

Compassion satisfaction and fatigue among healthcare professionals in the emergency medical services during the COVID-19 pandemic

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Abstract

Background: The Covid-19 pandemic, has exposed healthcare professionals to higher levels of psychological distress, especially compassion fatigue (CF) which includes syndromes (burnout (BO) and secondary traumatic stress (STS). Our study aims to assess satisfaction (CS) among healthcare professionals (HCP) through the Professional Quality of Life score.

Materials and Methods: We conducted a cross-sectional study on 64 HCPs who had worked in the emergency medical services (EMS), named “Service d’Aide Médicale Urgente“ (SAMU) in French during the period from 1/03/2020 to 1/06/2021. We used an unsupervised and self-administrated survey for the self-assessment of the professional quality of life using the ProQOL V.

Results: The mean score of CS, BO, and STS were 34.4 ± 6.566 ; $28.59 \pm 6.19.7$, and 31.56 ± 4.357 , respectively. The majority of participants presented a medium level of STS, BO, and CS. There were significant differences by profession for CS, with paramedics having the highest score. There was a significant positive correlation between CS and age. CS differed based on whether they were infected or not by COVID-19. Age, comorbidities, professional status, and individual estimation of the risk of contracting covid-19 during work weighted BO. Only sex weighted STS. All three subscales were significantly correlated with each other. CS was negatively correlated with the other subscales. There were positive correlations between STS and BO. In the multiple linear regression model, only BO and the use of safety measures had a significant association with CS. As for BO, the variables with significant weights were comorbidities and CS. As for STS, only sex showed significant weights

Conclusion: Future lines of research and improvement strategies, emerge based on these data to cultivate compassion, empower CPs to prevent CF, and diminish BO and STS and their effects on both professionals and patients.

Keywords: Burnout; Compassion Fatigue; COVID-19; Emergency Medical Services; Quality of Life.

INTRODUCTION

Healthcare professionals (HCPs), especially those who are working in the Emergency Department (ER), witness the pain and agony of their patients daily (1). Providing care in ERs is exhausting for medical and paramedical professionals and may be responsible for physical and emotional distress. Indeed, many studies showed a high prevalence of psychological distress among emergency physicians (EPs) (2).

Repeated exposure to unpredictable challenges in these departments was noted to be responsible for symptoms of anxiety, exhaustion, and stress causing a decrease in the quality of the care provided and a low rate of satisfaction (3). These facts were indeed amplified during the COVID-19 pandemic (4). COVID-19 was recognized in the spring of 2020 as a threat to global health (1). It had a profound impact on all aspects of life, especially, it has an impact on the healthcare community (4).

On July 2021, Tunisia reported 17527 confirmed deaths related to COVID-19 (5). HCPs in the prehospital emergency services, named “Service d’Aide Médicale Urgente” (SAMU) in French were the most involved teams since the first wave of this pandemic. Working in this context led HCPs to endure difficult situations and caused certain psychological suffering such as compassion fatigue (CF) (6).

The concept of CF has gained considerable attention over the past twenty years, as health professionals have increasingly been challenged to manage complex demands in an overburdened

healthcare system (7). CF is defined as the cost of caring for others or for their emotional pain resulting from the desire to help individuals suffering traumatic events (8).

There were two syndromes related to CF, Burnout (BO) and secondary traumatic stress (STS) (9). Some studies found a high prevalence of STS among HCPs working in critical care units (10).

The COVID-19 pandemic has not yet come to an end. HCPs are still at risk of developing BO and STS. For that, It seems crucial to pay attention to their mental health status, by screening for psychological distresses and by implementing approaches destined to reduce the effect of stressful work environment and boost compassion satisfaction (CS) (11).

For these reasons, we aimed to study the impact of the COVID-19 pandemic on HCPs working in the emergency medical services of central e of Tunisia (SAMU 03) by investigating the CS, BO, and, STS levels and their associated factors.

METHODS

- **Study design:** We conducted a cross-sectional study on HCPs who worked in SAMU 03 from 1/03/2020 to 1/06/2021.

