Original Article

Perceived Stress and its Associated Sociodemographic Factors among Physicians Working in Aseer Region of Saudi Arabia

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ABSTRACT

INTRODUCTION: It is well acknowledged that health workers experience higher level of stress and stress related health problems than other occupational groups. Thus, measuring physician stress and understanding its related factors is a topic of importance with public health implications.
OBJECTIVES: To measure the level of stress and to identify the socio-demographic and practice factors associated with stress among physicians in Aseer region.
STUDY DESIGN: Cross sectional study.
STUDY SETTING: Physicians in government health service, Aseer region, Saudi Arabia
METHODOLOGY: A self administered questionnaire based on Perceived Stress Scale (PSS) was used in the study. Study included 375 participants across three levels (resident, specialist, consultant) and six broad specialties (Surgical, Medical, Obstetrics / Gynaecology, Paediatrics, Dermatology, Emergency & ICU); selected following a two stage sampling procedure.
RESULTS: A total of 303 physicians returned completely filled questionnaires. A high mean stress score was reported (18.07±5.1). Though highest mean stress scores were found for dermatologists (21.00), no significant differences in stress was found based upon nationality, smoking status, presence of any chronic illness and specialty. Significantly more stress was found in females (df =301, t=3.68, p<0.001); and singles as compared to married physicians (df=301, t=4.52, p<0.001). ANOVA across multiple groups revealed significant difference in stress scores between younger age groups with F (2,300) =9.402; p=<0.001, η^2=0.05; mean=(19.10±4.91) and other age groups, and also between residents, F(2,300)=9.76; p<0.001; η^2=0.06, mean=19.34±4.81 as compared to specialists (17.04±5.30) and consultants (16.56±5.11).
CONCLUSION: Physicians in Aseer region experience high level of stress. Gender, age, marital status and position are significantly related to stress.

KEY WORDS: Stress, Physicians, Medical Specialty, Residents, Saudi Arabia.

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INTRODUCTION

Stress has been defined as a dynamic condition in which the individual is confronted with an opportunity, constraint or demand related to what he or she desires and for which the outcome is perceived to be both uncertain and important[1]. According to empirical research the occupations subjected more to stress include teachers, people in managerial jobs and health care practitioners[2]. It is well documented that compared to other occupational groups, health workers experience higher levels of stress and stress related health problems[3-5]. There are a number of studies that confirm high levels of stress in doctors. A nationwide study in Germany reported that surgeons are vulnerable to higher job stress compared to the general population[6]. A study in India also reported high levels of stress among physicians[7]. A study in Riyadh, Saudi Arabia, focused on perceived stress among the residents enrolled from various health specialties in the Kingdom, reported that 84% of the 938 residents perceived their job environment to be stressful[8].

Although there are many good reasons to study physician stress, public health concerns are at the top of the list. It has been identified that there is a relationship between physician stress, medical errors, patient safety concerns and quality of care[9]. Additionally, stress and burnout have been noted as contributing factors to physicians quitting medicine[10], which is disturbing given the imminent shortage of physicians [11]. Thus, understanding factors that are related to physician stress is a topic of importance with public health implications. This study was, thus, set out with the objectives to examine aspects of perceived stress in physicians at various levels and specialties, to find

differences among them and to determine the factors associated with stress, in Aseer region of Saudi Arabia where such a study is lacking.

METHODOLOGY

A cross sectional study design was followed to study stress among various levels and specialties of physicians working in Aseer region. Approval was obtained from the institutional ethical committee of King Khalid University (REC#2016-04-13). Study period was from April- May2016. Sample size was based on the results reported from previous studies [8] that 84% of resident physicians experience stress, keeping 95% confidence interval and margin of error as 5%, sample size was calculated as 196. To recruit the participants a two stage sampling procedure was followed. In the first stage, using simple random sampling, the health facilities were selected (7 government hospitals including secondary and tertiary level hospitals and 7 government primary health care centers). In the second stage, we used convenience sampling to recruit the study participants from selected facilities.

Inclusion and exclusion criteria*:* Male and female physicians belonging to any nationality and working as resident/specialist or consultant under six broad specialties (Surgical, Medical, Obstetrics /Gynecology, Paediatrics, Dermatology, Emergency & ICU) for past six months in the same facility were included in the study. Physicians with less than 6 month experience in the facility were excluded. The participants were informed about the purely scientific nature of the study. Anonymity and confidentiality were assured and participants were free to leave the study at any stage. Those who consented to participate were included in the study. The final study sample included 375 participants.

