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Article

Professional quality of life among physicians of tertiary care hospitals: An Egyptian cross-sectional study

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Abstract

Background: Professional quality of life greatly impacts well-being and performance of professionals working in the field of caring. The study aims at assessing the components of professional quality of life and their predictors.

Design and methods: The cross-sectional study was performed on 167 physicians enrolled by using stratified random sampling from tertiary care hospitals, Ismailia, Egypt. It was conducted by a structured interview questionnaire which included Maslach Burnout Inventory to assess burnout syndrome, and Professional Quality of Life version 5 (Pro QOL- 5) subscale to assess compassion fatigue and satisfaction.

Results: Among participants, 78.9% had high burnout, 76% had moderate potential compassion satisfaction and 82% had moderate potential compassion fatigue. The correlation between scales of professional quality of life scores showed significant results ($p<0.05$). The multiple linear regression analysis showed that marital status, frequency of dealing with critical patients, and compassion fatigue score (B= -6.959, B= 3.573, B= 1.115) were significant predictors of burnout score ($p<0.05$). Marital status (B= 2.280, p=0.024), and burnout score (B = 0.179, p=0.000) were significant positive predictors of compassion fatigue. While compassion satisfaction score was negative predictor (B= -2.804, p=0.006). The predictors of compassion satisfaction were the marital status (B = 5.039, p=0.000), and compassion fatigue score (B = -0.254, p=0.006).

Conclusions: High prevalence rates of burnout, compassion fatigue and satisfaction indicating poor professional quality of life were detected among physicians in tertiary care hospitals.

Introduction

The emotional and physical effects of caring within the stressful health care environment are gaining increasing attention. The term "professional quality of life" means the positive and negative emotions that a person feels regarding his or her job as a care giver. Compassion satisfaction (CS), burnout (BO), and compassion fatigue (CF) are components of professional quality of life which can be experienced by workers in service industries who aid persons with problems.[1] Burnout and compassion fatigue are recognized as occupational hazards associated with the medical profession. Hence it is not surprising that physician burnout rates are high.[2] Both burnout and compassion fatigue can aggravate physician mental health with negative effect on the physician satisfaction and his family roles.[3] Also, they are associated with increased rates of medical errors, malpractice risk, physician turnover and subsequently increased healthcare manpower costs.[4]

Compassion fatigue and burnout have been used to describe conditions resulting from being continuously subjected to highly stressful circumstances in a professional capacity.[5] Burnout is caused by chronic stress in the work environment and results in three distinct symptoms; emotional exhaustion (EE), depersonalization (DP), and reduced professional achievement (PA).[6] A cross-sectional study conducted on Egyptian resident physicians at educational hospitals showed that 67.3% had high total burnout score.[5]

While, compassion fatigue is a condition characterized by a gradual lessening of compassion over time that helping professionals can experience over time due to frequent exposure to the suffering throughout their work. It is also known as secondary traumatic stress. Besides, it is common among individuals who work directly with trauma victims such as physicians and nurses especially the first responders.[7] Health care providers who work in the fields of trauma, mental illness, surgery, emergency medicine, obstetrics, and rural general practitioners are particularly at risk of developing compassion fatigue. It can lead to the reduction of self-efficacy and confidence leading to deterioration in performance and work output.[8] On the other hand, compassion satisfaction is the pleasure derived from assisting others, and the level of support obtained from colleagues.[9]

Although the relationship between the three components is not

Significance for public health

Professional quality of life has an impact on performance of caregiver workers. Physicians in tertiary care hospitals are predisposed to different occupational stressors which affects their wellbeing and their work performance which has adverse effect on patient care and health care system. Up to date, no studies were conducted in Egypt to assess the three components of professional quality of life; burnout, compassion fatigue, and compassion satisfaction. Our study shows that most of the participants had high burnout, moderate potential compassion fatigue, and moderate potential compassion satisfaction reflecting poor professional quality of life. So, it highlights the need for urgent implementation of interventional program to increase health-care professionals' understanding and prevention of the risk of burnout and compassion fatigue. This accompanied by conducting screening measures on a regular basis for assessing physician well-being, and satisfaction to improve the professional quality of life of the physicians and their job performance.