- **Study population:** The study population included HCPs: EPs, emergency medicine residents, family medicine residents, nurses, and paramedics working or having training in SAMU 03 from March to June.

- **Data collection:** Participants completed a self-administrated survey assessing the professional quality of life PRoQOL V.

Sociodemographic characteristics and work-related data were also collected through a self-administered questionnaire. A total of 55 questions were included in the survey, which took approximately 15 minutes to be completed.

- **Tools:** To assess the ProQoL, we used the French version of the Professional Quality of Life Scale (ProQoL) V (9),) It is a self-administered questionnaire consisting of 30 items rated on a 6-point Likert scale. It ranges from 0 = “never” to 5 = “always”. The scale is divided into three subscales: STS, CS, and BO. Each of these subscales contain 10 items. Higher scores indicate higher levels of BO, STS, and CS. For each subscale, a score less than 22 was considered to be low, a score more than 42 was high and a score in between was medium. (12,13). The ProQOL does not have a scale-specific control value for use as a diagnostic instrument (13). This questionnaire has been shown to have adequate psychometric properties in various cultural contexts (14).

Socio-demographic and work-related data were collected through a self-administered questionnaire written in French. The collected information included: age; sex; marital status (single, married and separated or widow/er); specialty, years of professional experience, years of employment in SAMU03, estimation of workload, contact with COVID, Protection equipment in their workplace and Compliance with the individual safety measures. We also collected information about; Comorbidities, COVID-19 vaccination status, infection by

COVID-19, and individual risk of contracting COVID, and in family members.

- **Definition:** CF is defined by Figley (8) as the cost of caring for others or for their emotional pain resulting from the desire to help individuals suffering traumatic events. Other synonyms include “empathy burnout”, “vicarious traumatization”, or “secondary traumatic stress”, all of which create some degree of conceptual confusion. However, CF is a concept of documented relevance to those in nursing and represents a basic inability to nurture others and engenders a temporal component (7). The PROQOLV defines it, as the association between a high risk of BO and a high risk of STS (15). Thus, CF may lead to avoidance behaviors in the professional-patient relationship (16).

BO: It was first described by Freudenberger in 1988, as a state of physical, emotional, and mental exhaustion resulting from exposure to chronic and emotional stress (17) preventing workers from assisting organizations (18).

STS, as stated by Charles Figley, is defined as the expression of emotions and behaviors secondary to a traumatic event experienced by a third person. It is a variety of stress due to the willingness of helping others in distress. It may lead to avoiding any reminders of this trauma or the patient himself (8).

A protective factor against CF is compassion satisfaction (CS), described as the satisfaction experienced by HCPs when performing their work properly, which also includes satisfaction with their relationship with colleagues and the sense that the work they perform is of social

value (19). This construct focuses on the satisfaction that comes from helping and caring for individuals in difficult situations. Unsurprisingly, the balance between CS and CF determines the level of professional quality of life (20).

- **Data analysis:** All statistical analyses were conducted using SPSS version 25. We used descriptive statistics to characterize the sample and the overall responses. In addition, Pearson's correlations, Analysis of Variance (ANOVA), and independent samples t-tests were used. Finally, linear regression analyses were carried out. All tests were two-tailed, and the significance level was set at $p < 0.05$. Only significant results are reported and, where percentages are shown, they are valid percentages.

- **Ethical consideration:** All participants were informed about the study's aims as well as its benefits. This study presents no harm to the participant; it only consists of collecting anonymous data.

RESULTS

A total of 74 HCPs were included in this survey. Only 86.48% (64 HCPs) completed the questionnaire. The mean age of the participants was 32.92 ± 8.998 years ranging from 25 to 61 years. The number of men and women participating in this study was almost equal with a sex ratio of $(M/F) = 0,93$.

Most HCPs didn't have any comorbidity (87.5%). Only 6,3% of them were obese. Most of

Table 1. Socio-demographic and work-related characteristics of the participants.

