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ORIGINAL ARTICLE

Comparison of sources and expressions of stress among hospital and primary health care physicians

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Abstract *Background:* Work stress is an important problem that affects physicians. Sources and expressions of stress among hospital physicians (HP) and primary health care (PHC) physicians (PHCP) differ due to the nature of clinical work duties.

Objective: Was to compare sources and expressions of stress among HP and PHCP.

Subjects and Methods: Data were collected from 247 HP working in a general hospital and 250 working in PHC centers in Kuwait using the Quick Stress Questionnaire (QSQ), in addition to sociodemographic and work characteristics of physicians.

Results: Both HP and PHCP suffered from only few sources of stress. Also they had relatively low mean percent scores for the three studied domains of stress. HP tended to significantly suffer from more sources of stress than PHCP (2.33 + 1.88 compared with 1.91 + 1.956, $P = 0.003$). Signifi-

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cantly higher proportions of HP suffered from work, financial, family, and social/personal relationship concerns than PHCP. Self-image and sex concerns were more likely encountered among PHCP than HP. The overall mean percent score of stress expression did not differ significantly between the two groups (25.7 + 16.9% compared with 25.1 + 18.9%). However, few somatic expressions were more significantly expressed among PHCP.

Conclusion: HP were significantly more exposed to sources of stress than PHCP. Overall, both groups had similar level of stress expressions with some differences in the somatic expressions domain.

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1. Introduction

Medical professionals, regardless of the place or work are exposed to a web of factors, including an increasing workload, time pressure, changing attitudes toward physicians on the part of patients and the erosion of professional autonomy.^{1,2} Several organizational factors can contribute to diminish the quality of work life of physicians.^{3,4} Existing studies have looked at how medical practitioners often struggle to balance professional and non-professional lives and how this can cause significant amounts of stress.⁵ From an organizational perspective, studies have also explored how job satisfaction can be affected by different stressors related to out-of-hours care and new contract arrangements.^{6,7}

The nature of work and nature of authority of physician at the hospital are different from those at the primary health care center. At the hospital, physicians are also more often specialized, and meet a group of patients allocated according to specific medical problems. Also, they have specific job assignments on the wards and emergency units, where they meet specific health problems at a single field of medicine. At the primary health care, physicians deal with a wide range of health problems, examine many cases a day most of them of mild morbidity. They mainly apply screening examination and make initial diagnosis.⁸ These differences in working positions and responsibilities might be reflected on their work load and the level of stress they might be suffering from. Thus, the current study was designed to compare sources and expressions of stress of physicians working in the hospitals and those affiliated to the primary health care centers.

2. Methods

An observational cross-sectional study design was adopted for this study. Out of the six general governmental hospitals in Kuwait, Amiri Hospital was randomly selected to carry out this research. In addition, out of five health regions, three regions, namely Al-Ahmadi, Al-Farwaniya, and the Capital were randomly selected. All primary health care centers located in the selected regions were included in the study. All physicians available in the selected facilities during the field work of the study were the target population of this study. The total number of available physicians was 746; out of these, only 497 agreed to share in the study with a response rate of 66.6%. The study covered the period February 2011 to October 2011. Data were collected over three months starting from March to May 2011.

Data of this study were collected through a specially designed questionnaire. This questionnaire consisted of several

sections. The first section dealt with sociodemographic characteristics, including age, sex, nationality, marital status, number of years in current and whole practice, educational qualification, and current job. The second section included the Quick Stress Questionnaire (QSQ).⁹ It is a 25 item self-report questionnaire, designed to measure sources and expressions of stress. The part dealing with sources of stress consisted of 8 questions each is a 9 point Likert scale (ranging from 1 'little' to 9 'extreme'), in addition to one more open ended question dealing with other sources. The part dealing with expressions of stress consisted of three domains, cognitive, somatic, and behavioral. Each of the cognitive and behavioral domains consisted of three questions, while the somatic domain consisted of 7 questions. The last three questions dealt with overall level of stress, comparing level of stress during the current with the previous year, and level of stress when seeking counseling or treatment.