yet fully understood, it seems that the triad can represent all major aspects of professional quality of life which is affected by and affects professional well-being and performance.[10,11] A Singaporean cross-sectional study conducted on 332 physicians found that 37% were at high risk of burnout and 7.5% were at high risk of compassion fatigue and only 0.3% had high rate of compassion satisfaction. The findings also showed a poor negative correlation between compassion fatigue and satisfaction.[4] Furthermore, an Israelian study conducted among family practitioners found strong correlations between burnout and compassion fatigue ($r = 0.769$, $p<0.001$), as well as between burnout and compassion satisfaction ($r = -0.241$, $p=0.006$), but no correlation was found between compassion satisfaction and compassion fatigue.[9]

Hence, it is obvious that burnout, compassion fatigue and compassion satisfaction have a major effect on physicians' work performance. Although, many studies conducted in Egypt regarding burnout, to date there have been no published Egyptian studies about compassion fatigue or compassion satisfaction. In addition, the relationship amongst these three dimensions of professional quality of life is not fully understood. To fill this gap, we conducted this work to assess the professional quality of life including burnout, compassion fatigue, and compassion satisfaction among physicians as well as to investigate the relationship among these dimensions and their predictors.

Design and methods

Study design and population

It is a cross-sectional study was carried out between 24th October and 26th December 2020 to assess the three components of professional quality of life; burnout syndrome, compassion fatigue, and compassion satisfaction, among physicians working in Suez Canal University hospitals, Ismailia, Egypt. Both male and female physicians with work experience of at least one year were enrolled in this study.

Sampling

By assuming, the prevalence of burnout syndrome among physicians (89.1%)[3], prevalence of compassion fatigue among physicians (7.5%), prevalence of compassion satisfaction among physicians (0.3%)[4], at the level of significance of 95%, the sample size was 150 and with 10% non-response rate, the calculated sample size was 167 participants. It is calculated by Epi-info (Epidemiological Information Package) software ver. 7. Stratified random sampling technique was used to recruit physicians to participate in the study. Departments of Suez Canal University hospitals were categorized into surgical and medical departments and then, a representative sample was drawn from both categories using simple random sampling technique.

Data collection methods

Back-to-back translation of the questionnaire from English to Arabic language was conducted then it was revised by an expert of public health. A pilot study was conducted on 15 participants who were excluded from the study results, to ascertain the clarity, and applicability of the study tool. It also helped to estimate the time needed to fill in the questionnaire. Based on the received feedback we modified some questions. An informed consent was obtained from all study participants before joining in the study. Then physicians who recruited in the study were interviewed to fill in the study questionnaire. The data were collected by face to face interview using by a structured interview questionnaire.

The questionnaire included four parts:

Sociodemographic data included gender, age, residence, educational level, marital status, smoking status, practice of regular physical activity.

Occupational history included professional designation, specialty, and previous exposure to workplace violence and its type, and, frequency of dealing with critically ill patients.

Assessment of burnout syndrome: Burnout syndrome was assessed by the Maslach Burnout Inventory (MBI).[12] It has become the almost universally accepted gold standard to assess burnout due to its high reliability and validity.[13] MBI has 3 subscales: emotional exhaustion, depersonalization, and per-

Table 1. Descriptive statistics of the studied participants (n=167).

