

Original Research Article

Prevalence of Burnout Syndrome among Working Physicians in Family Health Centres and Units in Port Said Governorate

ABSTRACT

Background: The classic symptoms of the syndrome of burnout as described by Maslach et al. are emotional exhaustion, depersonalization, and inefficacy. Prolonged exposure to stress is usually the main cause of emotional exhaustion and it manifests through the loss of enthusiasm for work, feeling helpless, trapped, and defeated. Depersonalization occurs when physicians treat patients indifferently, objectify them, and develop a negative attitude toward their colleagues and profession. Inefficiency, or the lack of a sense of personal achievement, is characterized by the individual's withdrawal from responsibilities and detachment from the job. **Aim:** To assess burnout prevalence among physicians of primary health care centers and units in Port Said. **Subjects and Methods:** A cross-sectional study was conducted with simple random sampling of physicians of primary care centers and units. Burnout was measured using the Maslach Burnout Inventory (MBI), a validated 22-item questionnaire considered the gold standard tool for measuring burnout. **Results:** In the current study on 155 physicians, the prevalence of burnout was 65.8% among the studied sample with 80%, 65.8%, and 80% of the subjects displayed high EE, DP, and low PA, respectively. Gender, setting of the practice, marital status, salary, sleeping hours, and working in night shifts were all factors that significantly contributed to physicians' burnout. **Conclusion:** In the current study, a high prevalence of burnout was found among the physicians in PHC centers and units. Gender, setting of the practice, marital status, salary, sleeping hours, and working in night shifts were all factors that significantly contributing to physicians' burnout.

Keywords: Emotional Exhaustion, Depersonalization, Maslach Burnout Inventory, Primary care.

1. INTRODUCTION

Workers in intense patient-centered environments can find their interest and energy eroded by the demands and their engagement is gradually replaced by cynicism, emotional depletion, loss of motivation and reduced commitment, leading to a crisis in professional competence (1). This is the syndrome of burnout as described by Maslach et al. The three classic symptoms for burnout are emotional exhaustion, depersonalization, and inefficacy (2).

Prolonged exposure to stress is usually the main cause of emotional exhaustion and it manifests through the loss of enthusiasm for work, feeling helpless, trapped, and defeated. Depersonalization occurs when physicians treat patients indifferently, objectify them, and develop a negative attitude toward their colleagues and profession. Inefficiency, or the lack

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EE is emotional exhaustion
DP depersonalization?
PA; is what?

Comment [rc2]: can you reveal here what gender? male or female
setting of practice: primary health care or hospital etc
marital status: married/single etc
salary: brachet
sleeping hours: number?

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of a sense of personal achievement, is characterized by the individual's withdrawal from responsibilities and detachment from the job (3).

Multiple studies have indicated a high prevalence of burnout among practicing physicians and have shown that one-third of physicians have experienced burnout at certain points throughout their careers (4). Burnout begins to cultivate its seeds during the medical school days, continues throughout the residency period, and finally matures in the daily life of practicing physicians. Studies suggest that the prevalence of burnout among medical students ranges between 31 and 49.6% (5). Among residents, 50 and 76% of surgical and internal medicine residents are affected, respectively (6).

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It is remarkably stable when studied across time on the same individuals and this chronic nature of burnout is probably not due to its genetic or personality origins but rather to work-related characteristics. Several studies were conducted to study burnout in the Eastern Mediterranean region; In Yemen it was (11.7%), While among Tunisian primary care doctors there was (33%) suffering from burnout, and in Saudi Arabia, Selaihem found prevalence of burnout amongst physicians working in primary care in Riyadh military hospital, Saudi Arabia (2013) was (53.5%) of respondents scored high for EE burnout. Similarly, percentages of burnout of 53.9% and 41.9% were reported among hospital physicians and family physicians, respectively, in Suez Canal University in Egypt (7).

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In a recent study from the United States, 45.8% of physicians reported having at least one symptom of burnout (4). Similarly, the study by the European General Practice Research Network Burnout Study Group, which included 1,400 family physicians in 12 European countries, revealed the following: 43% of respondents scored high for emotional exhaustion, 35% for depersonalization, and 32% for low personal accomplishment, while 12% of participants suffered from burnout in all three dimensions (8).

In the clinical setting, burnout is uniquely problematic as it affects not only the burned-out provider but also the patients under his or her care. Prior studies have correlated physician burnout with suboptimal patient care, decreased empathy, and greater than 2-fold increases in preventable adverse events. A large body of literature outlines the potential adverse outcomes of burnout for staff, which include illness and absenteeism, staff conflict, distrust of management, poor coping and substance abuse (9).

Clinical consequences of burnout include medical errors and adverse events, poor prescribing habits, low patient satisfaction and low adherence to physician recommendations. Another major problem for hospitals is retention of highly trained critical care staff, as ED staff leave their profession at a higher rate than those in other specialties (1).

Although potentially pertinent factors such as career stage and specialty have been examined in previous studies, primary care-specific factors and solutions are less well understood. There are a limited number of studies of burnout that focus exclusively on primary care and engage frontline clinicians to provide their varied perspectives; most studies have been based in other countries or included specialist physicians (10).

