

ORIGINAL ARTICLE

**PSYCHOLOGICAL MORBIDITY AND SOURCES OF JOB  
STRESS AMONG DOCTORS IN YEMEN**

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**Abstract**

***Objective:*** The objective of the present study was to determine the prevalence and factors contributing to psychological morbidity among doctors in Sana'a city, Yemen. ***Methods:*** A cross sectional study was conducted among 442 Yemeni doctors. The (GHQ12) was used as a measure of psychological morbidity. Sources of job stress were determined using a 37-item scale questionnaire. ***Results:*** The prevalence of psychological morbidity was 68.1 %. Gender, age range of 30 – 39 years old, chewing Khat, type of residence and income were significantly associated with psychological morbidity ( $p < 0.05$ ). Five stressors out of 37 were significantly associated with psychological morbidity. On multivariate analysis, the significant predictors of psychological morbidity were being 30 – 39 years old, patients not trusting doctors, not chewing Khat, uncertainty and insecurity. ***Conclusion:*** The prevalence of psychological morbidity in Yemeni doctors was higher than those reported internationally and it was associated with many important job stressors. *ASEAN Journal of Psychiatry, Vol. 13 (1), January – June 2012: XX XX.*

**Keywords:** Doctors, Psychological Morbidity, Stress, Yemen

**Introduction**

Mental health is an important issue in the workplace particularly in developing countries. There is lack of studies regarding mental health among Yemeni doctors. This study found a high prevalence of psychological morbidity among Yemeni doctors. Age, gender, low income, uncertainty and insecurity were associated with psychological morbidity in this study.

Job stress is an important issue in the workplace not only because it affects doctors' health, but also because it impairs the quality of health service doctors are expected to deliver. Severe or chronic stress can result in disease or death. Musculoskeletal disorders, high blood pressure,

disturbed metabolism (risk of Type II diabetes) and cardiovascular problems may be the result of stress [1]. In Western Australia, stress is generally viewed as a disease [2]. Doctors are considered to be members of high stress occupations [3] and previous studies found that the prevalence of stress using the General Health Questionnaire (GHQ) ranged from 16.9% to 52% among doctors in the United Kingdom [4 – 9] and 30.7% to 41% among doctors in Australia [10,11]. In Saudi Arabia, the prevalence of psychological morbidity using GHQ among postgraduate medical trainees was 59%, ranging from 47% for Paediatrics to 93% for Internal Medicine [12] and was significantly higher in women compared to men in that study. In Iraq, 97 (55.7 %) out of 132 physicians reported their

work related stress as severe or moderate [13].

There were no studies done in Yemen regarding mental health among medical doctors . However, a study was done among 783 Yemeni Medical students in Sana'a University which found that the prevalence of mental morbidity (using Goldberg's General Health Questionnaire) was 27% [14].

The most common source of stress mentioned in the literature included home-work interface, home-work overload [15], demands of work made on personal/social life [16], increased and inappropriate demands from patients [17], difficulty in finding a locum, the working environment [18], lack of the necessary staff to do a job and inadequate facilities and financial resources [19 – 21]. Concerns about money, exposure to toxic substances and exposure to infectious patients were mentioned as important sources of stress by all categories of hospital workers [22].

Regarding sources of stress in the developing countries, a study in Saudi Arabia among 414 hospital staff showed that insufficient technical facilities, absence of appreciation, long working hours, and short breaks were significantly associated with work-stress among staff. Age and experience were significantly and negatively associated with work-stress level. Results also revealed that Saudi participants showed significantly higher level of work-stress than the non-Saudis [23]. In Turkey, the most common causes of stress to doctors were not enough time to follow developments in medicine, and the limited social life due to heavy workloads [24].

Republic of Yemen is a Middle Eastern country located on the Arabian Peninsula in Southwest Asia with a population of 21.5 million people. No study has been conducted on psychological morbidity or sources of stress among medical doctors in Yemen. This study has been conducted to determine the prevalence and factors contributing to psychological morbidity among doctors in Sana'a City Yemen. This study hypothesized that economical and management factors would be associated with psychological morbidity.