Variables	Frequency	%
Gender (male)	68	40.7
Female	99	59.3
Age (years), mean (SD)	32.35 (5.44)	
Residence (rural)	8	4.8
Urban	159	95.2
Marital status (single)	61	36.5
Married	105	62.9
Widow	1	0.6
Educational level		
Bachelor's degree	56	33.5
Master's degree	50	29.9
Doctorate degree	61	36.5
Medical or surgical staff		
Medical staff	98	58.7
Surgical staff	69	41.3
Job		
Resident	52	31.1
Demonstrator	14	8.4
Assistant lecturer	43	25.7
Lecturer	52	31.1
Assistant professor	5	3
Professor	1	0.6
Smoking status (non-smoker)	152	91
Smoker	15	9
Smoking years	5.65	4.70
No. of cigarettes a day	11.41	11.40
Regular physical activity (yes)	51	30.5
Frequency of physical activity per week (n=51)		
Once	17	33.3
Twice	16	31.4
3 times	12	23.5
4 times	6	11.8
Exposure to violence during work (no)	45	26.9
Yes	123	73.7
Type of violence (n=123)		
Physical	6	4.9
Verbal	94	76.4
Physical and verbal	20	16.3
Physical and sexual	1	0.8
All types of violence	2	1.6
Frequency of dealing with critical patients		
Never	5	3
Many times a year	18	10.8
Once a month	26	15.6
Once a week	29	17.4
Once a day	25	15
More than one time a day	64	38.3

sonal accomplishment. The MBI includes 22 items with a 7-point Likert-type rating scale ranging from "never" (=0) to "daily" (=6). Subscales were classified into low, average and high level of burnout. On the total burnout scale scores of 1-33 are considered as low, 34-66 as average and 67-99.9 as high level of burnout.[14]

Assessment of compassion fatigue and compassion satisfaction: Compassion fatigue and compassion satisfaction were assessed by the Professional Quality of Life version 5 (Pro QOL- 5) subscale for compassion fatigue and compassion satisfaction. It measures how frequently each item was experienced in the last 30 days. It includes 10 statements corresponding to each subscale and is scored on a 6-point Likert scale, ranging from "never (0)" to "very often (5)". Regarding compassion fatigue, scores of 22 or less indicate low potential for compassion fatigue, scores between 23 and 41 represent moderate potential, and scores above 41 indicate high potential. Regarding compassion satisfaction, scores of 22 or less indicate low potential for compassion satisfaction, scores between 23 and 41 represent moderate potential, and scores above 41 indicate high potential.[10]

Table 2. Subscales of burnout and dimensions of professional quality of life among studied physicians (n=167).

Variables	No.	%
Emotional exhaustion grades		
Low	15	9
Average	27	16.2
High	125	74.9
Emotional exhaustion score, mean (SD)	34.41(11.61)	
IQR (median)	17(36)	
Depersonalization grades		
Low	44	26.3
Average	33	19.8
High	90	53.9
Depersonalization score, mean (SD)	13.06 (7.87)	
IQR (median)	12(13)	
Reduced personal accomplishment grades		
Low	38	22.8
Average	42	25.1
High	87	52.1
Personal accomplishment score, mean (SD)	30.82(8.98)	
IQR (median)	13 (31)	
Total burnout grades		
Low	6	3.6
Average	29	17.5
High	131	78.9
Total burnout score, mean (SD)	78.29 (17.90)	
IQR (median)	23 (79)	
Compassion satisfaction grades		
Low potential	11	6.6
Moderate potential	127	76
High potential	29	17.4
Compassion satisfaction score, mean (SD)	34.33(7.32)	
Compassion fatigue grades		
Low potential	27	16.2
Moderate potential	137	82
High potential	3	1.8
Compassion fatigue score, mean (SD)	29.78(6.81)	

Correlation matrix of the professional quality of life subscale

Subscales of burnout Spearman's rho	Total burnout		Compassion satisfaction		Compassion fatigue	
	r	p value	r	p value	r	p value
Emotional exhaustion	0.869	0.000*	-0.268	0.000*	0.503	0.000*
Depersonalization	0.646	0.000*	-0.373	0.000*	0.365	0.000*
Personal accomplishment	0.211	0.000*	0.589	0.000*	-0.121	0.189
Total burnout		-0.095	0.223	0.454	0.000*	
Compassion satisfaction				-0.163#	0.035*	

IQR, interquartile range; #Pearson correlation; *p<0.05.

