scale (HADS)**

Depression and anxiety were measured in this work using the HADS questionnaires. As known, HADS is a valuable psychological instrument comprised of 2 subscales: HADS for anxiety scale (HADS-A) and HADS for depression scale (HADS-D). Each subscale yields consisted of 7 items which result in a score ranging from 0 to 21 for anxiety and 0 to 21 for depression, respectively. Higher levels of anxiety and depression were associated by an increasing HADS-A/HADS-D score. The anxiety/Depression severity was divided into three categories: 0 to 7 = normal, 8 to 10 = borderline abnormal and 11 to 21 = abnormal (case) [1].

### **2.2.3 The Mini International Neuropsychiatric Interview (MINI):**

Depression was also assessed in this study using an interview-based diagnostic tool known as the Mini International Neuropsychiatric Interview (MINI), which is developed in the United States for doctors, clinical research, psychologists and psychiatrists [8]. This standardized validated measurement is compatible with the diagnostic criteria established by the DSM-5. MINI consists of three screening questions and seven main questions, which mostly include "Yes" or "No". Once all questions are posed, the number of yes or no responses are tallied in order to determine the disorder that aligns with the responses given by participant. For this study, the psychometric properties of the MINI are satisfactory in terms of validity [9], faithfulness and sensitivity [10].

## **2.3 Statistical Analysis**

The data were analysed using the Statistical Package for Social Sciences (SPSS), version 22.0 (Armonk, NY, USA). Descriptive analyses were performed to present results. Qualitative variables such as the HADS and PSS were transformed into a qualitative variable (low, medium, and high stress level). They are presented to number and % and expressed as mean and standard deviation. The Student's t-test was used for gender comparisons. The statistical significance was set at  $p < 0.05$ .

## **2.4 Ethical considerations**

To conduct this study, authorization was obtained for data collection. Furthermore, the participant is free to decide whether or not to take part in the questionnaire and to withdraw at all times and without prejudice. To encourage them to reply truthfully, all participants are asked not to reveal their identity when answering.

## **3. Results**

### **3.1 Prevalence of stress using the PSS test**

Table 1 presents the prevalence of stress among teachers using the PSS test. The statistical analysis demonstrated that, among of all teachers, 95.9% are stressed, while the percentage of non-stressed teachers is much lower (4.1%).

**Table 1.** Prevalence of stress among teachers using the PSS test.

|               |                    | Frequency | Percentage | Validated percentage |
|---------------|--------------------|-----------|------------|----------------------|
| Validated     | Absence of stress  | 5         | 3,3        | 4,1                  |
|               | Presence of stress | 116       | 77,3       | 95,9                 |
|               | Total              | 121       | 80,7       | 100,0                |
| Not available | Missing system     | 29        | 19,3       |                      |
| Total         |                    | 150       | 100,0      |                      |

### 3.2 Prevalence of anxiety and depression using the HADS test

#### 3.2.1 Prevalence of anxiety in the general population

Statistical analysis demonstrated that 72.4% of teachers do not suffer from anxiety, while 6% of this population do. On the other hand, cases of doubt represent approximately a quarter of the population (21.6%) (Table 2).

**Table 2.** Prevalence of anxiety among teachers using the HADS-A test.

|               |                | Frequency | Percentage | Validated percentage |
|---------------|----------------|-----------|------------|----------------------|
| Validated     | Absence        | 97        | 64,7       | 72,4                 |
|               | Doubt          | 29        | 19,3       | 21,6                 |
|               | Presence       | 8         | 5,3        | 6,0                  |
|               | Total          | 134       | 89,3       | 100,0                |
| Not available | Missing system | 16        | 10,7       |                      |
| Total         |                | 150       | 100        |                      |

#### 3.2.2 Prevalence of depression in the general population

Table 3 shows the prevalence of depression among teachers using the HADS-D test. We can observe that the majority of teachers (92.9%) don't suffer from depression. Only a minority (1.6%) say they do. While 5.5% are moderately depressed.

