

Work Related Stress among Physicians Working in Primary Health Care Centers in Taif City, Saudi Arabia, 2020

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Abstract Background: Stress levels among healthcare professionals including doctors are high compared with the general working population because the work is characterized by high degree of responsibility and medical errors can have catastrophic effects on both the medical professional and the patient. **Objectives:** To assess psychosocial stress and its association with socio-demographic characteristics and work demands of physicians. **Subject and methods:** A descriptive cross-sectional study design was adopted among all physicians working at primary healthcare centers (PHCCs), Ministry of Health (MOH) in Taif during the period February-April, 2020. Assessment of Psychosocial Stress: was investigated by the Reeder scale. Work characteristics were investigated with the Karasek scale. **Results:** The study included 103 PHC physicians. The age of more than half of them (59.4%) ranged between 30 and 39 years. More than half of them (55.3%) were males. High psychological stress was observed among 29.1% of the participants. It was reported among more than half of the participants (55%) aged ≤ 29 years compared to 17.9% of those aged ≥ 40 years, $p=0.022$. Half of single physicians compared to 24.7% of married expressed high level of psychological stress, $p=0.022$. Almost one third of general practitioners (32.8%) compared to 16.7% of consultants had high level of psychological stress, $p=0.046$. Physicians who practiced less than 5 years were more likely to have psychological stress compared to those practiced >10 years (40.5% versus 20.7%), $p=0.025$. The percentage of the Karasek scale for work characteristics ranged between 30.6 and 75 with a mean \pm SD of 59.7 ± 7.7 and median (Interquartile range) of 55.6 (61.1-63.9). It was abnormally distributed as evidenced from significant Shapiro-Wilk test, $p<0.001$. Although with advancing in the level of psychological stress, the accompanied work demand was increasing, the difference was not statistically significant. **Conclusion:** Psychological work-related stress is a common problem affecting primary healthcare physicians, Ministry of Health in Taif, Saudi Arabia. It was not significantly associated with work demands, although, its rate increase with increasing in work demands.

Keywords: stress, work demands, primary care physicians, Saudi Arabia

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1. Introduction

Stress is often defined as a feeling of being overwhelmed, worried or run-down. Stress can affect people of all ages, genders and circumstances and can lead to both psychological and physical health issues. By definition, stress is any uncomfortable "emotional experience accompanied by predictable biochemical, physiological and behavioral changes. [1] Workplace Stress is globally considered a risk factor for workers' health and safety. More specifically, the health care sector is a constantly changing environment, and the working conditions are increasingly becoming demanding and stressful. According to the World Health Organization

(WHO), "a healthy workplace is one in which workers and managers collaborate to use a continual improvement process to promote and protect the health, safety and well-being of all workers and the sustainability of workplace. [2]

Burnout is a relatively new term, closely related to the word stress and explained as "a syndrome of emotional exhaustion and cynicism that occurs frequently among individuals who do 'people work' of some kind". It consists of three components: emotional exhaustion, depersonalization, and feelings of low personal accomplishment. [3]

Stress levels among healthcare professionals including doctors are high compared with the general working population. [4,5] largely because the work is demanding, is characterized by high degree of responsibility and

because medical errors can have catastrophic effects on both the medical professional and the patient. [6] Furthermore, health professionals are exposed to both emotional and physical risk. workplace Stress is globally considered a risk factor for workers' health and safety. More specifically, the health care sector is a constantly changing environment, and the working conditions are increasingly becoming stressful and demanding. According to the World Health Organization (WHO), "a healthy workplace is one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and well-being of all workers and the sustainability of workplace. [7] Particularly, in the past 35 years, the prevalence of stress-related illnesses such as burnout has increased significantly, affecting 19 e 30% of employees in the general working population. [8]