## **Methods**

### ***Participants***

A total of 500 questionnaires were distributed manually to all the available Yemeni doctors (specialists and non-specialists) in three main government hospitals in Sana'a city in the period from December 2007 to July 2008. Four hundred forty two doctors returned completed questionnaires with observed response rate of 88.4%. Non-Yemeni doctors and those with less than one year duration of work and/or those who worked in the private sector only were excluded from this study. Written consent was obtained from the participants and they were given written information about the conduct of the study enclosed with the questionnaire form.

### ***Research instruments:***

#### ***A- Psychological morbidity***

The 12-item version of the General Health Questionnaire (GHQ12) is a reliable method of measuring minor psychological disorders among general populations and has also been validated as a suitable measure of mental health in occupational studies [5, 25]. It has been used as a short screening instrument, producing results that are comparable to longer versions of the GHQ 28 [5, 25, 26]. GHQ12 has been subjected to factor analysis in a variety of countries and the results showed that two factors expressing depression and social dysfunction could be identified [27]. Each item was rated according to whether they have been experienced 'not at all', 'the same as usual', 'rather more than usual' or 'much more than usual' in the past few weeks. Scoring was on a 0–0–1–1 basis (i.e., a score of 0 or 1 was given a value of 0 and a score of 2 or 3 was given a value of 1. This can be scored 0 to 12. Psychological morbidity was defined as a score of 4 or more on the GHQ-12. This approach was used in the previous studies [5,9,26].

#### ***B- Sources of Job Stress:***

Sources of job stress were determined by a 37- obtained from the literature and by discussion

with a group of Yemeni doctors. Each item was scored on a 3 point Likert scale, where a value of 0 equals “not applicable”, a value of 1 refers to “disagree” and a value of 2 refers to “agree”.

### ***C- Socio-demographic and work characteristics:***

A questionnaire was developed for this study to obtain demographic and job characteristics. The socio-demographic factors included age, sex, qualification (junior general practitioner or specialist), marital status, chewing Khat. Chewing Khat (*catha edulis*) is a legal social and a culture-based activity common in Yemen. It is used as a stimulant as it contains cathine and cathinon that have amphetamine-like effect. Work characteristics included length and type of employment, number of working hours per week and total monthly income.

Data analysis was done using “Statistical Package for Social Sciences (SPSS version 13). All the continuous socio-demographic and work characteristic variables were categorized. Differences in the prevalence of psychological morbidity were tested with Chi square tests (Yates’ correction) for binomial variables. In cases of variables with three categories, Odds Ratio (OR) were obtained by simple logistic regression. To test the relation between each source of stress and psychological morbidity,

“disagree” was considered as the reference group and simple logistic regression was used to obtain OR. Multiple logistic regression was used to determine the predictors of psychological morbidity after the multicollinearity was checked for. All variables that were significantly associated with psychological morbidity in the bivariate analysis were entered into the logistic regression. The internal consistency of the GHQ-12 was assessed by Cronbach's alpha coefficient. Furthermore, the factor structure of the questionnaire was extracted by performing principal component analysis using oblique factor solution.

### **Results**

Of the 442 respondents, 260 (58.8%) were men, 246 (55.7%) aged 30-39 years, (34.7%), 153 were single (34.6), 278 (62.9%) were married and 303 (68.6%) were non-specialists. The mean age of doctors was 33.3±5.7 years and the age ranging from 25 to 55 years. Only 54 (12.4 %) have their own houses. The median of working hours with the government was 40 hours per/week ranged from 24 to 70 hours (including locum). Two hundred and twenty seven (51.4%) doctors were employed with the government only while 215 (48.6%) were employed with the government and working in the private sector as well (Table 1).