Statistical analysis

Data entry and statistical analysis were performed using the Statistical Package for Social Science (SPSS) software program version 22. Descriptive statistics were applied in the form of tables and graphs as appropriate. Student's *t*-test was used for quantitative normally distributed variables, and Mann Whitney U test was used for not normally distributed variables. Chi-square test was used for qualitative variables. Correlation between compassion fatigue, burnout, and compassion satisfaction was calculated using Pearson's correlation or Spearman's rho correlation. Multiple linear regression analysis was used for assessing for risk factors. Statistical significance was set at $p<0.05$.

Results

Table 1 shows that 40.7% of the studied physicians were male, the mean of participants' age was 32.35±5.44 years. Most of the participants (62.9%) were married, 58.7% were medical staff and 41.3% surgical staff. Most of participants (91%) were non-smokers. About thirty percent have practiced physical exercise regularly. Most of the studied physicians (73.7%) were reported exposure to violence during work, 76.4% of violence was verbal. Among studied participants, 38.3% were dealing with critical patients more than one time a day.

The MBI subscales of burnout and the three components of quality of life was presented in Table 2. Many of the studied physicians (74.9%) had high emotional exhaustion. The mean of emotional exhaustion score was 34.41±11.61. Nearly half of the studied physicians (53.9%) had high depersonalization. The mean of depersonalization score was 13.06±7.87. Also, approximately half of participants (52.1%) had highly reduced personal accomplishment. The mean of personal accomplishment score was 30.82± 8.98. Regarding burnout, 78.9% had high burnout. The mean of total burnout score was 78.29±17.90, while, 76% had moderate potential compassion satisfaction and the mean of the score was 34.33±7.32. In addition, 82% had moderate potential compassion fatigue and the mean of the score was 29.78±6.81. Table 2 also demonstrates the correlation between these scores, it shows positive significant correlations between the three MBI subscales (emotional exhaustion, depersonalization, and personal accomplishment) and total burnout score ($r = 0.869$, $r = 0.646$, $r = 0.211$ respectively). While, total burnout score had significant moderate positive correlation with compassion fatigue ($r = 0.454$). On the other hand, compassion fatigue had a significant negative correlation with compassion satisfaction ($r = -0.163$).

The univariate analysis of risk factors of MBI subscales of burnout are demonstrated in Table 3. Regarding emotional exhaustion; marital status, educational level, regular physical activity, and

Table 3. Univariate analysis of risk factors of Maslach Burnout Inventory subscales of burnout (n=167).