Primary health care (PHC) includes providing services for disease prevention, treatment, management, and rehabilitation. It is an essential part of the health system in achieving its goal of improving the health of populations (11). A PHC system needs a competent, effective, and motivated workforce to provide high-quality services to meet the stated goal. Notwithstanding this, structural reforms in the health system have led to heavy workloads, which may lead to employee burnout (12). Application of new systems in primary health care has been shown to contribute to increased burnout levels among health care professionals despite the benefits that might have been achieved in patient care (13,14).

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Similarly, after implementations of the new health insurance system in Port Said governorate, it was noted that there was a change in the environment of care including increased workload, clerical task performance, use of electronic health records, engagement in practice change initiatives, and the rising complexity of primary care practice. All these factors contributed to the increased levels of burnout reported by many health care professionals and the considerable challenges they faced.

Therefore, this study was designed to assess the level of burnout among physicians after implementation of the new health insurance system, to identify the possible factors that potentiate that, and to determine the available solutions to combat burnout.

2. MATERIAL AND METHODS

2.1 STUDY DESIGN

A cross-sectional study was carried out in family health centers and units in Port Said governorate that are affiliated to the universal health insurance from June 2021 to December 2021. Port-said Governorate consists of 7 main districts, which are Al-Zouhor, Al-Dawahy, Al-Manakh, Al-Arab, Port-Fouad, Al-Ganoub and Al-Gharb districts. The latter two districts are considered rural ones. According to the universal health insurance site, the universal health insurance system in Port Said includes 35 family health centers and units that serve more than 800,000 people. The study included the physicians of PHC centers and units affiliated to universal health insurance in Port Said governorate. We included family physicians of all career levels, physicians of all specialties, and physicians with managerial positions. Physicians who were being treated for anxiety of disorders, obsessive compulsive disease, depression, or other psychological problems were excluded from the study.

2.2 SAMPLING

Cluster sampling technique was used. A list of all the 35 family health centers and units was obtained, and 15 centers and units were selected by using a computer-generated list of random numbers. Eligible physicians from these 15 centers and units were included in the

study. The calculated sample size was 140 participants; however, after adding the expected (drop-out) rate (10%), the final sample size was 155 participants.

2.3 DATA COLLECTION TOOL

The first part was the socio-demographic questionnaire (gender, age, residence, marital status, family size, etc.). The second part was related physician's professional features and work setting characteristics (urban or rural area, administrative duty, total work experience (year), work experience for present institution (year), afternoon shifts, etc.). The third part was the Maslach Burnout Inventory (MBI), which is the gold-standard of burnout surveys in the field of medicine (4). It consists of 22 items in the three subscales of emotional exhaustion (EE), depersonalization (DP), and personal achievement (PA). This questionnaire is rated based on a 7-point Likert scale, ranging from 0 (never) to 6 (every day). Due to the multi-dimensionality of the burnout structure, the scores of each subscale are reported separately and cannot be added up as a total score. According to Maslach, high scores in EE and DP and low scores in PA are considered as high burnout (12,15–17). Burnout level is classified into three groups, low, moderate, and high. The cut-off points for this classification are presented in Table 1 (12). There was no need for translation as the target sample were physicians capable of comprehending and answering questions in English.

Table 1: Cut-off points for burnout classification

Level	Low	Moderate	High
EE (9 items, 0–54)	0–18	19–26	27–54
DP (5 items, 0–30)	0–5	6–9	10–30
AP (8 items, 0–48)	39–48	32–38	0–31

Questionnaires were distributed in person at the workplace of the staff. After describing the purpose of the study and assuring the confidentiality of information, staff consent to participate in the study was obtained and they were given a week to complete the questionnaire. After a week, completed questionnaires were collected. In total, 155 completed questionnaires were returned.

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The study considered physicians with a high score on the depersonalization and emotional exhaustion subscales along with low scores in personal accomplishment as being professionally burned out.

2.4 DATA Management

Data was entered into a Microsoft Excel sheet and then analyzed using the statistical package for social sciences (SPSS) software program version 25.0. Data were presented as tables and graphs, as suitable. For descriptive analysis, numerical data were expressed as mean \pm standard deviation, whereas categorical data were expressed as frequencies and percentages. Student t-test and ANOVA were used to compare scores between two groups, whereas Chi-square test was used to compare categorical data. Spearman correlation coefficient was used to study the correlations between variables. Results were considered

statistically significant at a p-value less than 0.05 and highly significant at p-value less than 0.001.

3. RESULTS

The mean age of the physicians was 29.01 ± 2.62 years and ranged between 26 and 37 years. Moreover, 62.6% of the attendants were females and more than three fourths of them were working in urban areas (79.4%). Meanwhile, the mean years of experience after graduation was 4.82 ± 2.19 years. 78.7% of the physicians perceived their salary as satisfactory. Also, 28.4% of the physicians were smokers (Table 2). The mean number of encountered patients weekly was 168.8 ± 38.09 patients. About 75% of the physicians attended night shifts. Moreover, about two-thirds of the physicians had considered changing their job at least once (63.2%) (Table 3).

