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JOB STRESS AND GENERAL HEALTH AMONG UNIVERSITY TEACHERS IN THE MOROCCAN CONTEXT

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SUMMARY

Background: The present study was conducted to investigate occupational stress and general health among university professors, stress is measured by the Walter Gmelch Index (FSI), while general health was screened by the D. Goldberg GHQ-28 test. A collection of qualitative and quantitative data was carried out under the assumption that the stress at work perceived by the person correlates with his general health result.

Material/ Methods: One hundred and twenty-five teachers (101 men, 20 women; aged 29-62) took part in this study with a kit that includes the two indices (FSI and GHQ-28) and a set of sociodemographic variables.

Results: The results revealed that a large part of the participants suffering from chronic stress and almost half of the subjects (48.76%) suffering from psychic disorders or somatization. The study also affirms our starting hypothesis on a significant correlation between the general state of health and the state of perceived stress. Statistical analysis also reveals a correlation between GHQ and certain institutional variables (grade and seniority at work).

Conclusions: This study expresses the importance of a psychological first aid kit available to health professionals which makes it possible to estimate the prevalence of psychological distress in a given population and to detect psychosomatic cases which escape the general practitioner.

Key words: general health, work stress, job strain, psychological disorders, university teachers

INTRODUCTION

Among the concepts most discussed in modern literature, stress is the most studied in a wide variety of environments and among diverse populations, it is a concept of scientific research, media and colloquial language, it is so widespread that we use it in the description of our state unconsciously. Despite this presence, at the Moroccan academic level, research on stress is scarce, this scarcity becomes clearer in the university environment, in a study carried out by Esserdi Hamid et al. in 2019 on the distribution of the volume of studies on psychosocial risks in Morocco, two studies in the education sector among 34 pieces of research that present all the studies carried out within the Moroccan context with only 11 of them approaching the concept of stress. The impact of stress on health is a relationship already known and verified clinically and statistically by several studies around the world, the rarity in our Moroccan context of studies on stress at work in relation to the state of health highlights the value of this study in the higher education sector. Many works suggest that a prolonged experience of stress can lead to temporary or chronic illness, burnout, and reduced work engagement and performance (Kokkinos, 2007).

This study aims to explore the state of stress at work or more precisely the combination between demands and control at work in a sample of university teachers and seeks the significance of the relationship with the state of health detected by a recognized instrument. academically under GHQ-28.

MATERIAL AND METHOD

Participants

Using a quantitative descriptive cross-sectional study design, a survey based on an experimental protocol was distributed to teachers in paper or electronic form as possible to collect data from full-time faculty members on their general health status, job stress, and a set of socio-demographic data.

The participants who willingly accepted to participate in this study, were invited to fill in a questionnaire in one of the two forms (paper or modifiable PDF) either at their place of work or in their free time under the most favorable conditions in order to facilitate the task. In this operation, 121 reliable answers were taken care of by us to carry out the statistical treatment which presents our sample.

Material and procedure

The variables of this study include the current level of stress at work, the presence of general health disorders, as well as a demographic instrument created by the researcher under the supervision of the supervisor, the psychometrically tested instruments used are: the index of stress by Professors Gmelch, Wilke, and Lovrich (1986), and the General Health Questionnaire (GHQ-28) by D. Goldberg. Selected instruments were assessed for reliability and validity. For example, internal reliability for an instrument can be tested with Cronbach's alpha,

results should exceed 0.7 at a minimum, and >0.9 is considered high reliability (Houser, 2007). Validity is the degree to which an instrument measures the attribute it is meant to assess the degree to which the instrument captures the meaning of the notion it was intended to capture (Polit & Beck, 2008).

The teacher stress index (FSI)

The Faculty Stress Index (FSI) was developed by Gmelch, Wilke, and Lovrich (1986) for screening professional stress. The index is based on two items from the Administrative Stress Index (Koch, Tung, Gmelch, & Swent, 1982), items suggested from a review of current faculty publications, and items suggested from stress reports kept by 20 faculty members for one week. (Gmelch, et al., 1984). In the academic environment FSI proved to be more reliable on the job strain compared to the Karasek model since FSI overrides the significant weight that gives the control and demand model to the organizational factors that stand as the main criticism of the Karasek model, therefore the notion of stress or work/organizational stress will be used interchangeably with job strain in the remainder of this article, and given that the FSI scale questions tend to explore more the combination between the demands of work as well as the perception of control over this work.