Work overload is a major source of exhaustion that, in role, is at the root of burnout, [9] representing the basic individual stress component of burnout. [10] In addition, a lack of job control means that employees' sense of discretion and autonomy are limited. As a result, their sense of control over what they do is limited or undermined, which also means that they do not have much of a say in what goes on in their work environments. By contrast, job control enables workers to take decisions regarding their work. [11] As described by Leiter and Maslach, job control plays an important role in influencing, either directly or indirectly, workload and burnout among employees. In this sense, more control gives workers the opportunity to shape their work environment, such as reducing their workload accordingly. This is in line with the buffer hypothesis of job stress, where high job requirements (mainly, a high workload) coupled with low job control lead to job strain. In this sense, it is central to clarify and control the variables involved in the job burnout process. This will enable the development of strategies aimed at protecting health care professionals from the risk of burnout. [12]

Regarding the burnout etiology, researchers have mainly focused on the role played by an occupational context. Maslach and Leiter provided a more comprehensive perspective by identifying six general areas of work life considered as the most important antecedents of burnout: a manageable workload, job control, re-wards, community, fairness, and values. According to this model, a mismatch between one's expectations and the structure or process within the occupational environment contributes toward burnout. [13] These different six areas have relationships with the three dimensions of burnout. [11,12,13,14] Mainly building on the demand control theory of job stress described by Karasek and Theorell. [15]

Individuals of type A personality are more prone to occupational stress as are those with an external locus of control with external etiology being workload; organizational changes, poor management, and insufficient resources to do the job; dealing with patients' suffering; medical mistakes, malpractice litigations and complaints. [16,17] The isolation, poor relationships with other doctors, and work-life balance are major social etiology of stress among physicians. [18,19] This combination of stressors increases the risk of, for example, coronary heart disease

and musculoskeletal disorders and overt mental illness such as anxiety, depression and suicidal thoughts, and various behavioral effects. [20]

Being exposed to stress for long time, may lower a person's efficiency and could trigger negative consequences on one's health or family and social life. [21] The present study aimed to study work related stress among physicians working in primary health settings in Taif city, Saudi Arabia.

2. Methods

A descriptive cross-sectional study design was carried out at Makkah region, in Taif province which has high altitude. Inside Taif city, there are 19 PHCCs belonging to Ministry of Health (MOH). The study was carried out in all PHCCs inside Taif city belonging to MOH. All physicians working at PHCCs, MOH in Taif during the study period (February-March, 2020) were included in the study, provided that they had inclusion criteria. Training residents and physicians with administrative responsibilities were excluded.

An anonymes self-administred questionnaire was used for physicians. The questionnaire included three main sections; Socio-demographic characteristics (Age, gender, marital status, nationality, job title, and years of practice), assessment of psychosocial stress: Psychosocial stress in this study was investigated by a questionnaire based on the Reeder scale. [22,23] The Reeder scale uses four statements experienced in everyday stressful situations as "usually tense or nervous", "daily activities are extremely trying and stressful".

Interpretation of Reeder psychological stress scale

- 0: No response on one or more statements
- 1: "Not at all" for all four statements
- 2: "Not at all" for any three statements with any other response on the fourth.
- 3: "Not at all" for any two statements with "Not very accurately" for the other two statements
- 4: "Not at all" for any one or two statements with any other responses for the remainders but not those for a score of 3
- 5: All other responses sets not specified under 0, 1, 2, 3, 4, 6, 7, and 8
- 6: "To some extent" to all four statements OR "to some extent" for three statements with "exactly" for the other statement
- 7: "Exactly" for any three statements with T some extent" or "Not very accurately for the fourth OR "Exactly" for two statements with "to some extent" for the other two statements
- 8: "Exactly" for all the four statements

A scoring system was used to derive a summary score ranging from 1 (low perceived stress) to 8 (high perceived stress). [24] Scores were categorized as high (6-8), medium (4-5) and low (1-3). [25] and assessment of work characteristics (Work characteristics were investigated with the Karasek scale. This scale measures job character—decision latitude and psychological workload demands. It is assessed by twelve items such as "keep learning new things", "can develop skills", "job requires skills", "task variety", "repetitious", and "job requires

creativity”, “have freedom to make decisions”, “choose how to perform work”, “have a lot of say on the job”, “job needs to be fast”, “work-related quality of life” and “amount of work”. [26,27,28] 4- Likert scale was utilized and responses of the participants were scored in the way that never was given a score of “0”, seldom a score of 1, sometimes, a score of 2 and often a score of 3. Reversed score was applied to items 7, 8, 10, and 12 and the total score was computed so as the higher the score, the higher the work demands and vice versa.