Table 2. Socio-demographic characteristics of the studied sample

Variables	N (%)
Age	
mean \pm SD	29.01 \pm 2.621
median (range)	28 (26-37)
Gender, n (%)	
Male	58 (37.4)
Female	97 (62.6)
Setting of the practice, n (%)	
Urban	123 (79.4)
Rural	32 (20.6)
Marital status, n (%)	
Single	41 (26.5)
Married	114 (73.5)
Years since qualification	
mean \pm SD	4.82 \pm 2.19
median (range)	4 (2 - 11)
Years in current workplace	
mean \pm SD	2.916 \pm 1.99
median (range)	2 (1 - 9)
Earning from all practice	
Not satisfactory	33 (21.3)
Satisfactory	122 (78.7)
Smoking, n (%)	
Absent	111 (71.6)
Present	44 (28.4)
Increased consumption of tobacco during the last year	
No	140 (90.3)
Yes	15 (9.7)

Table 3. Characteristics related to workplace

Variables	N (%)
No of patients/ week	
mean \pm SD	168.8 \pm 38.09
median (range)	170 (100 – 230)
Average sleeping hours/ week	
4 – 8 hrs	80 (51.6)
> 8 hrs	75 (48.4)
Working in night shifts	
No	40 (25.8)
Yes	115 (74.2)
Frequency ofweekendsa year are you off	
mean \pm SD	36.93 \pm 10.14
median (range)	36 (18 – 48)
Frequency of sickleave days last year	
mean \pm SD	16.92 \pm 18.01
median (range)	14 (0 – 80)
Considering changing job at least once over the past months	
No	57 (36.8)
Yes	98 (63.2)

The results showed that about 80% of the physicians had high grade emotional exhaustion and 16.8% had moderate grade emotional exhaustion while only about 4% had low grade emotional exhaustion. Also, they showed that 65.8% of the physicians had high grade depersonalization while 34.2% had moderate grade depersonalization while no participant had low grade depersonalization. Additionally, it was found that about 80% of the physicians had low grade personal accomplishment while 7.7 % had moderate grade personal accomplishment and about 12.9 % had high grade personal accomplishment. After summation of results, it was found that the burnout prevalence, among the studied sample, was 65.8% (Figures 1-4).

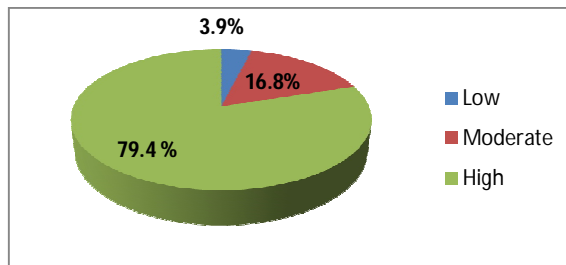


Figure 1. distribution of emotional exhaustion domain among the studied physician

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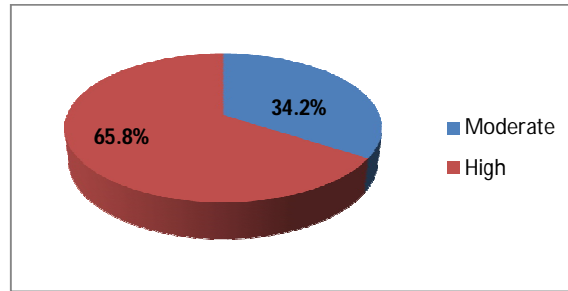


Figure 2. distribution of depersonalization domain among the studied physician

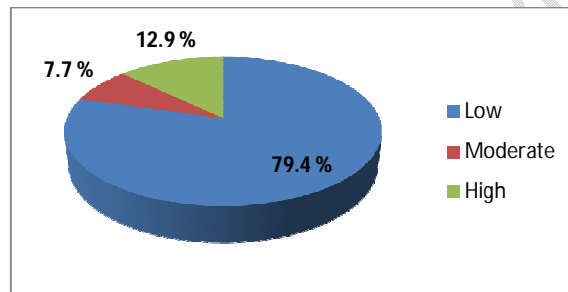


Figure 3. Distribution of personal accomplishment domain among the studied physician

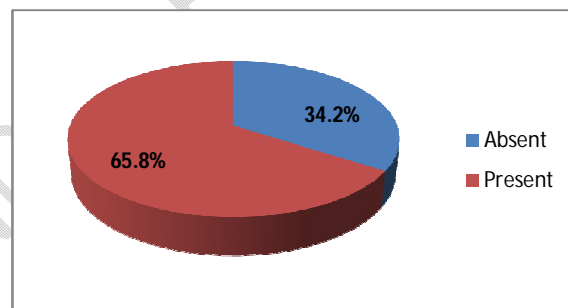


Figure 4. Prevalence of burnout among the studied sample.

It was found that high degree of emotional exhaustion was significantly higher among female physicians and those who work in urban family health center and physicians who perceive their salary as unsatisfactory. Also, the high degree of emotional exhaustion was significantly higher among physicians who had lower sleeping hours per day. Moreover, participants with high emotional exhaustion were found to have more night shift and more sick leave days (Tables 4&5).