The index underwent two pilot studies to determine content validity, face validity, and clarity (Gmelch, et al., 1986). The internal consistency, or alpha coefficient, was determined for the index with the "test-retest " method and is reported as 0.83 (Gmelch, et al., 1986). The psychometric quality of the *Administrative Stress Index* explains why it has been widely used for more than 25 years (Gmelch and Chan, 1994; Flynn, 2000; Shumate, 2000; Abdul Muthalib, 2003; Halling, 2004; Welmers, 2006).

The FSI is intended to measure the level of job stress the participant experiences at the time of instrument administration in relation to their faculty work.

The item "rate the level of stress you feel at your job" allowed the participant to rate their perception of job stress. Data analysis allowed the researchers to compare the average of the previous FSI items with this item for the estimate of self-report stress at work. Finally the last item is "to rate the level of stress you experience in your daily life" which is ranked on the five-point scale and works as an element of control: some participants may work with a very high level of daily stress which causes them to interpret work stress as very high, while others operate with a low level of daily stress which frames their work stress.

Research indicates several factors that affect the stress levels of university faculty members. These include a work-life imbalance and diminished support from administration and colleagues (Slišković & Maslić Seršić , 2011), increasing numbers of students to teach (Easthope and Easthope, 2000), work overload (Thorsen, 1996), lack of university funding and resources, lack of recognition (Gillespie et al., 2001). Similarly, demographic and education factors, such as gender (Hart and Cress, 2009), college degrees (Kinman, 2001), age, and the number of years of teaching experience (Fisher, 2011).

General Health Questionnaire (GHQ-28)

Theoretically, the construction of the GHQ is based on a hierarchical model of psychiatric disorders. Within such a model, the least differentiated level of mental illness includes dysthymic disorders, a tendency to develop minimal somatic symptoms, and a change in the subject's observable social behavior (Goldberg and Williams, 1988).

As developed by D. Goldberg (the 1st version in 1970), the GHQ questionnaire is a screening tool for psychiatric disorders or minor psychic disorders in subjects from the general population or in patients consulting in non-psychiatric care services, it makes it possible to estimate the prevalence of psychological distress in a given population and to detect potential psychiatric cases that escape the general practitioner (Inres, 2011). The GHQ-28 is one of the most widely used and validated questionnaires to screen for emotional distress and possible psychiatric morbidity (Sterling, 2011). The instrument is composed of items assessing 4 domains:

- Symptoms associated with depression.
- Symptoms associated with anxiety and insomnia.
- Symptoms associated with social maladjustment.
- Symptoms associated with somatization.

This is a self-administered questionnaire that the person completes by considering their condition over the past weeks. Four response modalities are proposed, with the following variable formulations depending on the items:

- "better than usual", "as usual", "worse than usual", "much worse than usual"
- "not at all", "no more than usual", "a little more than usual", "much more than usual"
- "more than usual", "as usual", "less than usual", "much less than usual"
- "less than usual", "as much as usual", "more than usual", "better than usual", "much longer than usual"
- "definitely not", "I don't think so", "crossed my mind", "yes, definitely".

There are several versions depending on the number of elements (60 items, 30, 28, 20, 12), but the most used are the GHQ-28 and the GHQ-12. In this study we based ourselves on the GHQ-28 for its high compatibility with the stress study, the psychological suffering threshold being > 7.

The instruments used in the study have been shown to be valid and reliable in previous studies, verification of the reliability of the instruments was analyzed with the data from this study, and the following figures present the internal consistency reliability information for the set measurements.

In Table 1 we present the measurement of the internal consistency of the instruments used in the study.

Table 1. Measurement of the internal consistency of the instruments used in the study

Cronbach's Alpha Scale	
Gmelch Stress Index (FSI)	**0.948**
The Goldberg General Health Questionnaire (GHQ-28)	**0.798**

RESULT

Descriptive statistics

In Table 2 we present statistics of the socio-demographic variables of the sample.
In Table 3 we present statistics for the organizational variables of the sample.

Relevant results

Research question N° 1: What is the percentage of teachers who have a pathological state of health?

In the sample (N = 121), 48.76% (59) of the individuals among our sample who have a pathological state of health which differs according to the seriousness of each situation but which remains beyond the threshold (Table 4).