Study tool: The self administered questionnaire included bio data of the physicians: (age, gender, nationality, marital status), clinical history (chronic illness, psychiatric disorders, sleep disorders, smoking), specialty characteristics (specialty, year) and their perceived stress. The perceived stress component was measured using Perceived Stress scale (PSS); a standardized questionnaire developed in the eighties by Cohen et al [12]. The PSS has been widely used in studies worldwide on different populations including general population[13], physicians[14] and patients[15]. The PSS is a measure of the extent to which situations in one's life are judged as stressful. It includes a number of direct queries about current levels of experienced stress. The PSS was designed for use in community samples with at least a junior high school education. Its items are easy to understand; the response alternatives are also simple and can be used in all population groups. The questions were asked about feelings and thoughts during the last month.

Scoring: The respondents answered each (PSS) question on a Likert type scale (never, almost never, sometimes, fairly often, or very often). The answers to questions 1, 2, 3, 6, 9, and 10 were scored such that "never" corresponds to zero and "very often" corresponds to 4. The answers to questions 4, 5, 7, and 8 were scored such that "never" was scored as 4 and "very often" as zero. The total stress score was calculated by summing up the scores of all individual questions, higher scores indicating higher levels of stress. The stress score was interpreted as follows. Scores from 0 to 7 indicate that the stress level is very low; from 8-11 the stress level is low; from 12-15 the perceived stress level is average; from 16-20 the stress level is high and scores of 21 or above indicate that the stress level is very high.

Statistical analysis: Using SPSS 17.0, the data was analyzed and presented as frequencies and percentages for categorical variables. The continuous variables were presented as mean and standard deviation. To examine the associations between categorical variables and the scores of stress, one-way analysis of variance (ANOVA) or student t-test were used as appropriate.

RESULTS

The basic characteristics of the study population are shown in table 1. From 375 participants, 303 physicians returned completely filled questionnaires (230 males and 73 females). Their ages ranged between 25 to 70 years, with majority 163 (53.8%) between 25-35 years of age. Non Saudi physicians formed 63 % of the study sample. Most of the physicians were married (80.5%), non smokers (82.2%) and didn't have any chronic illness. Almost half (150) were residents. Medical and surgical specialties formed the bulk of the sample. The detailed frequency distribution of responses to the PSS questionnaire are shown in table 2. During the 30 days preceding the survey, more than one third of physicians (36%) often (fairly often or very often) felt nervous and stressed, 25% of them often felt upset because of unexpected events and 27.5% often felt angered by circumstances that were beyond their control. In addition, 18% of the respondents often felt unable to control important things in their life and 14% often felt that difficulties were piling up too high to overcome. In contrast, almost 36% of the residents often felt that things were going their way, 37% often felt that they were on top of things, 61.4% often felt confident in their ability to handle their personal problems and 49% had often been able to control irritations in their life.

The stress scores are shown in table 3. The mean stress score was 18.01, with a standard deviation of 5.11. The range was wide with maximum and minimum score as 37 and 4 respectively and an inter-quartile range of 6.

The stress distribution among respondents and its perceived effects are shown in table 4. A large proportion of physicians reported high levels of stress. High stress was reported by 40.6% and very high stress was reported by 30.7% physicians. Seventy nine percent physicians perceived that stress had a negative effect on their job. More than half of them (54.5%) also reported sleep disturbance in the past month. Table 5 describes the differences in mean stress scores among various groups of physicians based on their basic and practice variables. Independent sample t tests revealed some significant differences in stress scores among the following groups. Females as compared to males had significantly higher stress scores, $t(301) = 3.68$, $p < 0.001$. Singles as compared to married physicians had significantly higher stress scores $t(301)=4.52, p<0.001$.