Table 4. Association between emotional exhaustion domain and socio-demographic characteristics of the physicians

Variables	Emotional exhaustion			P-value
	low degree burnout. (n= 6)	moderate degree burnout. (n=26)	High degree burnout. (n=123)	
Age, median (range)	29 (29 – 29)	29 (27 – 37)	28 (26 – 35)	0.079 ^a
Gender, n (%)				
Male	6 (100)	6 (23.1)	46 (37.4)	0.002 ^{*c}
Female	0 (0)	20 (76.9)	77 (62.6)	
Setting of the practice, n (%)				
Urban	6 (100)	26 (100)	91 (74)	0.005 ^{*c}
Rural	0 (0)	0 (0)	32 (26)	
Marital status, n (%)				
Single	0 (0)	14 (53.8)	27 (22)	0.001 ^{*c}
Married	6 (100)	12 (46.2)	96 (78)	
Years since qualification, median (range)	5 (5 – 5)	5 (3 – 9)	4 (2 – 11)	0.107 ^a
Years in current workplace, median (range)	2 (2 – 2)	2 (1 – 6)	3 (1 – 9)	0.128 ^a
Salary				
Satisfactory	6 (100)	12 (46.2)	15 (12.2)	<0.001 ^{*c}
Not satisfactory	0 (0)	14 (53.8)	108 (87.8)	
Smoking, n (%)				
Absent	6 (100)	18 (69.2)	87 (70.7)	0.287 ^c
Present	0 (0)	8 (30.8)	36 (29.3)	
Increased consumption during the last year				
No	6 (100)	26 (100)	108 (87.8)	0.115 ^c
Yes	0 (0)	0 (0)	15 (12.2)	

^ap-values are based on Kruskal Wallis test. Statistical significance at P < 0.05

^bp-values are based on chi-square test. Statistical significance at P < 0.05

^cp-values are based on Fisher exact test. Statistical significance at P < 0.05

Table 5. Association between emotional exhaustion domain and work-related characteristics among the studied physicians

Variables	Emotional exhaustion			P-value
	Low degree (n=6)	Moderate degree (n=26)	High degree (n=123)	
No of patients/ week, median (range)	152 (130 – 175)	160 (143 – 228)	170 (100 – 230)	0.283 ^a
Sleeping hours/ day				
4 – 8 hrs.	3 (50)	3 (11.5)	74 (60.2)	<0.001 [*]
> 8 hrs.	3 (50)	23 (88.5)	49 (39.8)	
Night shifts				
No	3 (50)	6 (23.1)	31 (25.2)	0.376

Yes	3 (50)	20 (76.9)	92 (74.8)	
Frequency of weekends a year are you off, median (range)	42 (36 – 48)	36 (24 – 48)	36 (18 – 48)	0.253
Frequency of sick leave days last year, median (range)	0 (0 -0)	7 (0 – 15)	15 (0 – 80)	<0.001*
Considering changing job at least once over the past months				
No	3 (50)	3 (11.5)	74 (60.2)	<0.001*
Yes	3 (50)	23 (88.5)	49 (39.8)	

^bp-values are based on chi-square test. Statistical significance at P < 0.05

^cp-values are based on Fisher exact test. Statistical significance at P < 0.05

Regarding the second subscale, it was found that high degree depersonalization was significantly higher among married physicians and those who perceive their salary as unsatisfactory. Moreover, participants with a high degree of depersonalization were found to have more years of working. Physicians with high grade depersonalization had more sick leave days and had considered changing their job at least once over the past months (Tables 6&7).

Table 6. Association between depersonalization domain and socio-demographic characteristics of the physicians

Variables	Depersonalization		P-value
	moderate degree (n=53)	High degree (n=102)	
Age, median (range)	28 (27 – 37)	28 (26 – 35)	0.233 ^a
Gender, n (%)			
Male	21 (39.6)	37 (36.3)	0.683 ^b
Female	32 (60.4)	65 (63.7)	
Setting of the practice, n (%)			
Urban	44 (83)	79 (77.5)	0.417 ^b
Rural	9 (17)	23 (22.5)	
Marital status, n (%)			
Single	26 (49.1)	15 (14.7)	<0.001*^b
Married	27 (50.9)	87 (85.3)	
Years since qualification, median (range)	4 (3 – 9)	4 (2 – 11)	0.297
Years in current workplace, median (range)	2 (1 – 6)	3 (1 – 9)	0.028*
Salary satisfaction			
Satisfactory	21 (39.6)	12 (11.8)	<0.001*^b
Not satisfactory	32 (60.4)	90 (88.2)	
Smoking, n (%)			
Absent	39 (73.6)	72 (70.6)	0.851 ^b
Present	14 (26.4)	30 (29.4)	
Increased consumption during the last year			
No	50 (94.3)	90 (88.2)	0.266 ^b
Yes	3 (5.7)	12 (11.8)	

^ap-values are based on Mann Whitney test. Statistical significance at P < 0.05

^bp-values are based on chi-square test. Statistical significance at P < 0.05

^cp-values are based on Fisher exact test. Statistical significance at P < 0.05

Table 7. Association between depersonalization domain and work-related characteristics among the studied physicians