**Table 3.** Prevalence of depression among teachers using the HADS-D test.

|           |         | Frequency | Percentage | Validated percentage |
|-----------|---------|-----------|------------|----------------------|
| Validated | Absence | 118       | 78,7       | 92,9                 |

|               |                |     |      |       |
|---------------|----------------|-----|------|-------|
|               | Doubt          | 7   | 4,7  | 5,5   |
|               | Presence       | 2   | 1,3  | 1,6   |
|               | Total          | 127 | 84,7 | 100,0 |
| Not available | Missing system | 16  | 10,7 |       |
|               | Total          | 150 | 100  |       |

### 3.3 Prevalence of depression using the MINI test

Table 4 describes the prevalence of depression among teachers using the MINI test. Statistical results show that 94.9% of teachers do not suffer from depression, while only 5.1% do.

**Table 4.** Prevalence of depression among teachers using the MINI test.

|               |                        | Frequency | Percentage | Validated percentage |
|---------------|------------------------|-----------|------------|----------------------|
| Validated     | Presence of depression | 7         | 4,7        | 5,1                  |
|               | Absence of depression  | 130       | 86,7       | 94,9                 |
|               | Total                  | 137       | 91,3       | 100,0                |
| Not available | Missing system         | 13        | 8,7        |                      |
|               | Total                  | 150       | 100,0      |                      |

### 3.4 Comparison of the prevalence of stress, depression and anxiety according to gender

Regarding the stress domain: it was observed that 13.5% of men and 18.8% of women have high stress. The majority, 86.5% of men and 78.3% of women, have moderate stress. The remaining 2.9% of women have light stress, which is absolutely inexistent for men. In addition, when analysing the analysis of HADS-A test, we noted that 69.6% of men and 74.4% of women are not anxious. Only a minority express anxiety (7.1% of men and 5.1% of women). Concerning the analysis of HADS-D test: it was observed that 94.4% of men and 91.8% of women do not suffer from depression. The cases of doubt account for 5.6% of men and 5.5% of women.

There were no significant differences between the results of men and women ( $p > 0.05$ ), indicating that both sexes react in the same way to stress, depression and anxiety (Table 5).

**Table 5.** Comparison of the prevalence of stress, depression and anxiety according to gender.

|           |          | Man    |       | Woman  |       | Total  |       | p-value |
|-----------|----------|--------|-------|--------|-------|--------|-------|---------|
|           |          | E (ni) | P (%) | E (ni) | P (%) | E (ni) | P (%) |         |
| PSS-Score | Light    | -      | -     | 2      | 2,9   | 2      | 1,7   | 0,32    |
|           | Moderate | 45     | 86,5  | 54     | 78,3  | 99     | 81,8  |         |

|         |          |    |      |    |      |     |      |      |
|---------|----------|----|------|----|------|-----|------|------|
|         | High     | 7  | 13,5 | 13 | 18,8 | 20  | 16,5 |      |
| HADS-A- | Absence  | 39 | 69,6 | 58 | 74,4 | 97  | 72,4 |      |
|         | Doubt    | 13 | 23,2 | 16 | 20,5 | 29  | 21,6 | 0,80 |
|         | Presence | 4  | 7,1  | 4  | 5,1  | 8   | 6    |      |
| HADS-D- | Absence  | 51 | 94,4 | 67 | 91,8 | 118 | 92,9 |      |
|         | Doubt    | 3  | 5,6  | 4  | 5,5  | 7   | 5,5  | 0,47 |
|         | Presence | -  | -    | 2  | 2,7  | 2   | 1,6  |      |

## 4. Discussion

This study, as mentioned above, aims to measure the prevalence of stress, anxiety and depression among newly recruited contractual primary teachers in the *KHEMISSET* region using 3 international scales (PSS, HADS and MINI).