**Table1: Socio-demographic and job characteristics profile**

Variable		N	%
Gender	Male	260	58.8
	Female	182	41.2
Age groups(years)	≤29	140	31.7
	30 - 39	246	55.7
	≥ 40	56	12.7
Marital status	Single	153	34.6
	Married	278	62.9
	Divorce or Widowed	11	2.5
Speciality status	Non specialist	303	68.6
	Specialist	139	31.4
Chewing Khat	Yes	201	45.5
	No	241	54.5
Residence	House owner	54	12.2
	Not a house owner	388	87.8
Type of Employment	Government only	227	51.4
	Government and private	215	48.6
Duration (years)	≤5	225	50.9
	> 5	217	49.1
Hours of work with the government/week	≤40	245*	55.4
	> 40	192	43.4
Income from the government YR /month	≤40.000	338*	76.5
	> 40.000	102	23.1

\* Total is not 442 due to non-response.

***Sources of job stress in the work place:***

Table 2 shows sources of stress ranked by number and percentage of doctors who agree that they cause stress in the work place. The twelve most important stressors in the work place (in rank order) were lack of resources, lack of comfortable rooms for doctors on call, the stress and strain of general practice, arbitrary entrance of the patients, difficulty in finding a

locum, demand of job on family and social life, working environment, increasing workload, worrying about finances, quality and quantity of food given to doctors on call and exposure to occupational hazards. The five lower ranked stressors were examining patients of the opposite sex, patients not trusting doctors, paperwork, lack of emotional support at home and feeling of isolation.

**Table 2. The first 10 common sources of job stress ranked by number and percentage of doctors who agreed that they cause stress in the work place (N=442).**

Sources of job stress	Agree	
	N	%
Lack of resources	387	87.6
Lack of comfortable rooms for doctors on call	347	78.5
The stress and strain of general practice	340	76.9
Arbitrary entrance of the patients	340	76.9
Difficulty in finding a locum	324	73.3
Worrying about finances	324	73.3
Demand of job on family and social life	321	72.6
Working environment	311	70.5
Quality and quantity of food given to doctors on call	310	70.1
Exposure to Occupational hazards	306	69.2

***Internal consistency and factorial based validity of theGHQ12***

To test the reliability, the internal consistency of the questionnaire was measured using Cronbach's alpha coefficient. The alpha for the whole sample was found to be 0.82. Factorial validity of the GHQ12 was examined using exploratory factor analysis (Quartimax rotations) and showed that a two-factors structure was loaded that accounted for 43% of the variance. Except for item 3 (playing a useful part in

things), all other items were loaded in two distinct factors: 'psychological distress' and 'social dysfunction'. These two factor structures supports findings of previous studies [27, 28,29].

For those Yemeni doctors who responded to the questionnaire, 301 (68.1 %) scored 4 or more on the GHQ-12 indicating likely psychological morbidity. By using Chi-squared tests of proportions, the prevalence of psychological morbidity was significantly higher in: women compared to men (75.3%, 63.1% respectively).

**Table 3. Association between socio-demographics and job characteristics with psychological morbidity**

Variables		Cases N (%)	Not cases N (%)	OR (95% CI)
Gender	Men	164 (63.1)	96 (36.9)	1.8 (1.17- 2.7)*
	Women	137 (75.3)	56 (24.7)	
Age groups (year)	≤29	92 (65.7)	48(34.3)	1.44(0.76-2.7 )
	30 - 39	177 (72.0)	69 (28.0)	1.9 (1.0-3.5)*
	≥ 40	32(57.1.)	24 (42.9)	Reference <sup>§</sup>
Speciality status	Specialist	89 (64.0)	50 (36.0)	1.3 (0.86-2.0)
	Non specialist	212 (71.1)	91 (30.0)	
Marital status	Single	106 (69.3)	47 (30.7)	0.5 (0.1-2.4)
	Married	186 (66.9)	92 (33.1)	0.5(0.95-2.1)
	Divorce or	9 (81.8)	2 (18.2)	

	Widowed			Reference §
Chewing Khat	Yes	112(55.7)	89 (44.3)	2.9 (1.9 -4.3)*
	No	189 (78.4)	52 (21.6)	
Residence	House owner	27 (50.0)	27 (50.0)	2.4(1.4-4.3)*
	Not a House owner	274 (70.6)	114 (29.4)	
Duration of work (years)	≤5	152 (67.6)	73 (32.4)	0.95 (0.64-1.4)
	>5	149 (68.7)	68 (31.3)	
Employment	Government	163 (71.8)	64 (28.2)	1.4 (0.95-2.1)
	Private	138 (65.8)	92 (34.2)	
Hours of work with the government/week	≤40	165 (67.3)	80 (32.7)	0.9 (0.62 -1.4)
	> 40	132(68.8)	77(31.3)	
Monthly income from the government (YR/month)	≤40000	240 (71.0)	98 (29.0)	1.8 (1.1-2.8)*
	> 40000	59 (57.8)	43 (42.2)	