Variables	Depersonalization		P-value
	moderate degree (n=53)	High degree (n=102)	
No of patients/ week, median (range)	175 (120 – 228)	167 (100 – 230)	0.155 ^a
Average sleeping hours/ week			
4 – 8 hrs	24 (45.3)	56 (54.9)	0.256 ^b
> 8 hrs	29 (54.7)	46 (45.1)	
Working in night shifts			
No	9 (17)	31 (30.4)	0.083 ^a
Yes	44 (83)	71 (69.6)	
Frequency of weekends a year are you off, median (range)	36 (18 – 48)	36 (24 – 48)	0.311 ^a
Frequency of sick leave days last year, median (range)	7 (0 – 80)	15 (0 – 60)	<0.001 ^a
Considering changing job at least once over the past months			
No	32 (60.4)	25 (24.5)	<0.001*
Yes	22 (41.5)	77 (75.5)	

^a p-values are based on Mann Whitney test. Statistical significance at P < 0.05

^b p-values are based on chi-square test. Statistical significance at P < 0.05

^c p-values are based on Fisher exact test. Statistical significance at P < 0.05

Regarding the last subscale, it was found that low degree personal accomplishment was significantly higher among females and married physicians. Also, it was found that high grade of personal accomplishment was significantly higher among physicians who had sleeping hours per day of more than 8 hours. Moreover, participants with a low degree of personal accomplishment were found to have more sick leave days and thoughts of leaving their jobs.

Table 8. Association between Personal accomplishment domain and Socio-demographic characteristics of the physicians

Variables	Personal accomplishment assessment			P-value
	low degree (n= 123)	moderate degree (n=12)	High degree (n=20)	
Age, median (range)	28 (26 – 36)	28.5 (28 – 29)	27 (27 – 37)	0.731 ^a
Gender, n (%)				
Male	43 (35)	12 (100)	3 (15)	<0.001*
Female	80 (65)	0 (0)	17 (85)	^c
Setting of the practice, n (%)				
Urban	91 (74)	12 (100)	20 (100)	0.005* ^c
Rural	32 (26)	0 (0)	0 (0)	
Marital status, n (%)				
Single	24 (19.5)	6 (50)	11 (55)	0.001* ^c
Married	99 (80.5)	6 (50)	9 (45)	

Years since qualification, median (range)	4 (2 – 11)	4.5 (4-5)	3 (3 – 8)	0.653 ^a
Years in current workplace, median (range)	3 (1 – 9)	2 (2 - 2)	1 (1 – 6)	0.120 ^a
Earning from all practice				
Satisfactory	21 (17.1)	6 (50)	6 (30)	0.017* ^c
Not Satisfactory	102 (82.9)	6 (50)	14(70)	
Smoking, n (%)				
Absent	87 (70.7)	12 (100)	12 (60)	0.047* ^c
Present	36 (29.3)	0 (0)	8 (40)	
Increased consumption during the last year				
No	108 (87.8)	12 (100)	20 (100)	0.115 ^c
Yes	15 (12.2)	0 (0)	0 (0)	

^a p-values are based on Kruskal Wallis test. Statistical significance at P < 0.05
^b p-values are based on chi-square test. Statistical significance at P < 0.05
^c p-values are based on Fisher exact test. Statistical significance at P < 0.05

Table 9. Association between personal accomplishment assessment domain and work-related characteristics among the studied physicians

Variables	Personal accomplishment assessment			P-value
	low degree (n= 123)	moderate degree (n=12)	High degree (n=20)	
No of patients/ week, median (range)	165 (100 – 230)	36 (18 – 48)	15 (0 – 80)	0.144 ^a
Average sleeping hours/ week				
4 – 8 hrs	68 (55.3)	9 (75)	3 (15)	0.001* ^b
> 8 hrs	55 (44.7)	3 (25)	17 (85)	
Working in night shifts				
No	34 (27.6)	3 (25)	3 (15)	0.553 ^c
Yes	89 (72.4)	9 (75)	17 (85)	
Frequency of weekends a year are you off, median (range)	36 (18 – 48)	30 (18 – 48)	36 (24 – 48)	0.149 ^a
Frequency of sick leave days last year, median (range)	15 (0 – 80)	0 (0 – 0)	7 (4- 15)	<0.001* ^a
Considering changing job at least once over the past months				
No	27 (21.8)	12 (100)	17 (85)	<0.001* ^c
Yes	97 (78.2)	0 (0)	3 (15.8)	

^a p-values are based on Kruskal Wallis test. Statistical significance at P < 0.05
^b p-values are based on chi-square test. Statistical significance at P < 0.05
^c p-values are based on Fisher exact test. Statistical significance at P < 0.05

There was a positive significant correlation between change in emotional exhaustion and depersonalization ($r = 0.786$) ($p < 0.001$). On the other hand, there was a negative significant correlation between change in personal accomplishment and emotional exhaustion ($r = -0.705$) ($p < 0.001$) and depersonalization ($r = -0.636$) ($p < 0.001$) (Table 10 and Figures 5-7).