Risk factors	Emotional exhaustion mean ±SD (median)	p-value	Depersonalization mean ±SD (median)	p-value	Personal accomplishment mean ±SD (median)	p-value
Gender						
Male	34.01±11.41 (36)	0.717	14.21± 7.37(14.5)	0.113	32.19± 8.63 (33)	0.113
Female	34.68± 11.79 (36)		12.27± 8.14(13)		29.88± 9.15 (29)	
Residence						
Rural	30.25± 11.84 (30.5)	0.308	13.13± 6.60 (14.5)	0.810	28.50± 8.60 (29.5)	0.488
Urban	34.62± 11.59 (36)		13.06± 7.95 (13)		30.94± 9.01 (31)	
Marital status						
Single	37.70± 10.87 (40)	0.006*	16.62± 7.81 (17)	0.000*	28± 8.96 (28)	0.001*
Married or widow	32.51± 11.64 (33.5)		11.01± 7.18 (12)		32.44± 8.63 (34.5)	
Educational level						
Bachelor's degree	35.88± 10.73 (36)	0.005*	16.30± 7.70 (16)	0.000*	28.27± 8.65(29)	0.000*
Master's degree	37.54±11.34 (41)		14.08± 7.46 (14.5)		28.24±8.20 (28)	
Doctorate degree	30.49± 11.67 (32)		9.25± 6.79 (8)		35.28±8.24 (38)	
Medical or surgical staff						
Medical staff	33.79± 11.68 (35.5)	0.499	11.31± 7.93 (12)	0.001*	31.94± 8.44 (32.5)	0.086
Surgical staff	35.29± 11.52 (36)		15.55± 7.12 (15)		29.23± 9.55 (19)	
Smoking status						
Smoker	36.17± 9.45 (36.5)	0.704	18.41± 7.83 (18.5)	0.029*	30.67± 8.42 (29.5)	0.541
Non-smoker	34.32± 11.87 (36)		12.53± 7.74 (13)		30.72± 9.08 (31)	
Ex-smoker	31.67± 3.79 (30)		18.67± 6.66 (17)		36.33± 5.77 (33)	
Regular physical activity (n=51)						
Yes	30.45± 11.90 (31)	0.004*	10.80± 6.47 (11)	0.021*	31.35± 9.51 (30)	0.543
No	30.59± 8.77 (31)		36.15± 11.08 (38)		14.05± 8.25 (13.5)	
Exposure to violence during work						
Yes	35.36± 10.91 (36)	0.149	14.25± 7.84 (14)	0.001*	30.31± 8.27(35)	0.175
No	31.82± 13.09 (33)		9.82± 7.09 (10)		32.20± 10.67 (30)	
Frequency of dealing with critical patients						
Never	26.60± 12.30 (27)	0.000*	6.20± 5.31 (3)	0.000*	25.20±13.81 (24)	0.815
Many times a year	28.89± 12.33 (29)		7.56± 7.20 (5)		32.72± 8.57 (34)	
Once a month	28.73± 9.83 (30)		13.27± 7.05 (13)		31.12± 8.05 (31.5)	
Once a week	31.97± 9.35 (34)		11± 5.98 (12)		29.59± 9.01 (30)	
Once a day	34.56± 12.39 (38)		13.28± 6.39 (13)		31.48± 9.76 (33)	
More than one time a day	39.92± 10.39 (42.5)		15.91± 8.59 (16)		30.90± 8.84 (30)	

IQR, interquartile range; *p<0.05.

frequency of dealing with critical patients were statistically significant risk factors; while, marital status, educational level, type of specialty either medical or surgical staff, smoking status, regular physical activity, exposure to violence during work, and frequency of dealing with critical patients were significant risk factors for depersonalization. As regards personal accomplishment; marital status, and educational level were significant risk factors.

Univariate analysis for risk factors of the three dimensions of professional quality of life is summarized in Table 4. The significant risk factors of burnout were marital status, regular physical activity, exposure to workplace violence, and frequency of dealing with critical patients. While for compassion fatigue they were gender, educational level, exposure to violence during work and frequency of dealing with critical patients. And for compassion satisfaction; marital status and educational level were the significant risk factors. The multiple linear regression analysis of risk factors of the three components of professional quality of life are illustrated in Table 5. The significant predictors of burnout score ($p<0.05$)

Table 4. Univariate analysis of risk factors of dimensions of professional quality of life (n=167).