Data collection was carried out during the period from February-March, 2020. Questionnaire forms were handed to physicians after explanation of the aim of the study. They were checked for completeness and validated by the investigator, who was available at time of data collection to clarify any inquiries.

An informed verbal consent was obtained from physicians before participation in the study. The collected data were strictly confidential, and were not disclosed for any reason, and were used only for research purposes.

The data was verified by hand then coded and entered to a personal computer. SPSS software statistical program version 25 was utilized for data entry and analysis. Continuous variables were presented as arithmetic mean and standard deviation (SD), median and interquartile range (IQR) while categorical variables were presented as frequencies and percentages. Chi-square test (χ^2) was used to test for the association between demographic characteristics of the participants and their psychological stressors. Test of normality (Shapiro-Wilk) was applied for Karasek scale for work characteristics. None-parametric statistical tests were applied since the Karasek scale for work characteristics was abnormally distributed. Mann-Whitney test was used to compare means between two different groups while Kruskal-Wallis test was applied to compare means of more than two

groups. P-value of less than 0.05 was considered significance throughout the study.

3. Results

The study included 103 PHC physicians. The age of more than half of them (59.4%) ranged between 30 and 39 years. More than half of them (55.3%) were males and majority were married (82.5%). Saudi nationals represent 58.3% of them and 62.1% were general practitioners whereas 5.8% were consultants. Duration of practice exceeded 10 years among 28.2% of them. (Table 1)

Table 1. Socio-demographic characteristics of the participants

	Frequency	Percentage
Age (years)		
≤29	20	19.4
30-39	55	59.4
≥40	28	27.2
Gender		
Female	46	44.7
Male	57	55.3
Marital status		
Single	18	17.5
Married	85	82.5
Nationality		
Saudi	60	58.3
Non-Saudi	43	41.7
Job title		
General practitioner	64	62.1
Specialist	33	32.0
Consultant	6	5.8
Duration of practice (years)		
<5	37	35.9
5-10	37	35.9
>10	29	28.2

Table 2. Response of the participants to the Reeder psychological stress scale

	Exactly	To some extent	Not very accurately	Not at all
In general I am usually tense or nervous	1 (1.0)	22 (21.4)	42 (40.7)	38 (36.9)
There is a great amount of nervous strain connected with my daily activities	2 (1.9)	22 (21.4)	51 (49.5)	28 (27.2)
My daily activities are extremely tiring and stressful	1 (1.0)	25 (24.3)	41 (39.7)	36 (35.0)
At the end of the day, I am completely exhausted mentally and physically	9 (8.7)	35 (34.0)	40 (38.9)	19 (18.4)

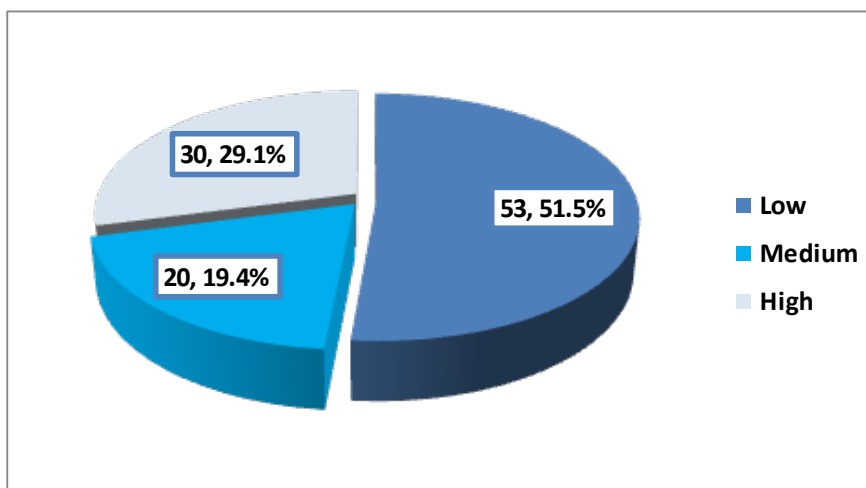


Figure 1. Level of psychological stress according to Reeder psychological stress scale

Table 3. Factors associated with level of psychological stress among primary healthcare physicians.