Comment [rc10]: can you elaborate on these findings and the implications

Table 10. Correlation between different study outcome measures

Variables	Depersonalization		Personal accomplishment	
	r	p-value	r	p-value
Emotional exhaustion	0.786	<0.001*	-0.705	<0.001*
Depersonalization	-	-	-0.636	<0.001*

^avalues are based on Pearson's correlation coefficient. Statistical significance at $P < 0.05$

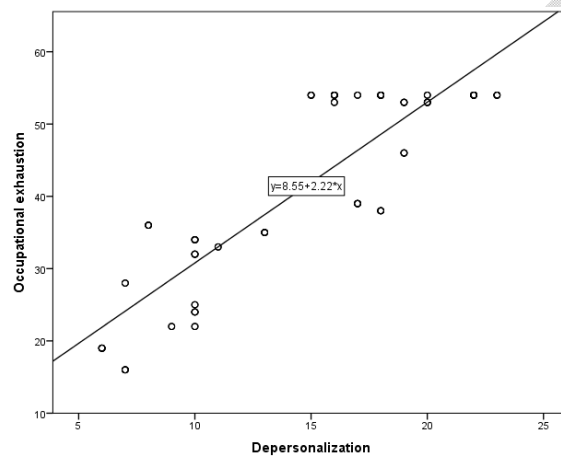


Figure 5. Correlation between emotional exhaustion and depersonalization

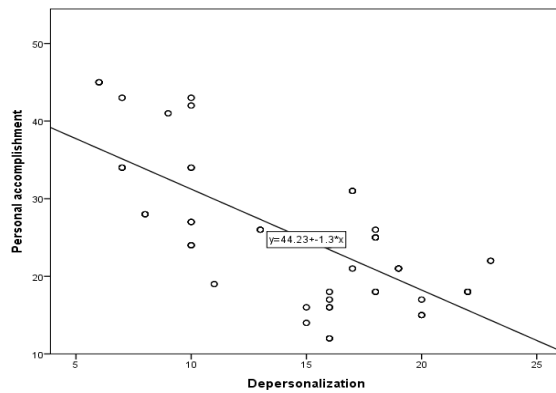


Figure 6. Correlation between personal accomplishment and depersonalization

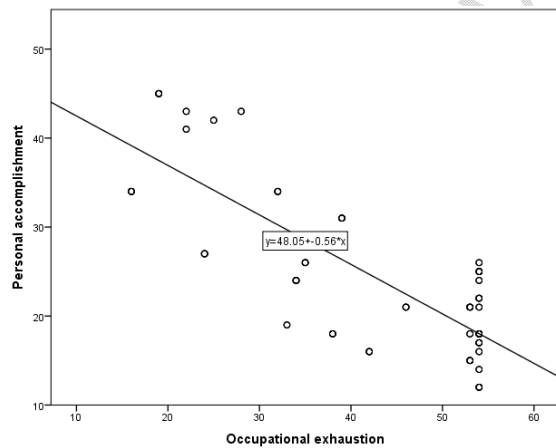


Figure 7. Correlation between personal accomplishment and emotional exhaustion

4. DISCUSSION

In the current study on 155 physicians, the prevalence of burnout was 65.8% among the studied sample with about 80%, 65.8%, and 80% of the subjects displayed high EE, DP, and low PA, respectively. Gender, setting of the practice, marital status, salary, sleeping hours, and working in night shifts were all factors that significantly contributed to physicians' burnout.

Similar high percentages were observed in a study in Iran which assessed the burnout in 539 PHC physicians. Zarei et al. showed that 90.5% of the staff had high DP, 55.3% had high EE, and 98.9% had low PA scores. Also, 52.9% (277 physicians) of the staff suffered from high burnout (12). Similarly, Bawakid et al. reported that 69.5% of physicians, working in PHC centers under ministry of health Jeddah, Saudi Arabia, displayed moderate to severe EE (18). In another study, which assessed burnout and stress amongst interns in Irish

hospitals, Hannan et al, reported that a large percentage (55.4%) of the subjects recruited into this study had high levels of EE, 51.5% had a high level of DP, and 41.6% had a low level of PA (19).

In general, figures of burnout are noticeably variable in the previous literature with regards to different settings in both the developed and developing countries. For example, in a study which compared burnout patterns between hospital physicians and family physicians working in Suez Canal University Hospitals in Egypt, Kotb et al. showed that the percentage of hospital physicians (53.9%) who met study criteria for burnout (A "high" score on at least 2 of the three dimensions of MBI) was higher than family physicians who met the same criteria (41.94%) with a statistical significant difference ($p=0.00$) (7). This study included only 31 family physicians, hence the lower prevalence of burnout syndrome compared to the current study. The current study showed high prevalence of burnout syndrome and high scores in the 3 parts of burnout. That might be explained by the effect of implementation of the new health insurance system in Port Said governorate, it was noted that there was a change in the environment of care including increased workload, clerical task performance, use of electronic health records, engagement in practice change initiatives, and the rising complexity of primary care practice. All these factors contributed to the increased levels of burnout reported by many health care professionals and the considerable challenges they faced.

Comment [rc11]: please rephrase

In a study in the USA, the incidence of EE has been reported to vary from 19.5% to 34.4%, DP to vary from 6.0% to 26.9%, and PA to vary from 28.2% to 38.68% (16). Similarly, in a large study to assess burnout in European family doctors (The EGPRN study), it has been reported that among PCPs in 12 European countries, 43%, 35%, and 32% of the participants displayed EE, DP, and PA, respectively (20). One possible reason for this relatively lower range of prevalence is the differences in socio-economic status of the regions and participants.