Risk factors	Total burnout		Compassion fatigue		Compassion satisfaction	
	mean SD	p-value	mean SD	p-value	mean SD	p-value
Gender						
Male	80.41(15.28)	0.249 a	28.25(6.60)	0.016*	35.10(8.07)	0.259
Female	76.83(19.43)		30.83(6.79)		33.80(6.75)	
Residence						
Rural	71.88(23.17)	0.431a	26.75(6.96)	0.198	30.75(7.25)	0.157
Urban	78.61(17.62)		29.93(6.79)		34.51(7.30)	
Marital status						
Single	82.33(18.70)	0.020 a*	29.67(6.70)	0.879	31.39(8.44)	0.000*
Married or widow	75.96(17.08)		29.84(6.91)		36.02(6.01)	
Educational level Bachelor's degree						
Master's degree	80.45(20.30)	0.144 b	30.38(5.77)	0.003*	33.27(7.73)	0.001*
Doctorate degree	79.86(15.02)		31.82(7.20)		32.16(7.76)	
	75.02(17.52)		27.56(6.84)		37.08(5.62)	
Medical or surgical staff						
Medical staff	77.03(17.66)	0.150 a	30(7.41)	0.604	35.07(7.23)	0.119
Surgical staff	80.07(18.21)		29.46(5.89)		33.28(7.37)	
Smoking status						
Smoker	85.25(18.17)	0.302b	28.67(3.58)	0.826	34.67(7.06)	0.490
Non-smoker	77.57(17.91)		29.85(7.06)		34.40(7.36)	
Ex-smoker	86.67(10.41)		30.67(3.79)		29.33(6.43)	
Regular physical activity						
Yes	72.61(17.96)	0.013 a *	28.76(5.86)	0.203	34.59(7.87)	0.763
No	80.78(17.36)		30.22(7.17)		34.22(7.10)	
Exposure to violence during work						
Yes	79.93(16.81)	0.045 a *	30.57(6.63)	0.014*	34.15(6.94)	0.599
No	73.84(20.08)		27.64(6.92)		34.82(8.33)	
Frequency of dealing with critical patients						
Never	58(27.94)	0.000 b *	28.40(6.95)	0.009*	32(7.11)	0.531
Many times a year	69.17(15.73)		27.89(7.61)		36.28(4.99)	
Once a month	73.12(12.73)		27.58(5.74)		34.08(7.37)	
Once a week	72.56(19.20)		29.62(7.19)		35.90(6.79)	
Once a day	79.32(17.96)		27.64(7.51)		34.20(8.27)	
More than one time a day	32.22(5.92)		33.41(7.72)		86.73(14.87)	

[a]Mann-Whitney Test; [b]Kruskal-Wallis Test; *$p<0.05$.

Table 5. Multivariate linear regression analysis of dimensions of professional quality of life (n=167).

Predictors	Burnout score			Compassion fatigue score			Compassion satisfaction score		
	Unstandardized	t	p-value	Unstandardized B	t	p-value	Unstandardized B	t	p-value
Marital status	-6.959	-2.807	0.006*	2.280	2.275	0.024*	5.039	4.450	0.000*
Exposure to violence during work	0.009	0.003	0.997	2.008	1.910	0.058	0.458	0.366	0.715
Frequency of dealing with critical patients	3.573	4.623	0.000*	0.059	0.179	0.858	-0.337	-0.869	0.386
Compassion satisfaction score	0.312	1.893	0.060	-0.183	-2.804	0.006*			
Compassion fatigue score	1.115	6.340	0.000*	-	-	-	-0.254	-2.804	0.006*
Burnout score	-	-	-	0.179	6.340	0.000*	0.070	1.893	0.060

R Square for burnout model is 0.356, R Square for compassion fatigue model is 0.286, R Square for compassion satisfaction model is 0.141; *$p<0.05$.

were marital status, frequency of dealing with critical patients, and compassion fatigue score (B= -6.959, B= 3.573, B= 1.115). The significant positive predictors of compassion fatigue were marital status (B= 2.280, p=0.024), and burnout score (B = 0.179, p 0.000). While compassion satisfaction score was negative predictor (B= -2.804, p=0.006) for compassion fatigue. With regards to compassion satisfaction, the predictors were marital status (B = 5.039, p=0.000), and compassion fatigue score (B = -0.254, p=0.006).

Discussion

Healthcare workers, especially physicians, experience different strains throughout their career which can evoke a continuous state of stress. Such unmanaged stress can develop to exhaustion, burnout, low professional satisfaction. Likewise, compassion fatigue is another occupational hazard for physicians due to the highly demanding and helping nature of their profession. Accordingly, this can result in numerous problems, not only for the physician, but also for his patients, employer organization, and the healthcare system in general.[15]

The present research formulated to evaluate the professional quality of life including burnout syndrome, compassion fatigue, and compassion satisfaction among physicians and to study the relation between these components as well as to assess the predic tors of physician professional quality of life.