The one way ANOVA test showed some significant differences among groups. There was a statistically significant difference across the age group in their stress scores $F(2,300) = 9.402$; $p=<0.001, \eta^2=0.05$. Post hoc analysis using Tukey HSD confirmed that younger aged physicians (25-35 years) experienced more stress (19.10±4.91) as compared to the other two age groups; age group 35-50 years (17.35±5.19) and age more than 50 years (15.5±4.53).Comparison of position also revealed that residents are significantly different in their stress scores $F(2,300) =9.76$; $p<0.001$; $\eta^2=0.06$. Post hoc analysis using Tukey HSD indicated that resident physicians experienced more stress (19.34±4.81), as compared to specialists (17.04±5.30) and consultants (16.56±5.11). No significant differences were found among groups based on nationality, smoking status, presence of any chronic illness and specialty. However the highest mean stress scores were reported by dermatologists (21.00).

TABLE I: BASIC CHARACTERISTICS OF THE RESPONDENTS

Variable	n	%
Gender		
Male	230	75.9
Female	73	24.1
Age		
25-35	163	53.8
35-50	104	34.3
≥50	36	11.9
Nationality		
Saudi	112	37.0
Non Saudi	191	63.0
Marital Status		
Married	244	80.5
Single	59	19.5
Smoking		
No	249	82.2
Yes	54	17.8
Chronic Illness		
No	248	81.8
Yes	55	18.2
Position		
Resident	150	49.5
Specialist	87	28.7
Consultant	66	21.8
Specialty		
Surgical	85	28.1
Medical	111	36.6
Emergency/ICU	26	8.6
Paediatrics	45	14.9
Obstetrics / Gynae	26	8.6
Dermatology	10	3.3

TABLE III: STRESS SCORES OF THE STUDY GROUP

Mean ± SD	18.01±5.11
Minimum	4
Maximum	37
Inter quartile range	6

TABLE IV: STRESS LEVEL AMONG RESPONDENTS AND ITS PERCEIVED EFFECTS

Variable	n	%
Stress level		
Very low stress	8	2.6
Low stress	26	8.6
Average stress	53	17.5
High stress	123	40.6
Very high stress	93	30.7
Negative effect on job		
Yes	240	79.2
No	63	20.8
Sleep disturbance		
Yes	165	54.5
No	138	45.5

TABLE II: RESPONSES TO THE PERCEIVED STRESS SCALE QUESTIONNAIRE BY PHYSICIANS (n=303)

Questions (Perceived stress scale)	Never n (%)	Almost Never n (%)	Sometimes n (%)	Fairly often n (%)	Very often n (%)
In the last month, how often have you been upset because of something that happened unexpectedly?	28(9.2)	36(11.9)	163(53.8)	42(13.9)	34(11.2)
In the last month, how often have you felt that you were unable to control the important things in your life?	58(19.1)	63(20.8)	127(41.9)	40(13.2)	15(5)
In the last month, how often have you felt nervous and "stressed"?	13(4.3)	28(9.2)	154(50.8)	69(22.8)	39(12.9)
In the last month, how often have you felt confident about your ability to handle your personal problems?	13(4.3)	25(8.2)	79(26.1)	125(41.3)	61(20.1)
In the last month, how often have you felt that things were going your way?	21(6.9)	31(10.2)	143(47.2)	95(31.4)	13(4.3)
In the last month, how often have you found that you could not cope with all the things that you had to do?	41(13.5)	82(27.1)	127(41.9)	39(12.9)	14(4.6)
In the last month, how often have you been able to control irritations in your life?	17(5.6)	37(12.2)	101(33.3)	112(37)	36(11.9)
In the last month, how often have you felt that you were on top of things?	23(7.6)	46(15.2)	120(39.6)	93(30.7)	21(6.9)
In the last month, how often have you been angered because of things that happened that were outside of your control?	21(6.9)	48(15.8)	151(49.8)	61(20.1)	22(7.4)
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	42(13.9)	71(23.4)	150(49.5)	28(9.2)	12(5)