\*:  $p < 0.005$ , §: simple logistic regression was used. \*\* One USD= 200 Yemeni Rials (YR)

The results presented in Table 4 show the OR for “agree” and “disagree” categories only while “undecided” were omitted from the results. Only the significant associations were shown. Doctors who agreed that these sources of job stress caused stress to them were more likely to have psychological morbidity than those who reported

to disagree. These sources were: uncertainty and insecurity, poor status in the eyes of seniors, patients not trusting doctors, conflicting roles with other health professionals, and quality and quantity of food given to doctors on call (Table 4).

**Table 4: Association between psychological morbidity and sources of stress (for each item the reference category is "disagree")**

Sources of job stress	OR (95% CI)	P value
Uncertainty and insecurity Agree Disagree	2.6 (1.5-4.5) Reference	<0.001
Poor status in the eyes of your seniors Agree Disagree	1.9(1.1-3.1) Reference	0.013
Patients not trusting doctors Agree Disagree	2.2(1.2-4.0) Reference	0.007
Conflicting roles with other health professionals Agree Disagree	1.9(1.1-3.2) Reference	0.024
Quality and quantity of food given to doctors on call Agree Disagree	2.0 (1.1-3.8) Reference	0.035

**Multivariate Analysis (Psychological morbidity)**

Variables which were significantly associated with psychological morbidity in the bivariate analysis were entered into logistic regression. Variables entered were: gender; chewing Khat; type of residence; income from the government; uncertainty and insecurity; poor status in the eyes of seniors; patients not trusting doctors;

conflicting roles with other health professionals and quality and quantity of food given to doctors on call. Significant predictors of psychological morbidity in the final model were age (30-39 years old); uncertainty and insecurity; patients not trusting doctors and not chewing Khat. Adjusted R-square = 16.4 which indicated that these variables accounted for 16.4% of variance (Table 5).

**Table 5: Predictors of psychological morbidity using multiple logistic regression**

Variables		$\beta$	S.E.	OR (95% CI)	P-value
Age (years)	≤ 29	0.080	0.352	0.9(0.46-1.84)	0.819
	30-39	0.649	0.324	1.9(1.02-3.60)	0.045
	>40	reference	reference	reference	
Uncertainty and insecurity	Agree	0.944	0.291	2.6 (1.5-4.6)	0.001
	Disagree	reference	reference	reference	
Patients not trusting doctors	Agree	0.766	0.324	2.2(1.14-4.06)	0.002
	Disagree	reference	reference	reference	
Chewing Khat	No	1.097	0.229	3.0 (1.9-4.7)	<0.001
	Yes	reference	reference	reference	

**Discussion**

The response rates were comparable to those reported in other surveys [11,30]. This study showed that more than two thirds of Yemeni doctors (68.1%) have psychological morbidity. This prevalence was considerably higher than those reported in developed and developing countries for general medical working populations where the prevalence of psychological morbidity ranged from 21%-52% [4-11, 31,32]. However, our finding can be considered comparable to that found in Saudi Arabia (47% to 93%) [12] but that study had a small sample size and the psychological morbidity was measured by GHQ28. High prevalence of psychological morbidity in Yemeni doctors can be explained by the fact that Yemen is a developing country with low financial and economic levels, poor workplace environment and scarce resources compared to

western countries. This would be a result of the socio-political situation in Yemen caused by a downward trend in the economy, increased cost of living and poor infrastructure. In addition to these situations, there is an absence of national organizations to help doctors with stress like those present in the developed countries [16].