Even two provinces in the same country may exhibit different prevalence of burnout. For example, two studies from Saudi Arabia (Asir and Al Ahsa) assessed burnout among physicians working in primary health care centers and showed that 29.5% of participants in one study scored high in the EE part compared to 47.3% of participants in the second study. In addition, 15.7% and 51.3% of the participants scored high in DP part, respectively. Also 19.7% and 59.7% had diminished PA, respectively (21,22). The study in Asir included 370 physicians, the majority were males (81.9%) and married (91.1%) and this might have caused the lower burnout compared to Al Ahsa study which included only 226 physicians and only 68% of them were males.

Another study in Iran showed relatively lower figures of burnout, an average of 15.4% of personnel displayed high frequency in subscale of EE, 14.5% in subscale of DP, and 10.2% in subscale of lack of PA (23). Al-Hashemi et al., Stanetić et al., and Gan et al. reported similar lower figures of burnout syndrome in Oman, Bosnia and Herzegovina, and China, respectively (15–17). Organizational (e.g., organizational climate, management/leadership styles, and communication) and personal (e.g., demographic characteristics, individual attitudes, and personality) factors in health systems might have contributed to these

differences. In addition, the classification of the prevalence rates and the cut-off points for high levels of burnout were very different among various studies.

Comment [rc12]: please summarize and include what you want to emphasize

In the current study, a positive significant correlation between EE and DP ($r=0.876$) ($p<0.001$). On the other hand, there was a negative significant correlation between PA and EE ($r=-0.705$) ($p<0.001$) and DP ($r=-0.636$) ($p<0.001$). Stanetić reported similar correlations in his study of burnout in PHC physicians. EE was significantly correlated with a high level of DP, a low level of PA and a high level of stress ($r=0.380$, $r=-0.174$ and $r=0.574$, $P=0.01$, $P=0.04$ and $P<0.01$, respectively). DP correlated with a low level of PA and a high level of stress ($r=-0.347$ and $r=0.283$, $P<0.01$ and $P=0.01$, respectively), while the level of PA was in a negative correlation with a high level of stress ($r=-0.281$, $P=0.01$) (17).

Comment [rc13]: please explain the findings

In addition to examining the prevalence, there is a vast amount of research in the current literature regarding the factors associated with burnout among PCPs, including inadequate staff, excessive workload, financial strain, inadequate supervision, night work, witnessing death in practice, frequent conflicts among healthcare professionals, stressors in their private life, and a lack of social support (24–26). In the study from Banja Luka, Bosnia and Herzegovina that assessed the presence of stress, burnout syndrome and the most important causes of working stress among physicians in primary health care, Stanetić revealed that the most common causes of stress in the interviewed group of doctors were: administrative burden (43.7%), constant changes to legislation (36.4%), overwork with a large number of patients (36.0%) and health care insurance demands (29.9%) (17).

The mean age of participants in the current study is 29.01 ± 2.621 and we found no statistically significant difference between different grades of the subscales of burnout regarding age. The research does not give a single answer regarding age being a contributor to burnout, some authors say that older ages cause long-term constant contact with patients and increase the level burnout and others refer to younger age to be one of the risk factors of being burned out. Stanetić et al, showed a significant correlation between the level of EE and age using Pearson's coefficient of linear correlation, where older doctors had higher levels of emotional exhaustion compared to younger doctors ($r=0.236$, $P<0.01$) (17). In contrast, another study by Zarei et al., stated that burnout was higher among younger employees (12). Similarly, Picquendar et al. stated that this syndrome is more influential in young professionals who work in high-risk and client-centered fields such as health services (27).

Majority of the studied physicians in the current study were <30 years and most of the sample were of the same age group. Considering the influence of age as a risk factor for burnout syndrome and high levels of stress could be justified by two conflicting theories. First, younger age may be a risk factor for the onset of burnout syndrome and as doctors gain more experience and grow older, the level of stress decreases and therefore the risk of burnout syndrome itself decreases. The other theory is that overworked people and persons exposed to frequent interpersonal conflicts over a long period of time may have emotional exhaustion symptoms to a large extent.

In the current study it was found that high degrees of emotional exhaustion and low degrees of personal accomplishment were significantly higher among female physicians ($p=0.002$ and <0.001 , respectively). No significant difference between males and females regarding degrees of depersonalization were found. Zarei et al., similarly, found EE was significantly higher among female participants ($p= 0.001$) while both males and females displayed comparable grades in DP and PA (12). Additionally, Zarei et al, stated that although gender was not a predictor of high burnout, a higher percentage of female employees suffered from high burnout and emotional exhaustion. In another study by Dreher et al., female GPs scored high on EE ($p = 0.031$) (28) Perhaps this is because women often have a dual role, as both a health care provider and a mother, which can cause stress and depletion of overall energy.