Variables	n	%
Sociodemographic characteristics		
Age (years)		
<=35	52	81.3
36-45	4	6.3
>=46	8	12.5
Gender		
Male	31	48.4
Female	33	51.6
Marital status		
Single	40	62.5
Married	23	35.9
Divorced	1	1.6
Comorbidities		
None	56	87.5
Hypertension	2	3.1
Diabetes	3	4.7
Obesity	4	6.3
Pulmonary	1	1.6
COVID-19 vaccine		
Vaccinated	37	57.8
Not vaccinated	27	42.2
Tested positive for COVID-19		
Yes	35	54.7
No	29	45.3
A family member at risk of contracting COVID		
Yes	4	6.3
No	60	93.8
Work-related characteristics		
Healthcare worker role		
Senior physician	9	14.1
Resident physician	38	59.4
Nurse	12	18.8
Paramedics	5	8
Time as a healthcare professional		
0 to 5 years	51	79.7
6 to 10 years	4	6.3
11 to 15 years	2	3.1
More than 15 years	7	10.9
Time in current job		
0 to 5 years	54	84.4
6 to 10 years	2	3.1
11 to 15 years	1	1.6
More than 15 years	7	10.9
Working Circumstances during the pandemic		
The working period during the pandemic		
1 to 4 months	1	1.56
4 to 6 months	13	20.31
7 to 12 months	2	3.1
More than 1 year	41	64.1
Workload (Before – after COVID-19)		
Increased	57	89.06
Decreased	2	3.12
Not changed	5	7.81
Protection equipment in their workplace		
Not agree at all	5	7.8
Disagree	13	20.3
Neutral	10	15.6
Compliance with the individual safety measures		
Totally Agree	27	42.2
Agree	7	10.9
Not agree at all	2	3.1
Disagree	10	15.6
Neutral	13	20.3
Agree	30	46.9
Totally agree	7	10.9
Risk of contracting SARS-COV2		
Not at all high	2	3.1
Not very high	7	10.9
Quite high	21	32.8
Very high	19	29.7
Extremely high	13	20.3

participants were vaccinated (57.8%) and half of them had already contracted COVID-19 (table1).

- **Work-related data:** The majority of participants were residents (59.4%) while 18.8% were nurses and 8% were paramedics.

Regarding professional experience, participants reported a mean year of experience of 5.82 ± 7.41 years and 4.13 ± 7.79 years of employment in SAMU03.

In our study, 50% of HCPs considered the risk of contracting sars-COV-2 during work to be very or extremely high. More than half of the participants said that the protection equipment in their workplace was sufficient (53.1%), and 57.8% declared they respected safety precautions.

The majority of HCPs admitted an increase in workload during the pandemic (89.06%) and only 7.81% considered it unchanged (Table 1).

Table 2. Compassion Satisfaction, Burnout and Secondary traumatic stress among healthcare professionals working in emergency medical services.

	Compassion Fatigue (CF)		
	Compassion Satisfaction (CS) n (%)	Burnout (BO) n (%)	Secondary Traumatic Stress (STS) n (%)
Low (≤ 22)	3 (4.7)	7 (10.9)	8 (12.5)
Medium (23- 41)	53 (82.8)	57 (89.1)	56 (87.5)
High (≥ 42)	8 (12.5)	0 (0)	0 (0)

The mean score of CS, BO, and STS was 34.47 ± 6.566 , 28.59 ± 6.197 , and 31.56 ± 4.357 , respectively. The majority of participants presented a medium level of STS, BO, and CS

(87.5%, 89.1%, and 82.8% respectively) (Table 2).

There were significant differences by profession for CS, with paramedics having the highest score ($p=0,041$). There was a significant positive correlation between CS and age ($p = 0.010$; $r = 0.318$). CS differed based on whether HCPs were infected or not by COVID-19 with a higher score among those who didn't contract COVID-19 ($p=0,005$). However, no significant difference was found between CS and sex, marital status, comorbidities, and anti-COVID vaccination.