The current study showed that more than three quarter of studied physicians (78.9%) met the criteria for high burnout (Table 2). Regarding MBI subscales, the emotional exhaustion was the most affected one with almost three quarter of respondents exhibited high emotional exhaustion (74.9%). This followed by depersonalization where around half of the participants scored high for it (53.9%). The lowest level was the reduced personal accomplishment by being presented in 22.8% of participants (Table 2). This high prevalence could be attributed to several reasons. The physicians are considered the least likely personnel to acknowledge that they are under stress themselves despite living very stressful conditions. Furthermore, physicians frequently deal with challenges of provision high-quality clinical services in the face of decreasing resources. They also bear the responsibility of making the correct diagnosis and providing proper management, and working for long hours, with continuous medical education. Besides, the current study was conducted during the period of the second wave of coronavirus disease (COVID-19) pandemic in Egypt, where healthcare workers were experiencing a very high workload and various psychosocial stressors. On the other hand, the self-care and coping usually do not comprise a part of the physician's professional training and are commonly the last ones on their list of priorities.

Similarly, an Egyptian study showed that 39.7% of physicians had high score on emotional exhaustion; while 22.6% experienced high level of depersonalization and most of them (99.2%) had high level of reduced personal accomplishment. As regards total burnout, 66.5% of physicians had moderate burnout and 22.6% had high burnout.[3]

Another work by Abbas *et al.*[6] demonstrated low prevalence of high burnout among 147 Egyptian physicians working in intensive care units in Canal health sector (29.9%), with nearly half of the participated physicians experienced moderate burnout. Moreover, a national survey evaluated burnout among US physicians from multiple specialties and revealed that approximately quarter of the participants (23%) suffered from high burnout.[16] These variations in the reported prevalence rates may probably be explained by discrepancies in work circumstances, the nature of the country health care system, available resources, the culture and awareness of both patients and health care providers.

The results of the present study showed that the mean CF score was 29.78±6.81with more than three quarters of participants (82%) suffered from moderate potential compassion fatigue. While, the mean CS score among physicians was 34.33±7.32 and most of them showed moderate potential compassion satisfaction (76%) (Table 2). The possible reason for this finding could be the deficient knowledge and awareness of health care providers about of the issue of compassion fatigue and its consequences, and management.

This finding was inconsistent with that of Ghazanfar *et al*.,[17] which revealed lower mean compassion fatigue in Pakistani physicians working in tertiary care hospitals (25.97±6.39) compared to our study, whereas, the mean compassion satisfaction among the same participants was higher (39.13±5.54) compared to present study. Though, an American cross-sectional study on pediatric critical care providers displayed lower prevalence of compassion fatigue (25.7%), and compassion satisfaction (16.8%).[18].

In the current research the total burnout score was positively correlated with compassion fatigue (r = 0.454). While, burnout was not associated with compassion satisfaction. Besides, compassion fatigue was negatively correlated with compassion satisfaction (r = -0.163) (Table 2), demonstrating that an increase of CF may overcome the professional's sensation of efficacy preventing the physician from feeling CS. Moreover, compassion fatigue could be partially controlled through augmenting the sense of compassion satisfaction.

In coherence with this result, Rossi *et al*.[19] reported a significant positive correlation between BO and CF (r=0.4797), whereas there was a negative correlation between CF and CS (r= 0.159). This also agrees with prior study of Chan *et al.*[4] which showed positive correlation between compassion fatigue and burnout (r = 0.503, p<0.001), while there was a negative correlation between compassion fatigue and compassion satisfaction (r = -0.446, p<0.001).

Furthermore, our study showed no statistically significant differences across medical and surgical specialties as regard both burnout and CF. This finding indicates equal risk of compassion fatigue and burnout among physicians of different specialties. On contrary, Shanafelt *et al*.[20] indicated significant differences in burnout among enrolled specialties with higher prevalence of burnout amongst physicians at emergency medicine, general internal medicine, and family medicine departments. While an Italian study found high burnout levels in the surgery unit and suggested that the economic crisis might be the cause behind the reported high burden of burnout among health care workers.[21]