	Level of psychological stress			p-value*
	Low N=53 N (%)	Medium N=20 N (%)	High N=30 N (%)	
Age (years)				
≤29 (n=20)	4 (20.0)	5 (25.0)	11 (55.0)	0.022
30-39 (n=55)	31 (56.3)	10 (18.2)	14 (25.5)	
≥40 (n=28)	18 (64.2)	5 (17.9)	5 (17.9)	
Gender				
Female (n=46)	20 (43.5)	10 (21.7)	16 (34.8)	0.338
Male (n=57)	33 (57.9)	10 (17.5)	14 (24.6)	
Marital status				
Single (n=18)	4 (22.2)	5 (27.8)	9 (50.0)	0.022
Married (n=85)	49 (57.6)	15 (17.6)	21 (24.7)	
Nationality				
Saudi (n=60)	29 (48.3)	13 (21.7)	18 (30.0)	0.710
Non-Saudi (n=43)	24 (55.8)	7 (16.3)	12 (27.9)	
Job title				
General practitioner (n=64)	26 (40.6)	17 (26.6)	21 (32.8)	0.046
Specialist (n=33)	22 (66.7)	3 (9.1)	8 (24.2)	
Consultant (n=6)	5 (83.3)	0 (0.0)	1 (16.7)	
Duration of practice (years)				
<5 (n=37)	14 (37.8)	8 (21.6)	15 (40.5)	0.025
5-10 (n=37)	20 (54.1)	8 (21.6)	9 (24.3)	
>10 (n=29)	19 (65.5)	4 (13.8)	6 (20.7)	

*Chi-square test.

3.1. Psychological Stress

Table 2 summarizes the participants' responses to the Reeder psychological stress scale. More than one third of them never felt tense or nervous (36.9%) and never felt that their daily activities are extremely tiring and stressful (35%). More than one-quarter (27.2%) never felt that great amount of nervous strain connected with their daily activities and 18.4% never felt that they were completely exhausted mentally and physically at the end of the day. Overall, high psychological stress was observed among 29.1% of them as illustrated from Figure 1.

High level of psychological stress was reported among more than half of the participants (55%) aged ≤29 years compared to 17.9% of those aged ≥40 years, $p=0.022$. Half of single physicians compared to 24.7% of married expressed high level of psychological stress, $p=0.022$. Almost one third of general practitioners (32.8%)

compared to 16.7% of consultants had high level of psychological stress, $p=0.046$. Physicians who practiced less than 5 years were more likely to have psychological stress compared to those practiced >10 years (40.5% versus 20.7%), $p=0.025$. Other studied factors (gender and nationality) were not significantly associated with psychological stress among physicians. (Table 3)

3.2. Work Demands and Characteristics

Most of the physicians (71.8%) reported that their job requires often learning new things and 60.2% reported that they got sometimes to do a variety of different things on their job. About half of them sometimes their job allows them to take a lot of decisions on their own (49.5%), on their job, they have very little freedom to decide how they do their work (49.5%), their recent quality of life is best imaginable (49.4%) and they have enough time to get the job done (47.5%). (Table 4)