With regards to levels of stress, the current study shows that there is a high rate of teachers suffering from the symptoms of stress (95.9%). In alignment with these results, a recent study shows that stress affects 100 % of Egyptian teachers [2]. Similar results were observed in other works. In Nigeria, the prevalence of stress among teachers was 72.2% [11]. Also, in a developed country like Norway, even though teachers are satisfied with their job, they are stressed about their activities [12]. The stress observed in these teachers may come from teachers' workload (course planning, student behaviour and class supervision) and other different sources of stress including, the unfavourable psychological environment at work, and teaching in overcrowded classrooms [2, 11]. In addition, different levels of education reflect variations in stress intensity, which are higher in elementary school teachers in comparison with high school teachers [13].

In the other hand, the results of this research reveal a low level of anxiety and depression in most teachers (6 % and 1.3%, respectively). However, the results differ from several works. A recent study showed high anxiety (17%), depression 19%, and stress rates (30%), among teachers [14]. In addition, another studies indicated that the altered behaviors in teachers were positively related to stress [2–4]. For example, Jones-Rincon and Howard found that the determinants of anxiety and depression in public school teachers were significantly linked to high rates of stress [4]. However, the decreased prevalence of anxiety and depression observed in our study may be attributed to the fact that the period of experience of these newly recruited teachers was short, suggesting that the type of stress suffered by these teachers is not chronic. Despite this, it is essential to note that these teachers may develop psychiatric illnesses as a result of stressful events at work over the years. In this context, it is reported that people with chronic stress show significantly more anxiety and depression [15, 16]. In animal studies, it has been found that chronic stress can induce the development of neuropsychiatric disorders such as depression and anxiety [17].

Additionally, based on the results of our study, we noted that high level stress, as well as the decreased levels of anxiety and depression, were similar in female teachers as compared to male teachers. Similar results are showed in another study [18]. In contrast, numerous findings discovered substantial difference between male and female teachers in terms of level of stress, depression, or anxiety. They observed that female teachers showed high scores when compared to male teachers [19–21]. The difference between these results may be attributed to the size of the targeted sample. The number of female teachers targeted in the other works is very large in comparison to the number of male teachers. Furthermore, females are more subject to be stressed and depressed due to a variety of contextual factors

such as lack of social support, an inability to cope well with stress, and childhood trauma, or intellectual and emotional demands at work place [22].

This study has some limitations which must be described to properly interpret its results. First, the limited geographical area of the study as we were only satisfied with a sample of primary school teachers from a small town (*KHEMISSET*) in Morocco. Second, we assessed the prevalence of stress, depression and anxiety only in newly recruited teachers, which may limit part of the interpretations to the public context of education. And, to overcome these limitations and other shortcomings of this study, we suggest to: Instead of conducting research at the city level, research should be undertaken at the different cities to overcome the study's sample size limitation and to produce accurate research data. In addition, future studies should focus on comparative research on new and experienced teachers.

Contract teachers, especially those newly recruited, may experience increased stress and anxiety due to the uncertainty of their employment status. The lack of job security can contribute to feelings of instability and future uncertainty, which may be exacerbated in the context of climate change, where the impacts on education systems and job prospects can be unpredictable. Climate change can evoke various emotional responses, including fear, sadness, and anger, due to its potential consequences for the environment, communities, and future generations. Teachers who are directly addressing climate change-related topics in their classrooms may experience emotional strain and a sense of responsibility to educate and inspire their students to take action. Newly recruited contract teachers may have limited access to training and resources related to climate change education. This lack of support can create additional stress and anxiety as they navigate unfamiliar topics and strive to deliver effective and engaging lessons on climate change. The presence or absence of coping mechanisms and support systems can significantly influence the mental well-being of contract teachers. Adequate support from school administration, mentoring programs, professional development opportunities, and access to counseling services can help alleviate stress and promote mental health.

## 5. Conclusion

In summary, the results of our study indicate high prevalence of stress and low prevalence of anxiety and depression among male and female school teachers, suggesting a teachers' mental health impairment. Suitable steps should be taken to enhance the mental health of teachers, thus guaranteeing good quality education.

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