Table 2. Statistics of the socio-demographic variables of the sample

Characteristics _ individual		**Workforce**	**%**
Sex	Man	101	83.5
	Woman	20	16.5
Age	20-30	1	0.8
	31-40	19	15.7
	41-50	42	34.7
	51-60	51	47.9
	Over 60	1	0.8
Marital status	Single	21	17.4
	Married	90	74.4
	Divorce	8	6.6
	Other	2	1.7
Number of children	0	33	27.3
	1	30	24.8
	2	23	19
	3 AND MORE	35	28.9

Table 3. Statistics for the organizational variables of the sample

Career characteristics		**Workforce**	**%**
Grade	PES	43	35.5
	ProH	12	9.9
	Pag	5	4.1
	PA	50	41.3
	MY	5	4.1
	Other	6	4.9
Seniority	Less than 10 years	24	18.9
	11 years – 20 years	43	35.5
	21 years – 30 years	53	43.8
	Over 30 years	1	0.8
Number of years in current establishment	fewer than 10 years	49	40.5
	11 years – 20 years	40	33.1
	Over 20 years	32	26.4
Have Other Job/activity	No	107	88.4
	Yes	14	11.6
Time devoted to this other job/activity	0	107	88.4
	Less than 4 hours	4	3.3
	Between 5 and hours	8	6.6
	7 hours or more	2	1.7

Table 4. Numbers and ratios of the subscales of the General Health Questionnaire (GHQ-28)

Sample	Somatic dysfunction	Anxiety & insomnia	Social dysfunction	Depression	Total
The number of pathological cases	17	25	9	8	59
Ratio (%)	14	20.7	7.4	6.6	48.76

Table 5. Comparison of the overall mean of organizational stress in different studies based on the same instrument

Author	Elmossati et al. (this study)	Poirel and Yvon (2009)	Welmers (2006)	Abdul Muthalib (2003)	Flynn (2000)	Shmate (2000)
Number	n=121	n=171	n=300	n=50	n=194	n=221
Total average	3.00	2.66	2.64	2.66	2.44	2.72

In the sample (N = 121), 62.8% (76) have immoderate stress, 37.2% (45) have moderate stress, people with non-moderate stress are divided into 30.26% (23) have an average lower than (μ = 3), and 69.73% (53) have high stress. On the other hand, the self-esteem of the level of stress at work gave as the result:

- 4.13% feel very low stress,
- 18.2% mild stress,
- 45.45% declare average stress,
- 31.40% high stress in their work,

1 0.82% (1) did not respond.

The results of the study reflect that more than 50% of the sample presents a job strain problem.

A comparison of the total average with similar studies on the basis of FSI allowed us to observe in our Moroccan context a higher level of stress (μ = 3.00) (Table 5).

Research question N° 3: What are the most important job strain generating factors among university teachers?

Descriptive statistics were calculated for each of the 44 items. The sample had yielded the most stressful factors, which are the following two:

- “Fixing financial aid for my research” (μ = 3.56, σ = 1.13).
- "Attending meetings that take up a lot of time" (μ = 3.54, σ = 1.17).

The sample had the lowest rated levels on the following two elements:

- "Having job demands that interfere with other personal activities (hobbies, family, and other interests" (μ = 1.69, σ = 1.39).
- “Not knowing how my supervisor/manager evaluates my performance” (μ = 2.08, σ = 1.54).

Research question N° 4: How do individuals with immoderate stress (high or active strain) differ from those with moderate stress (low strain or passive) according to their general health status?

This research question was analyzed using a one-way multivariate analysis of variance (MANOVA) to determine whether significant differences exist between moderate and immoderate stress levels among university professors according to general health status, membership in the group (moderate, immoderated)

Table 6. Correlation between general health, job strain and organizational factors

		GHQ-28	FSI	Grade / Rank	Seniority	Seniority in the current establishment
GHQ-28	Pearson's correlation	1				
	Sig.					
FSI	Pearson's correlation	.294**	1			
	Sig.	.001				
Grade / Rank	Pearson's correlation	.228**	-.068	1		
	Sig.	.005	.459			
Seniority	Pearson's correlation	-.155*	.167	-.586**	1	
	Sig.	.045	.067	.000		
Seniority in the current establishment	Pearson's correlation	-.238**	.158	-.604**	993**	1
	Sig.	.004	.084	.000	.000	

** the correlation is significant at the 0.01 level (Unilateral)
* the correlation is significant at the 0.05 level (Unilateral)

was used as an independent variable, with the result being: $F(1.119) = 34.16$, $p < 0.0005$, $\eta^2 = 0.223$, significant p allowed to reject the null hypothesis (no relationship) and found that the immoderated stress group has a higher score ($\mu = 14.66$, $\sigma = 4.38$) compared to the group that has moderate stress ($\mu = 9.74$, $\sigma = 4.61$). This finding means that job strain negatively influences the health status of the individual.