Table 4. Karasek scale for work characteristics among the participants

	Often	Sometimes	Seldom	Never
I get to do a variety of different things on my job	25 (24.3)	62 (60.2)	10 (9.7)	6 (5.8)
My job requires a high level of skills	59 (57.3)	37 (35.9)	6 (5.8)	1 (1.0)
My job requires that I learn new things	74 (71.8)	25 (24.3)	4 (3.9)	0 (0.0)
My job requires from me to be creative	35 (34.0)	48 (46.6)	18 (17.5)	2 (1.9)
My job allows me to take a lot of decisions on my own	46 (44.7)	51 (49.5)	6 (5.8)	0 (0.0)
On my job, I have very little freedom to decide how I do my work	18 (17.5)	51 (49.5)	21 (20.4)	13 (12.6)
I have enough time to get the job done	22 (21.4)	49 (47.5)	18 (17.5)	14 (13.6)
I am not asked to do an excessive amount of work	12 (11.7)	47 (45.6)	31 (30.1)	13 (12.6)
My job requires working very fast	28 (27.2)	56 (54.4)	13 (12.6)	6 (5.8)
I am free from conflicting demands that others make	16 (15.5)	44 (42.8)	34 (33.0)	9 (8.7)
My job requires working very hard	40 (38.8)	45 (43.7)	18 (17.5)	0 (0.0)
My recent quality of life is best imaginable	29 (28.2)	51 (49.4)	18 (17.5)	5 (4.9)

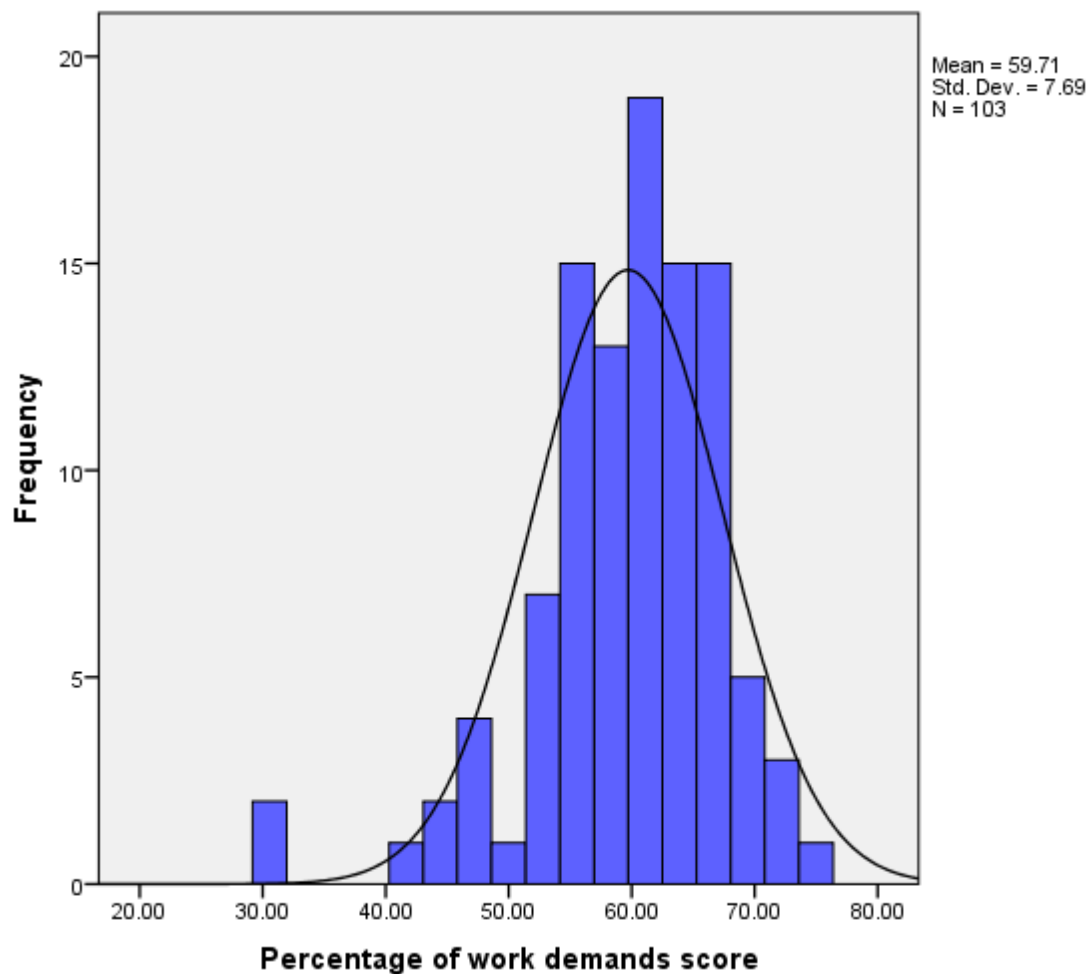


Figure 2. Distribution of the percentage of the Karasek scale for work characteristics among the participants