A pilot study was carried out on 30 physicians (not included in the final study). This study was formulated with the following objectives: to test the clarity, applicability of the study tools, accommodate the aim of the work to actual feasibility, identify the difficulties that may be faced during the application, as well as study all the procedures and activities of the administrative aspects. Also, the time of completing the questionnaire was estimated during this pilot study. The average interviewing time was 15 min. The necessary modifications according to the results obtained were done. Also, the structure of the questionnaire sheet was reformatted to facilitate data collection.

A pre-coded sheet was used. All questions were coded before data collection. This facilitates both data entry and verification as well as reduces the probability of errors during data entry. Data were fed to the computer directly from the questionnaire without an intermediate data transfer sheets. The Excel program was used for data entry. A file for data entry was prepared and structured according to the variables in the questionnaire. After the data were fed into the Excel program; several methods were used to verify data entry. These methods included simple frequency, cross-tabulation, as well as manual revision of the entered data. Percent scores were calculated for each domain of the QSQ. The sum of the scores of each domain was transformed into a percent score starting from zero and ending at 100. The following formula was utilized: observed sum of score divided by maximum possible sum of score multiplied by 100. As a 9 point Likert scale was used, a score ≥ 6 was considered as positive for each question response.

All the necessary approvals for carrying out the research were obtained. The Ethical Committee of the Kuwaiti Ministry of Health approved the research. A written format explaining the purpose of the research was prepared and signed by the

Table 1 Sociodemographic characteristics of hospital and PHC physicians.

Character	PHC physicians (<i>n</i> = 250)		Hospital physicians (<i>n</i> = 247)		<i>P</i>
	No.	%	No.	%	
<i>Age (years)</i>					
< 30	23	9.2	11	4.5	0.102
30–	91	36.4	109	44.1	
40–	88	35.2	84	34.0	
≥ 50	48	19.2	43	17.4	
<i>Gender</i>					
Male	141	56.4	195	78.9	< 0.001*
Female	109	43.6	52	21.1	
<i>Nationality</i>					
Kuwaiti	85	34.0	39	15.8	< 0.001*
Non-Kuwaiti	165	66.0	208	84.2	
<i>Marital status</i>					
Single	32	12.8	38	15.4	0.408
Married	218	87.2	209	84.6	
<i>Educational qualification</i>					
Bachelor/master	221	88.4	204	82.6	0.066
Board	29	11.6	43	17.4	
<i>Duration at current job (years)</i>					
< 5	90	36.0	111	44.9	0.029*
5–	65	26.0	70	28.3	
10–	58	23.2	34	13.8	
≥ 15	37	14.8	32	13.0	
<i>Total experience duration (years)</i>					
< 10	56	22.4	56	22.7	0.593
10–	69	27.6	81	32.8	
15–	48	19.2	42	17.0	
≥ 20	77	30.8	68	27.5	

* Significant, $P \leq 0.05$.

physician. In addition, the purpose and importance of the research were discussed with the director of the selected health center.

2.1. Statistical analysis

Before analysis; data were imported to the Statistical Package for Social Sciences (SPSS) which were used for both data analysis and tabular presentation. Descriptive statistical measures as count, percentage were used for categorical variables and

arithmetic mean, standard deviation and median were used for quantitative variables. Used analytic measures included Mann Whitney test and Chi square. The level of significance selected for this study was $P \leq 0.05$.

3. Results

Table 1 shows sociodemographic characteristics of primary health care (PHC) and hospital physicians. Age, marital status,

Table 2 Sources and of stress among hospital and PHC physicians.

Sources of stress	PHC physicians (<i>n</i> = 250)		Hospital physicians (<i>n</i> = 247)		<i>P</i> (χ^2)
	No.	%	No.	%	
Academic (work)	107	42.8	138	(55.9)	0.004*
Social/personal relationship	50	20.0	79	(32.0)	0.002*
Family	78	31.2	113	(45.7)	0.001*
Financial	73	29.2	126	(51.0)	< 0.001*
Self-image	51	20.4	28	(11.3)	0.006*
Health	57	22.8	42	(17.0)	0.106
Sex	24	9.6	10	(4.2)	0.014*
Day-to-day quarrel	37	14.8	41	(16.6)	0.581
Total score mean \pm standard deviation (median)	1.91 \pm 1.956 (1.0)		2.33 \pm 1.880 (2.0)		[0.003]*

[] Mann Whitney *P* value.