There was a significant negative correlation between BO and age ($r=-0.347$, $p=0.005$). We also found a significant association between BO and comorbidities ($t=2,820$, $p=0,006$) and the fact of being infected by COVID-19 ($t=-2,151$, $p=0,035$).

Differences by profession status were significant for BO ($F=3,029$, $p=0,012$); residents had the highest mean score.

In addition, Compliance with the individual safety measures ($p = 0.008$) and the COVID-19 risk of contamination ($p = 0.028$) was significantly associated with BO (Table.3).

As for STS, differences in mean scores were significant by sex ($t=-2,635$, $p=0.011$), women had higher mean scores than men. No association was found between STS and work-related data.

All three subscales were significantly correlated with each other. CS was negatively correlated with the other subscales; higher levels of satisfaction indicate lower levels of STS and BO. There were positive correlations between STS and BO.

Table 3. Differences Between ProQOL Sub-Dimensions Scores and Participants' socio-demographic Characteristics.

Variables	n	Professional Quality of Life					
		<u>SC</u>		<u>BO</u>		<u>STS</u>	
		M (ET)	values	M (ET)	values	M (ET)	values
Sociodemographic characteristics							
Age	64	32.92 (8.998)	r=0.318 p=0.010*	32.92 (8.998)	r=-0.347 p=0.005*	32.92 (8.998)	r=-0.089 p=0.483*
Sex							
Male	31	34.48 (7.215)	t = 0.018	27.35 (6.075)	t=-1.449	26.58 (5.661)	t=-2.635
Female	33	34.45 (6.006)	p=0.103 ^b	29.33 (4.813)	p=0.152 ^b	30.48 (6.160)	p=0.011 ^b
Marital status							
Single	40	33.38 (6.184)		29.48 (5.159)		28.95 (6.805)	
Married	23	36.00 (6.908)	F =2.095	26.52 (5.814)	F=2.213	27.70 (4.995)	F=0.838
Divorced	1	43,00	p=0.132 ^a	27	p=0.118 ^a	35	p=0.438 ^a
Comorbidities							
No	56	34.36 (6.667)	t =-0.35	29.07 (5.246)	t=2.820	28.57 (6.364)	t=1.483
Yes	8	35.25 (6.159)	p=0.722 ^b	23.50 (5.071)	p=0.006 ^b	28.75 (5.230)	p=0.143 ^b
COVID-19 vaccine							
Vaccinated	37	35.11 (6.100)	t =-0.91	28.30 (5.816)	t=0.131	27.62 (6.121)	t=1.318
Not vaccinated	27	33.59 (7.180)	p=0.366 ^b	28.48 (5.162)	p=0.896 ^b	29.93 (6.164)	p=0.275 ^b
Tested + for COVID-19							
Yes	35	32.43 (6.349)	t=2.885	29.69 (5.487)	t=-2.151	29.63 (6.292)	t=-1.481
No	29	36.93 (6.047)	p=0.005 ^b	26.79 (5.192)	p=0.035 ^b	27.34 (5.948)	p=0.144 ^b
Family member at risk of contracting COVID							
Yes	60	30.47(6.647)	t=0.010	28.32(0.957)	t=0.326	28.62(6.386)	t=-0.114
No	4	34.50 (6.028)	p=0.992 ^b	29.25 (0.957)	p=0.746 ^b	28.25 (2.062)	p=0.910 ^b
*Work-related characteristics:							
Healthcare worker role							
Senior physician	9	36.44 (6.207)		24.44 (5.480)		26.78 (7.563)	
Resident physician	38	33.47 (6.434)	F= 2.377	30.67 (5.262)	F=3.029	28.60 (6.233)	F=0.350
Nurse	12	36.5 (5.839)	p=0.041 ^a	25.58 (4.738)	p=0.012 ^a	29.92 (7.182)	p=0.907 ^a
Paramedics	5	37.0 (6.164)		26.00 (7.071)		29.75 (7.182)	
Time as a health care professional							
0 to 5 years	51	33.80 (6.409)		29.24 (4.680)		28.76 (6.048)	
6 to 10 years	4	41.00 (5.888)	F =1.747	25.75 (10.68)	F=2.241	27.05 (10.37)	F=0.192
11 to 15 years	2	38.00 (5.657)	p=0.167 ^a	23.5 (0.707)	p=0.093 ^a	30.50 (2.121)	p=0.901 ^a
>15 years	7	34.47 (7.161)		25.0 (6.831)		27.43 (6.321)	
Time in current job							
0 to 5 years	54	34.07 (6.515)		28.83 (5.316)		28.63 (6.302)	
6 to 10 years	2	42.05 (0.707)	F=1.546	21.00 (8.485)	F=1.627	27.50 (10.60)	F=0.129
11 to 15 years	1	42	p=0.212 ^a	24	p=0.193 ^a	32	p=0.943 ^a
>15 years	7	34.14 (6.719)		27.57 (5.740)		28.14 (5.581)	