Table 5. Factors associated with work demands and characteristics among primary healthcare physicians

	Work demands score			p-value
	Median	IQR	Mean rank	
Age (years)				
20-29 (n=20)	59.72	55.56-63.19	42.83	
30-39 (n=55)	61.11	55.56-66.67	58.37	
≥40 (n=28)	61.11	52.78-63.89	46.04	0.061**
Gender				
Female (n=46)	61.11	55.56-66.67	54.99	
Male (n=57)	61.11	55.56-63.89	49.59	0.357*
Marital status				
Single (n=18)	61.11	55.56-63.89	49.42	
Married (n=85)	61.11	55.56-66.67	52.55	0.684*
Nationality				
Saudi (n=60)	61.11	55.56-63.89	52.95	
Non-Saudi (n=43)	61.11	55.56-63.89	50.67	0.700*
Job title				
General practitioner (n=64)	61.11	55.56-63.89	49.05	
Specialist (n=33)	63.89	56.94-66.67	58.67	
Consultant (n=6)	58.33	51.39-65.97	46.75	0.287**
Duration of practice (years)				
<5 (n=37)	58.33	55.56-63.89	47.57	
5-10 (n=37)	61.11	58.33-66.67	59.84	
>10 (n=29)	58.33	52.78-63.89	47.66	0.132**

*Mann-Whitney test, **Kruskal-Wallis test, IQR: Interquartile range.

Table 6. Associated between work demands and characteristics and level of psychological stress among primary healthcare physicians

Level of psychological stress	Work demands score			p-value
	Median	IQR	Mean rank	
Low (n=53)	61.1	54.2-63.9	49.72	0.688*
Medium (n=20)	61.1	58.3-63.9	52.80	
High (n=30)	61.1	55.6-66.7	55.50	

*Kruskal-Wallis test, IQR: Interquartile range.

Overall, the percentage of the Karasek scale for work characteristics ranged between 30.6 and 75 with a mean±SD of 59.7±7.7 and median (Interquartile range) of 55.6 (61.1-63.9). It was abnormally distributed as evidenced from significant Shapiro-Wilk test, $p < 0.001$. (Figure 2)

Although work demands was highest among physicians aged 30-39 years than others (mean rank was 58.37 versus 42.83 and 46.04 for younger and older groups, respectively), the differences did not reach a statistically significant level, $p = 0.061$. Other studied factors (gender, nationality, marital status, job title and years of experience) were not significantly associated with work demands as shown in Table 5.

Although with advancing in the level of psychological stress, the accompanied work demands was increasing, the difference was not statistically significant as evident from Table 6.

4. Discussion

Physicians who work in outpatient settings of primary health care require competencies in these fields including prompt managing of cases, problem solving skills, person-centred care, comprehensive approach and community orientation. [26] Additionally to the fact that work in primary care is largely less attractive than work in a hospital for physicians. As a consequence, there are work-related problems in primary health care increasing the stress among physicians. [27]

Dissatisfaction among primary healthcare physicians has been reported by others and have been found to related mainly to lack of time to focus on individual patients, too much working hours and a heavy workload. [28] The present study was conducted to investigate work related stress among physicians working in primary health and explore some of its determinants in Taif, Saudi Arabia

4.1. Prevalence of Psychological Work-related Stress

The present study revealed that 29.1% of the primary healthcare physicians had high psychological stress. Higher rate has been reported in a similar old study carried out in Lithuania (48%). [29] In Ibadan, Nigeria, the prevalence of stress, job dissatisfaction and poor mental health were 31.6%, 15.4% and 9.9% respectively among junior doctors. [30] Other studies have shown a high prevalence of stress among physicians, with rates ranging between 19 and 47%. Comparison between studies is not logic due to variations in time of study conduction, characteristics of the participants and tools applied to assess stress. However, our figure reflects a high

prevalence of psychological stress among primary healthcare physicians.