* Significant, $P \leq 0.05$.

Table 3 Expression of stress among hospital and PHC physicians.

Expression of stress	PHC physicians (<i>n</i> = 250)		Hospital physicians (<i>n</i> = 247)		<i>P</i>
	No.	%	No.	%	
<i>Cognitive expression</i>					
Feelings of depression, hopelessness, powerlessness, and/or poor self-esteem	35	14.0	31	12.6	0.634
Anger, hostility, irritability, and dissatisfaction	44	17.6	39	15.8	0.588
Anxiety, fears, and worrying	65	26.0	64	25.9	0.982
Mean percent score (median)	30.9 ± 25.5 (29.2)		31.4 ± 22.5 (29.2)		[0.482]
<i>Somatic expression</i>					
Muscle tension, headache, backaches, and muscle aches	74	29.6	49	19.8	0.012*
Indigestion, stomach ache, diarrhea, ulcer attacks, constipation, and colitis	56	22.4	29	11.7	0.002*
Tics, tremors, and muscle spasms	22	8.8	10	4.0	0.031*
Sleeping, night awakening, and troublesome dreams	55	22.0	68	27.5	0.153
Eating disorders, over eating, and under eating	41	16.4	31	12.6	0.223
Hypertension	29	11.6	35	14.2	0.392
Acne, eczema, hives, breaking out, and skin blotching and skin blanching	13	5.2	9	3.6	0.399
Mean percent score (median)	23.6 ± 19.0 (20.5)		23.7 ± 17.7 (21.4)		[0.661]
<i>Behavioral expression</i>					
Excessive drinking and/or use of drugs (including nicotine and caffeine)	38	15.2	35	14.2	0.746
Forgetfulness, mental insufficiency, inability to study, and lack of motivation	41	16.4	44	17.8	0.676
Avoidance behavior (procrastination, escape, TV watching, excessive partying, absenteeism)	34	13.6	20	8.1	0.049*
Mean percent score (median)	22.9 ± 24.8 (16.7)		24.6 ± 20.4 (20.8)		[0.041]*
Total expression mean percent score (median)	25.1 ± 18.9 (23.1)		25.7 ± 16.9 (24.0)		[0.409]

[] Mann Whitney *P* value.* Significant, *P* ≤ 0.05.

educational qualification, and total duration of experience did not significantly differ between the two groups. Non-Kuwaitis (84.2% compared with 66.0%, *P* < 0.001) and males (78.9% compared with 56.4%, *P* < 0.001) were likely encountered among the hospital physicians (HP) than PHC physicians (PHCP). PHCP tended to spend more years at the current position than HP (*P* = 0.029).

Table 2 portrays sources of stress among hospital and PHC physicians. Overall, HP tended to suffer significantly from more sources of stress than PHCP (2.33 ± 1.88 compared with 1.91 ± 1.956, *P* = 0.003). The more common sources were prevalent among HP while the less common ones were more prevalent among PHCP. Significantly higher proportions of HP suffered from work (55.9% compared with 42.8%, *P* = 0.004), financial (51.0% compared with 29.2%, *P* < 0.001), family (45.7% compared with 31.2%, *P* = 0.001), and social/personal relationship (32.0% compared with 20.0%, *P* = 0.002) concerns than PHCP. Self-image (20.4% compared with 11.3%, *P* = 0.006) and sex (9.6% compared with 4.2%, *P* = 0.014) concerns were more likely encountered among PHCP than HP.

Table 3 reveals stress expressions among PHC and hospital physicians. The cognitive domain of stress shows similar proportions of both the categories of physicians with no significant difference of the mean percent scores (30.9 ± 25.5% compared with 31.4 ± 22.5%, *P* = 0.482). A median of 29.2% was revealed for each group. Although the overall score of somatic expression of the two groups did not differ significantly (23.6 ± 19.0% compared with 23.7 ± 17.7%, *P* = 0.661) yet, 'muscle tension, headache, backaches, and muscle aches' (29.6% compared with 19.8%,

P = 0.012), 'indigestion, stomach ache, diarrhea, ulcer attacks, constipation, and colitis' (22.4% compared with 11.7%, *P* = 0.002), and 'tics, tremors, and muscle spasm' (8.8% compared with 4.0%, *P* = 0.031) were more likely encountered among PHC than hospital physicians. HP had a significantly higher overall mean percent score of the behavioral expression domain than PHCP (24.6 ± 20.4% compared with 22.9 ± 24.8%, *P* = 0.041). Although, HP had a higher total stress expression mean percent score (25.7 ± 16.9% compared with 25.1 ± 18.9%) yet, this difference is not statistically significant (*P* = 0.409).