Research question N°5 : What is the relationship between the dimensions of the study?

The relationship between job strain and general health status was assessed using Pearson's product of moments correlation parametric test, although normally distributed parametric tests are acceptable for this study due to sample size > 100, nonparametric tests are particularly useful when the sample is less than 100 (Stevens, 2002).

According to the results of the correlation, we find the existence of a significant relationship between the state of general health and the job strain, moreover a significant effect has been approved between the state of general health and the grade of the teacher on the one hand and in the relation to the enclosure and the seniority in the current establishment.

According to the meaning of the relationships found, and according to the coding of the data, we can notice that the worsening of the general state of health (transition towards the pathological) is in direct connection with the increase in job strain, and the passage to higher grades, and in inverse connection with seniority and especially seniority in the current establishment which can be classified as a kind of social stability.

Consultation of the correlation of each subscale of the GHQ-28 (somatic dysfunction, anxiety and insomnia, social dysfunction and depression) reveals several findings:

Table 7. The correlation between all the variables of the study

	Somatic dysfunction		Anxiety & insomnia		Social dysfunction		Depression		Stress		Gender		Age		Marital status		Grade/Rank		Number of children		Seniority		Seniority in the current establishment	
		Pearson's correlation	Sig.	Pearson's correlation	Sig.	Pearson's correlation	Sig.	Pearson's correlation	Sig.	Pearson's correlation	Sig.	Pearson's correlation	Sig.	Pearson's correlation	Sig.	Pearson's correlation	Sig.	Pearson's correlation	Sig.	Pearson's correlation	Sig.	Pearson's correlation	Sig.	Pearson's correlation	Sig.
Somatic dysfunction		1																						
Anxiety & insomnia		.448**	.000	1																				
Social dysfunction		.184*	.043	.208*	.022	1																		
Depression		.271**	.003	.160	.080	.175	.055	1																
Stress		.053	.561	-.029	.756	.147	.107	.287**	.001	1														
Gender		.084	.358	-.030	.748	.108	.237	.232*	.010	-.033	.716	1												
Age		-.029	.756	-.099	.280	-.052	.572	-.251**	.005	.319**	.000	-.123	.179	1										
Marital status																								
Grade/Rank																								
Number of children																								
Seniority																								
Seniority in the current establishment																								

		Seniority in the current establishment	Seniority	Number of children	Grade/Rank	Marital status
Seniority in the current establishment	Pearson's correlation	1				
	Sig.					
Seniority	Pearson's correlation	.993**	1			
	Sig.	.000				
Number of children	Pearson's correlation	.431**	.437**	1		
	Sig.	.000	.000			
Grade/Rank	Pearson's correlation	-.604**	-.586**	-.378**	1	
	Sig.	.000	.000	.000		
Marital status	Pearson's correlation	.421**	.416**	.434**	-.293**	1
	Sig.	.000	.000	.000	.001	
	Pearson's correlation	.815**	.810**	.540**	-.658**	.396**
	Sig.	.000	.000	.000	.000	.000
	Pearson's correlation	-.115	-.118	.100	.170	.136
	Sig.	.208	.197	.274	.063	.137
	Pearson's correlation	.158	.167	.140	-.068	.013
	Sig.	.004	.067	.125	.459	.891
	Pearson's correlation	-.231*	-.229*	.027	.216*	.017
	Sig.	.011	.012	.769	.017	.851
	Pearson's correlation	-.094	-.105	.125	.204*	.189*
	Sig.	.307	.252	.173	.025	.038
	Pearson's correlation	-.072	-.064	.030	.048	.087
	Sig.	.433	.483	.742	.605	.345
	Pearson's correlation	-.008	-.003	.103	.129	.183*
	Sig.	.928	.973	.262	.159	.044

** the correlation is significant at the 0.01 level (Unilateral)
* the correlation is significant at the 0.05 level (Unilateral)

- A significant relationship between job stress and depression (a significant relationship not detectable by studying the total GHQ-28 score).
- A significant correlation of depression with somatic dysfunction (r=.271, p=.003), sex (r=.232, p=.010), age (r=-.251, p=.005), grade (r=.216, p=.017), seniority (r=-.229, p=.012) and seniority in the current institution (r=-.231, p=. 011).
- A significant positive correlation of somatic dysfunction with anxiety and insomnia (r=.448, p=.000), social dysfunction (r=.184, p=.003) and marital status (r=.183, p=.044).
- A significant relationship between work stress and age (r=.319, p=.000).