According to this study, it was observed that dealing with critical patients and suffering from compassion fatigue were significant positive predictors for burnout. While, marital status was negative predictor (Table 5). Also, lack of regular physical exercise, and exposure to workplace violence were statistically significant risk factors for burnout, with higher mean score was detected among physicians who were single, not practicing any physical exercise, dealing with critical patients more than one time a day (Table 4). This corresponds with Wang *et al*.[22] who reported that marital status was negative predictor of burnout. Likewise, Abdo e*t al*.[3] indicated that dealing with critically ill and dying patients and frequency of exposure to violence at work significantly associated with burnout syndrome. This finding also agrees with previous studies of Biksegn *et al*.[23] and Kobayashi *et al*.[24] which reported significant association between burnout and workplace violence. This result is in line with Miranda Alvares *et al*.,[25] who reported that not exercising frequently is associated with a high level of emotional exhaustion. This could attributed to the variations in a variety of neurotransmitters and neuromodulators caused by exercise, resulting in improved energy and mood.[26] Also, daily

physical exercise promotes psychological isolation from work with lowering the likelihood of long-term stress responses like burnout.[27]

As regard compassion fatigue, our study revealed that marital status and experiencing burnout were significant positive predictors, whereas the compassion satisfaction score was negative predictor (Table 5). Additionally, gender, educational level, exposure to violence during work and frequency of dealing with critical patients were significant risk factors of compassion fatigue with higher levels were found among females, physicians having master's degree, and physicians dealing with critical patients more than one time a day (Table 4). This finding establishes that caring for others especially very ill patients lead to feelings of helplessness and frustration making the physicians to detach from their own emotions and lastly develop compassion fatigue. In line with our findings, Ruiz-Fernández *et al*.[28] found that being married is a significant predictor of having a higher compassion fatigue. This demonstrates that despite being a source of social support, the family and marriage can be a source of unavoidable stress, and frustration which ultimately overwhelm the health care workers and make them more vulnerable to CF. Also, a study by Adeyemo *et al*.[29] agreed with our finding in that the experience of workplace violence was significantly correlated with secondary traumatic stress. While Hunsaker *et al*.[30] failed to detect any significant relation between CF the educational level. Concerning compassion satisfaction, marital status and being married was significant positive predictor and compassion fatigue was significant negative predictor (Table 5). Also, educational level and having doctorate degree was significant risk factor (Table 4).

Similarly, Wang *et al*.[20] found that marital status and being married was positively associated with compassion satisfaction. It is likely that the social support offered in marital relationships explains why it has the potential to minimize stress at work and increase compassion satisfaction. Moreover, Hunsaker *et al*.[28] reported that participants having higher level of educational background exhibited higher CS levels.

Study limitations

The current work has a limitation that it was a cross-sectional design which did not permit determination of causality. Thus, future research should involve longitudinal studies to consider the detected cause–effect relationships. Also, we used back-to-back translated Professional Quality of Life version 5 (Pro QOL- 5) subscale to assess compassion fatigue and compassion satisfaction. The questionnaire was revised by public health expert. In addition, a pilot study was performed to test our questionnaire. However, future research should involve use of a validated version of the questionnaire to ensure the perfect and real presentation of the psychometric properties of the questionnaire.

Conclusions

Most of the surveyed physicians experienced high burnout, moderate potential compassion fatigue, and moderate potential compassion satisfaction reflecting poor professional quality of life. There was a moderate positive correlation between burnout and compassion fatigue whereas, there was a weak negative correlation between compassion fatigue and compassion satisfaction with significant predictors for each component.

Recommendations

Our results highlight the need for urgent implementation of orientation program to increase health-care professionals' understanding of the risk of burnout and compassion fatigue. This accompanied by conducting screening measures on a regular basis for assessing physician well-being, and satisfaction. Also, support should be provided for affected physicians to increase their life satisfaction and self-compassion as well as stress reduction in form of mindfulness courses, cognitive behavioral therapy, acceptance and commitment therapy, as well as behavioral activation techniques. Physicians should be encouraged to exercise regularly to reduce stress responses. It is also necessary to implement effective workplace violence reduction strategies in all health care settings. Based on our finding that compassion satisfaction can act as a protective factor against compassion fatigue, interventions promoting compassion satisfaction should be applied.

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