*Working circumstances at the pandemic:							
Working period during the pandemic							
=< 1 year	23	34.48 (5.308)	t =0.009	28.91 (4.522)	t=-0.582	28.83 (6.279)	t=0.223
>1 year	41	34.46 (5.239)	p=0.993 ^b	28.07 (6.022)	p=0.562 ^b	28.46 (6.225)	p=0.824 ^b
Workload (Before - after COVID-19)							
Increased	57	34.89 (6.369)	F=1.799	27.95 (5.550)	F=1.950	28.40 (6.262)	F=0.364
Decreased	2	26.50 (6.364)	p=0.174 ^a	34.50 (0.707)	p=0.151 ^a	32.00 (4.243)	p=0.697 ^a
Not changed	5	32.80 (7.950)		30.80 (4.207)		29.40 (6.656)	
Protection equipments at the workplace							
Not applied	29	32.48 (6.016)	t=-2.274	30.34 (4.872)	t=2.735	29.62 (6.951)	t=1.211
Applied	35	36.11 (6.628)	p=0.026 ^b	26.74 (5.532)	p=0.008 ^b	27.74 (5.452)	p=0.230 ^b
Compliance with the individual safety measures							
Not applied	26	31.96 (6.954)	t=-2.644	29.58 (4.868)	t=1.457	27.42 (5.784)	t=-1.256
Applied	38	36.18 (5.770)	p=0.010 ^b	27.55 (5.825)	p=0.150 ^b	29.39 (6.416)	p=0.214 ^b
Risk of contracting COVID-19							
Yes	32	33.44 (7.089)	t=1.262	29.88 (5.290)	t=-2.248	29.50 (6.677)	t=-1.173
No	32	35.50 (5.930)	p=0.212 ^b	26.88 (5.387)	p=0.028 ^b	27.69 (5.637)	p=0.245 ^b

CF: compassion fatigue; CS: compassion satisfaction; BO: burnout; M = mean; SD = standard deviation; p = level of statistical significance; t = Student's t-test; F = one-way ANOVA; r = Pearson correlation; * Correlation is significant at the 0.05 level.

Regarding CS, only BO and the use of safety measures had a significant association with STS (Table 4). In the multiple linear regression model for BO, the variables with significant weights were comorbidities and CS (Table 4). For STS, only sex showed significant weights (Table 4).

DISCUSSION

Our study assessed the ProQOL in HCPs working at the SAMU 03 in Sousse, Tunisia, during the COVID-19 pandemic. Our findings indicated medium levels of CS and CF. our findings were consistent with a study conducted on Brazilian and Spanish palliative care professionals which found

medium levels of STS. However, it showed high levels of CS and low levels of BO. (14). Comparatively, Devilly et al. found a medium to a high level of STS and BO among mental health professionals in Australia (21). However, our results contrast with high levels of STS and BO found in previous studies with HCPs from Wuhan (22) and Spain (23), which were two of the most affected countries during this pandemic. This high burden of CF among prehospital teams can negatively affect the health of both professionals and their patients (24). In our study, we also found that CS had a significant negative correlation with BO and