DISCUSSION

The understanding of vital dimensions such as health and stress in a critical environment is of paramount importance, which makes studies similar to ours a delicate necessity especially with the emergence of practices and global recommendations which aim to respect and preserve well-being in the face of international challenges (pandemics, radical and extremist actions, etc.). Some studies indicate that teaching and nursing are the most stressful professions (Gil-Monte, 2009). In our work, which consists in the screening of these two dimensions and the search for inter-concept relationships in the Moroccan university environment among teachers, we can see the presence of a combination of high demands and low control at work. Job strain affects a significant part of the teachers; with a third having a high level of stress at work.

The alarming result of this study is that 1 in 2 cases exceed the threshold on the general health scale (GHQ-28) which presents itself as a pathological condition, hence the need for further research to reveal the factors generating this deterioration in health. Job demands, job control, and social support have been associated with depressive symptoms (Åhlin, 2018). On our part and from this work, we have been able to observe some significant relationships which contribute to the aggravation of the situation such as stress and professional advancement (grade), as well as factors which intervene in the improvement of the state of health such as seniority which presents itself as a source of stability. Other studies (Vitoria and Paredes, 2002) only found significant differences in health and stress according to teachers' professional status and self-esteem, but not between years of experience. Professional and social stability (advancement in grade/scale and seniority at work and social stability on the basis of geographical stability – seniority at the current establishment – favors a good result on the general health scale. Professional stability, availability of time and resources for the benefit of research development play an important independent and interactive role in the development of high psychological stress in teachers, which puts them at high risk of developing psychological distress. Similarly, studies on job strain and occupational health have shown that occupational health risk does not come exclusively from physical factors, but that organizational and psychosocial variables are often the most relevant risk factors (Porcel-Gálvez et al., 2014).Organizational characteristics such as instability can also contribute to the state of health and well-being of the professional (Godin et al., 2004). According to at least four systematic reviews, job strain is associated with an increased risk of depression (Bonde, 2008; Siegrist , 2008; Theorell et al., 2015; Madsen et al., 2017).

According to this study, there is, on the one hand, a relationship between job strain and depression, and on the other hand a relationship between depression and somatic dysfunctions, as well as a set of social determinants of health. (sex; rank, seniority, etc.). Similarly somatic dysfunctions are related to anxiety/insomnia and social dysfunction. Depression involves overt somatic symptoms of changes in appetite and weight, sleep disturbances and sexual dysfunction

(American Psychiatric Association, 2013; Devlin & Walsh, 1989), as well as varied non-specific complaints like fatigue, dizziness, aches and headaches (Jain, 2009; Kapfhammer, 2006; Simon, VonKorff, Piccinelli, Fullerton, & Ormel, 1999). The presence and disappearance of somatic symptoms are often correlated with the severity and remission of depression (Fava et al., 1997; Paykel et al., 1995). Lifelong social experiences influence the onset of depressive disorders and the resulting negative consequences (WHO, 2014). Analysis of the subject literature showed that somatic symptoms were as strongly associated with depression and anxiety as more objective physiological measures (Katon et al., 2007). The effect of age is a special case since it participates, on the one hand, in the increase of stress and on the other, in the reduction of depression, this observation may have the answer in the effect of aging on the neurochemistry of the brain or in the cultural, intellectual and spiritual context or under the effect of both. Furthermore, there are similarities between sleep-related endocrine system changes during depression and during normal aging (Steiger, 2007). Epigenetic regulation of hormonal status and genetic sex differences are determinants of susceptibility and resilience to stress in animal models and are implicated in complex human diseases. As preclinical and clinical research moves towards personalized treatments, we will need to begin to consider that the mechanisms contributing to the disease state may differ by gender and age (Hodes & Epperson, 2019). All of this research corroborates our results, which show a significant correlation between job strain, general health, and a set of social determinants of health.

CONCLUSION

The institutional environment can be seen as a rather complex and multi-leveled entity, which affects many aspects of health, including mental health, through both societal and individual dimensions. The somatic manifestation can be explained by a job strain stimulated by an unstable environment and by the absence of a culture oriented towards screening and monitoring of psychiatric and neuropsychological pathologies in Moroccan establishments. Researchers argue that in traditional societies, people manifest their psychological pain preferentially through somatic symptoms, because cultural values promote harmony and the collective good, and because mental disorders are viewed as shameful and fearful (Kirmayer et al. 1993). This study expresses the importance of a psychological aid kit available to health professionals, which makes it possible to estimate the prevalence of psychological distress in a given population and to detect psychosomatic cases that escape the general practitioner in order to promote the quality of life of individuals.

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