TABLE V: ASSOCIATION OF STRESS SCORES WITH SOCIODEMOGRAPHIC AND PRACTICE FACTORS

Variable	Mean ±S.D	df	t*/F value**	p value	Partial η^2
Age					
25-35	19.10±4.91	2,300	9.40**	0.000	0.05
35-50	17.35±5.19				
≥50	15.50±4.53				
Gender					
Female	19.90±5.34	301	3.68*	0.000	-----
Male	17.40±4.89				
Nationality					
Saudi	18.69±4.82	301	1.62*	0.106	-----
Non Saudi	17.71±5.24				
Marital status					
Married	17.44±5.09	301	4.52*	0.000	-----
Single	20.68±4.33				
Smoking status					
Yes	17.83±5.32	301	0.38*	0.701	-----
No	18.12±5.07				
Chronic illness					
No	18.11±5.26	301	0.29*	0.767	-----
Yes	17.89±4.38				
Position					
Resident	19.34±4.81	2,300	9.79**	0.000	0.06
Specialist	17.04±5.30				
Consultant	16.56±4.86				
Specialty					
Surgical	17.11±5.04	5,297	2.07	0.068	0.03
Medical	18.01±5.25				
Emergency/ICU	19.96±5.23				
Paediatrics	18.04±3.47				
Obstetrics/Gynae	18.46±4.81				
Dermatology	21.10±8.49				

DISCUSSION

The current study examined the levels of stress among various groups of physicians working in Aseer region and the Sociodemographic practice factors associated with it. The stress scores as described by the PSS were high in this study. The mean stress score was 18.01±5.11. Almost three fourth of the physicians (71%) reported more than average levels of stress (high and very high levels). They also reported that stress affected their sleep and job. There are a number of studies that confirm high levels of stress in doctors. A study from Germany reported that surgeons are vulnerable to higher job stress compared to the general population[6].Studies also revealed higher stress among physicians as compared to various other professions [16-18]. Job stress is negatively related to job satisfaction and perceptions of good physical and mental health[19]. Earlier, Klien et al concluded that clinicians who are exposed to job stress are at increased risk of reporting suboptimal quality of care[6]. The same study also found a significant association between psychosocial stress at work and care quality. Our results are supported by other studies that identified an association between job stress and suboptimal quality of care [20-22].

Socio-demographic factors and stress:

Among the sociodemographic factors related with stress, our study found a significant relation of age, gender and marital status while no significant differences in stress based on nationality, smoking status, presence of any chronic illness and specialty was revealed. Younger physicians had significantly higher mean stress scores as compared to elder physicians. This association suggests that over a period of time and with experience physicians get used to the stressors and respond in a better way. These findings have been confirmed in an earlier study at Australia [23]. Women have a higher lifetime risk of developing depression [24]. The current study found a positive association between female sex and high stress scores. It also found significantly higher mean stress scores among the unmarried as compared to married physicians. This is an augmentation of the evidence that psychological stress and ill health are more common among unmarried people including doctors and nurses [25-26]. In another study by Martini et al. being unmarried was associated with increased likelihood to meet burnout criteria [27]. Some contrary findings have also been reported previously; Michels et al reported an association between burnout and sex, in which men had significantly higher depersonalization scores than others[28]. Shanafelt et al also found no association with sex or marital status[29].

Practice factors and stress:

Several practice factors may affect the levels of stress among doctors. Position and specialty can be important determinants of this phenomenon. We found a significantly higher stress scores among the resident physicians as compared to specialists and consultants. In another study by Martini et al. being in one's first year in residency was associated with increased likelihood to meet burnout criteria, while Michels et al reported significantly higher depersonalization scores among third year residents [27,28]. This finding may be explained by the fact that residents are newly exposed to responsibilities of caring for patients as well as being held accountable by their senior colleagues. This change of role from passive learner to active career may lead to higher levels of stress among residents. An interesting finding in our study was the highest mean score of stress reported by dermatologists (21.1±8.49). This was followed by physicians working in ICU / Emergency Internists, obstetrician / gynecologists and pediatricians had similar stress levels, while the lowest levels were observed in surgical specialties. However, these differences were not significant as determined statistically. Prior studies have established differences among stress scores in physicians of different specialties, though this difference was not significant [27]. According to the mentioned study, the overall rate of burnout was fifty percent ,highest being seventy five percent in obstetrics-gynecology and fifty percent in dermatology, while they were lower in general surgery, psychiatry, and family medicine. This variation among specialties was not found to be statistically significant [27].Some other studies have noted that psychiatry residents have additional stressors like fear and exposure of patient violence and suicide[27, 30-31].

CONCLUSION

Physicians in Aseer region experience high levels of stress. Socio-demographic factors that were associated with stress were identified as gender, age and marital status. High levels of stress cuts across all specialties of medicine but it is significantly related to position (more in residents). The results point to a need of stress management programs aimed at the physicians at various levels, specially the residents.

LIMITATION OF THE STUDY: The study findings cannot be generalized as the sample is small and data is self reported.

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