Physicians in urban settings displayed significantly higher EE and lower PA. Additionally, although not significant, they displayed high depersonalization as well. Chowdhury et al., conducted a study to assess the prevalence of burnout syndrome and its related risk factors among physicians working in primary health care centers of the Ministry of Health, Al Ahsa region, Saudi Arabia. The authors reported contradictory findings to the current study. Participants who worked in rural area got higher scores in DP than the participants who worked in urban area ($P = 0.010$) (21).

Both urban and rural settings could be sources of stress and burnout. Patients in urban settings have very high expectations of the health care services and they are very demanding. The current study was conducted after implementation of the health insurance system and patients were expecting major differences in the services provided in PHC centers and units. On the other hand, rural settings also could be a risk factor of burnout. Deficiency of medical staff, travel distance and expenses, and the different culture of patients are factors that make working in rural areas a precipitating factor for burnout.

In the current study, Married participants displayed significantly higher EE ($p=0.001$), higher DP ($p= <0.001$) and lower PA ($p= 0.001$). Similarly, In the study of Kotb et al., there was a statistically significant relationship between burnout and marital status especially in low personal accomplishment domain, the prevalence of burnout was higher in married physicians (59.6%) than in singles ones (39.7%) and the risk of developing burnout was five times more among married women (7). On the contrary, some studies found no differences in burnout scores based on the marital status of participants (29), and that considered marital status as protective factor from burnout (30). Being married might add to burnout due to accumulation of responsibilities. Also, being single might be an important risk factor for burnout. Unmarried workers might have less social and family support in professional issues. Some previous studies have suggested that family and social support have an inhibitory effect on burnout (31).

Sleeping hours and shift work largely affected the level of burnout. Both higher levels of EE and lower levels of PA were significantly associated with sleeping fewer hours ($p=<0.001$

and 0.001, respectively). Participants who had more afternoon shifts significantly scored higher in EE. These findings came in agreement with the previous studies. For example, in their study to assess shift work and burnout among health care workers, Wisetborisut and colleagues found that longer sleeping hours were associated with lower odds of burnout. The odds of burnout in shift workers who slept 6–8 h/day was significantly lower than in those who slept less than 6 h/day (aOR 0.7, 95% CI: 0.5–0.9). Additionally, the prevalence of burnout in shift workers was 25% (95% CI: 23–27) compared with 15% (95% CI: 12–18) in the non-shift work group. Also, shift work had a significant association with EE (aOR 1.7, 95% CI: 1.2–2.3) (32) Shift work is a pattern of work involving rotation through different fixed periods across a working week or month. This may lead to circadian rhythm disruption, job strain and stress.

The number of patients per week was found to have no significant association with subscales of burnout. This was not concordant with the study of Kotb et al. which showed the presence of statistically significant relationship between number of patients seen by the physician per day and burnout as the percent of burnout increased from (43.8%) to (76.7%) with the decrease in number of consulted patients to less than ten per day (7). In the new health insurance system, a nearly fixed number of patients are assigned to each physician every day. This might have caused the number of patients to be not a risk factor of burnout in the current study.

To our knowledge, our study has the strength of being the first study to determine the prevalence of burnout among the family physicians of family health centers and units of Port Said under the authority of the universal health insurance. Additionally, the authors achieved their objectives and assessed the possible contributors to burnout and their association with the subscales of burnout.

5. LIMITATIONS

Due to the cross-sectional nature of the study, strong causal relationships cannot be inferred. This study, like all others using self-report data, participants might have expressed their opinions too strongly or weakly. Interviews could have been a better option, however, that would have required more time of study and was not applicable and limited due to the COVID-19 restrictions. This study was based on the data of a cross-sectional study conducted from June 2021 to December 2021. Waves of the COVID-19 pandemic were hitting the practice in this period which might precipitated the sense of burnout. Additionally, the death of medical colleagues might have been another source of stress and precipitating factor of the sense of burnout. According to the Egyptian Syndicate of physicians, more than 500 physicians died because of the COVID pandemic until April 2021.

6. CONCLUSION

In the current study, a high prevalence of burnout was found among the physicians in PHC centers and units. Gender, setting of the practice, marital status, salary, and sleeping hours were all statistically significantly associated with high emotional exhaustion and low personal accomplishment. Marital status, years of experience, and salary satisfaction were all factors that significantly contributed to physicians' sense of depersonalization. High emotional

exhaustion and depersonalization together with low personal accomplishment significantly associated with increased frequency of sick leave days per year and increased desire or thinking of changing the job among physicians.

Comment [rc14]: same comment in the abstract, please start female instead of gende, rural or urban instead of setting in practice, married instead of marital status etc

CONSENT

Participants had the right to refuse to participate in the study. Participants had the right to withdraw from the study at any time without giving any reason. Participants' data was kept confidential, and any data manipulation or transfer was done using codes. All authors declare that written informed consent was obtained from all participants.

ETHICAL APPROVAL

All procedures of the study were approved by the family medicine department, Suez Canal University. The study protocol was approved by the faculty of medicine ethics committee number 4583. Relevant authorities were contacted for permission to conduct the study in PHC settings affiliated to the Ministry of health and population in Port Said governorate.

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Comment [rc15]: references; follow one format
1. American psychological association format
2. Modern language association
3. Harvard style

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