4. Discussion

Work stress is an important health problem that can affect physicians. It is a pattern of physiological, emotional, cognitive and behavioral reactions to some extremely taxing aspects of work content, work organization and work environment. The impacts of work stress can affect both the physician and the health facility. On the individual level, mental health, musculoskeletal or cardiovascular problems can undermine the health status and may result in severe consequences such as work disability or death. On the organizational or specifically the health facility; increased rates of absenteeism, medical staff turnover, reduced performance, increased unsafe working practices, increased complaints of the patients, and retraining are among the many effects that increase the stress on the health facility.¹⁰ The current study was designed to reveal the extent of work stress among physicians in hospital and primary health care

settings and compare the sources and manifestations of stress among the two groups. The results of the current study revealed that HP were mainly males of non-Kuwaiti nationality spending a shorter time in their current jobs than physicians affiliated to the primary health care. HP stated an exposure to more sources of stresses at work than PHCP, with a median of 2 sources of stress compared to 1.

Several studies revealed that work, financial, and familial sources of the stress are common among both hospital and primary health care physicians.^{11–13} Significantly higher proportions of HP suffered from the common sources of stress namely, work, financial, and family than PHCP. The latter were more suffering from personal related sources of stress namely, self-image and sex than HP. The difference in the nature of work in hospital setting and PHC centers might be behind this difference. As in hospitals, physicians are dealing with more complicated cases, referred cases that need further investigations for diagnosis, as well as critical cases and terminal cases or irreversible ones.¹⁴ Such types of medical conditions might add more work stress explaining the higher proportion suffering from work stress among HP (55.9%) than PHCP (42.8%). The higher proportion of HP complaining of financial and familial sources of stress can be attributed to the higher proportions of non-Kuwaitis among HP who receive lower salaries than their Kuwaiti colleagues. Also, some of the non-Kuwaiti physicians might be living alone while their families are living in their original countries. Also the shorter duration at the current job, with expected lower salaries, might add to financial stress. The more concern about self-image among PHCP can be attributed to the higher proportions of Kuwaitis among them who are known to suffer from higher rates of obesity as well as the higher proportion of females who are also more concerned about their body form and body image in general.^{15,16}

Although HP had significantly more sources of stress than PHCP, yet the overall stress expression score, cognitive domain, and somatic domain mean percent scores did not differ significantly between the two groups. Although HP had a significantly higher mean percent behavioral score ($24.5 \pm 20.4\%$ compared with 22.9 ± 24.8 , $P = 0.041$) than PHCP yet, a significantly lower proportion of them (8.1%) suffered from avoidance behavior than the latter (13.6%, $P = 0.049$). Not only that, but also PHCP were significantly more likely to suffer from 'muscle tension, headache, back-aches, and muscle aches' (29.6% compared with 19.8%, $P = 0.012$), 'indigestion, stomach ache, diarrhea, ulcer attacks, constipation, and colitis' (22.4% compared with 11.7%, $P = 0.002$), and 'tics, tremors, and muscle spasms' (8.8% compared with 4.0%, $P = 0.031$) than HP. There is a discrepancy between the results of sources of stress, with significantly higher number among HP than PHCP and the somatic expressions of stress among the latter. However, the low number of sources of stress revealed among both the groups of physicians, in addition to the low rates of expression of stress in its different studied forms may explain this relation. At this low level of both parameters; it is difficult to find significant association between them. Also, it seems that the relationship between sources and expression of stress is a complicated one.¹⁷

Hospital physicians suffered from a higher number of sources of stress than PHCP. Although this had not been reflected on stress expressions yet, more efforts should be carried out to eliminate all sources of stress not only in the hospital setting but also at the PHC centers. Further studies are recommended to reveal the factors behind the higher number of stress sources among HP and their relationship to work load and job satisfaction.

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