In this study, there was a significant gender difference in psychological morbidity: women had significantly higher prevalence of psychological morbidity (75.4%) than men (63.9%). This is in keeping with the results from other studies that used the GHQ12 [11,12]. Higher prevalence of psychological morbidity in women might be explained by the fact that women in our community still perceive gender inequality in many aspects of life including work. In addition to the same conditions faced by men and women in the workplace, women have another burden represented by pregnancy,

delivery and caring for children, higher social expectations and facing additional pressure in balancing their medical and domestic roles compared with male doctors. This study revealed that male junior doctors had significantly higher prevalence of psychological morbidity than male specialists. Similarly, Kapur et al. (1998) found that the levels of stress (by GHQ12) decreased with increasing medical seniority [33]. In addition, in this study, some important sources of stress were reported as stressful to non-specialists more than to specialists, such as, they felt more stressed by conflicting roles with other health professionals, dealing with managers, worrying about finances, examining patients of the opposite sex, patients not trusting doctors, feeling of isolation, competition from other doctors and lack of comfortable rooms for doctors on call. This might be a possible explanation of the high prevalence of psychological morbidity among non- specialists.

Despite all the negative aspects of chewing Khat [34], unexpectedly, this study showed that psychological morbidity was significantly higher in those who did not chew Khat. A possible explanation might be that doctors who chew Khat had significantly higher income. Another explanation might be that khat reduces stress. This study invites further research to explore the relation between Khat and psychological morbidity. Inability to purchase own house was significantly associated with high prevalence of psychological morbidity in this study and was a significant predictor of psychological morbidity on the multivariate analysis. Low salaries of doctors can explain their inabilities to have their own house as 82% of doctors agreed that financial difficulties was one of the important stressors in their work. In this study, low income was associated with high psychological morbidity. Ofili et al. (2004) found that the main cause of stress outside work was the failure with some personal projects such as inability to own personal houses [31]. Clarke and Singh (2004) also found a significant association between psychological morbidity and the financial state<sup>8</sup>. In this study, two stressors were significant predictors of psychological morbidity; patients not trusting doctors and disturbance of

home/family life by work. Some of the important predictors of psychological morbidity reported in the previous studies were patients' expectations [35], having to deal with patients' suffering, poor management [4] and work-home interface [8,10].

Three of the twelve most important stressors (lack of comfortable rooms for doctors on call, quality and quantity of food given to doctors on call and arbitrary entrance of patients at the clinics and departments) were particular features of this study as they addressed specific situations in Yemeni hospitals. The arbitrary entrance of patients at the clinics is due to absence of a computerized system that regulates the entrance of patients. For the other nine stressors, at least one of them was found to be an important stressor in other studies [4,9,10,20-22,36]. This study found that most of the sources of stress were mostly organizational and administrative indicating that the management may need to make organizational and administrative changes to improve the quality of health care services and the overall situation of Yemeni doctors. This study has some limitations. First, the cross sectional nature of this study does not allow to observe a causal relationship between the variables. The second limitation is the exclusive dependence on self reported rating scales, which may cause systematic positive or negative response tendencies. Third, Selection bias is a possible limitation in this study; i.e. stressed doctors are more likely to respond to surveys of stress and/or doctors report more stress when stress is the focus of study.

## **Conclusion**

This study found a high prevalence of psychological morbidity among Yemeni doctors (68.8%). This is unacceptable situation could be responsible for deteriorating health care service in Yemen. The prevalence of psychological morbidity was higher in women, non specialist men, those with low income and those who did not own houses. This study has identified the important factors (stressors) in the work place and showed that many factors particularly administrative and financial were associated with psychological morbidity that can affect the



mental health of Yemeni doctors. The current policies and strategies for improving the health care service should be reviewed and organizational and management reforms should be implemented that take into consideration doctors' rights and their welfare particularly their physical and mental well-being as well as the financial status. Building a supportive and healthy work environment, eliminating or minimizing the sources of stress and counseling of doctors to tackle pressures are important measures for managing stress. This study found some similarities in the stressors reported in the previous studies and showed that some factors were specific stressors for Yemeni doctors. The findings also suggested that the Arabic version of the 12-item GHQ is a reliable and valid instrument to measure psychological morbidity in Yemeni medical doctors.

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