4.2. Factors Associated with Psychological Stress and Work Demands

Younger physicians expressed higher rate of psychological stress in the present study. Also, in Riyadh (2016), Reeder scores decreased with the increase in age. [31] Other studies did not reveal an association between physicians` age and psychological stress [29,30].

In agreement with Adeolu JO, et al (2016), [30] the present study showed no difference between males and males regarding psychological stress. However, some others reported that females expressed more work-related stress than males [32].

In accordance with others, [29] single physicians had significant higher rate of psychological stress compared to married physicians. Others reported no association between physicians` marital status and job stress. [30] Higher rate of psychological stress among single physicians could be attributed to their social instability as well as it could be a result rather than an outcome as due to the nature of the study design as a cross-sectional study, we could not determine the temporal relationship between psychological stress and studied factors.

In the current study, work demands was highest among physicians aged 30-39 years than others, although this was not significant, it could reflect the role of physicians` age in work demands. Furthermore, in the present study, work demands were not significantly associated with the level of psychological stress, although, the psychological work-related stress was increasing with increasing in the accompanied work demands. Further investigation is needed with inclusion of primary healthcare physicians from other disciplines.

General practitioners (GPs) had higher level of psychological stress than consultants. The same has been observed in Lithuania, [29] and in a local study carried out in Riyadh. [31] It has been documented that general practitioners are at the forefront line of helping patients to manage urgent health problems, which putting them under more stress than others. [33] Furthermore, GPs are facing the pressures of increased patient demand, as well as shortage of workforce as well as reduction in resources. [34,35] Also, GPs sometimes need to interfere with patients` personal life that may negatively impacts their life and result in negative feelings about work and frustration. [36]

Less experienced physicians were more likely to have psychological stress compared to high experienced ones in the current study. Others reported no effect of physicians` experience on job stress, [30] and others observed more stress among physicians who work for a long period of lime. [32]

Reasons of psychological work-related stress were not investigated enough in the present study. Some others reported that dealing with difficult patients, and heavy workloads were the commonest reported stressors for physicians. [32]

4.3. Strengths and Limitations

Strengths of the present study include the fact that being the first study of its kind, up to our knowledge, to investigate the possible association between work demands and characteristics from one side and job-related psychological stress from the other side in Taif, Saudi Arabia. Therefore, findings of this study could be of importance for decision makers and could represent a base for further more detailed study. Furthermore, the tools used were previously validated instruments. However, the study has some important limitations. The sample size was not sufficient which could impact the power of the study. The study was carried out among primary healthcare physicians working in MOH in Taif and this could impact the generalization of the results over other categories of primary care physicians working in other disciplines. Although, the used tools are valid, they depend on self-reporting, which increase the possibility of bias as a result of over or under estimation of the true situation. Reasons, other than work demands of psychological work-related stress were not investigated in the present study. Finally, the cross-sectional design of the study didn't consider the temporal relationship between exposure and outcome; therefore, the causal relations should be interpreted carefully.

5. Conclusion

Psychological work-related stress is a common problem affecting primary healthcare physicians, Ministry of Health in Taif, Saudi Arabia. Younger, single, less experienced physicians and general practitioners were more likely to have high level of psychological stress. Psychological stress was not significantly associated with work demands, although, its rate increase with increasing in work demands.

6. Recommendations

Based on the present study's findings, the following are recommended:

- Regular screening for stress should be done for all primary healthcare physicians
- Special attention should be given to the work environment at primary care settings to decrease the rate of stress among working physicians.
- Primary healthcare physicians should be trained in stress management through continuous medical education activities
- Further study is recommended investigating other reasons for work-related psychological stress such as dealing with difficult patients, work overload and job satisfaction

- Further longitudinal study including enough sample of primary care physicians working in different disciplines in Taif is recommended

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