Table 4. Linear regression models for the professional quality of life (CS, BO, and CF/STS)

	B	SE	β	t	p
CS					
(constant)	52.82	3.57	14.78	14.78	<0.00
The use of safety measures	3	3	3	3	01
	2.795	1.29	2.162	2.162	0.035
	-	3	-	-	<0.00
BO	0.705	0.11	0.592	6.071	01
		6			
BO					
(constant)	46.82	2.68		17.43	<0.00
Comorbidities	4	5	-	8	01
	-	1.50	0.309	-	<0.00
CS	5.110	9	-	3.387	01
	-	0.07	0.616	-	<0.00
	0.517	7		6.745	01
CF/STS					
(constant)	22.67	2.36		9.590	<0.00
Sex	6	5	0.317	2.635	01
	3.904	1.48			0.011
		2			

STS. This was consistent with two studies conducted in the UK by, Sodeke-Gregson et al. (25) and in Iby by S. Salimi, et al. (10)

We also found a significant positive correlation between BO and STS, which is congruent with the results of other studies (10,26). We found that certain socio-demographic and work-related characteristics may play a role in the development of BO and STS, and they may influence CS. In fact, in our study, young age was found to be a predictor of CF, which was congruent with several studies (10,25,26). However, concerning the influence of age on CS, findings from the literature were conflicting. Some studies found similar results to ours as older participants were found to present higher levels of CS (27,28). In other studies, no association was found between these two variables (29).

These results may perhaps be because young physicians had to face major ethical and moral

decisions. First, they had to take care of patients with a high mortality rate (25). Second, the COVID-19 pandemic made delivering bad news more difficult than ever, due to its nature and frequency and due to isolation measures (30). Eventually, they had to prioritize some patients over others due to a lack of resources such as ventilators or intensive care beds. These are unusual challenges for which they had not been properly prepared, which led to the development of STS and BO (31,32).

Regarding sex, significant differences were only found with STS; Women had the highest scores (33). Conversely, Mooney and al. found that men had significantly higher CS levels than women (34).

These relationships may be the result of the socio-cultural environment, since, from a cultural perspective, the task of caregiving is conceived and developed by women. This might lead to a greater predisposition to develop compassionate empathy skills and cultivate compassion, which is a protective factor against CF and a key element in attaining higher levels of CS (26).

Regarding the marital status of HCPs, no significant correlation was found with other variables. However, María Ruiz-Fernández et al. (26) reported that being married is a predictor of having a higher CF while being divorced is a predictor of a higher CS.

According to our findings, resident physicians had lower CS levels and higher BO levels compared to others (23). Although they performed in the same stressful and sensitive work environment during the pandemic,

residents underwent uncertainty, increasing workload, and unavailability of resources (10).

In the literature, as in our study, the availability of protection equipment at the workplace influenced CS, as higher levels of CS were positively correlated to protection equipment availability(14).

Some authors demonstrated that despite the emotional and psychological exhaustion experienced by HCPs, the satisfaction they obtained by helping their patients was very pronounced and could reduce the BO and STS risk factors (35). Perhaps, these HCPs, being in primary care, had a greater sense of control and more information on the healthcare situation during the COVID-19 pandemic (36). Reda Bouaboula et al. (37), showed that among the HCPs with a high level of CF, 28.1% of them also presented a high level of CS. In this setting, HCPs who derive high satisfaction from their work and who are aware of the value and usefulness of their work, express high levels of CS despite their CF (33,38).

This finding is important to promote self-compassion and to prevent the deterioration of SAMU 03 staff's mental health.

To raise CS and reduce BO and STS levels of the HCPs:

- Hospital institutions must provide adequate equipment to protect their employees ensure sufficient human resources and promote psychological support and ethical advice to health professionals.
- Rotating shifts could also be a measure to promote CS (26).

Limitations of the study

One of the principal limitations of our study is its cross-sectional design, which does not allow us to determine the time sequence between the subscales and their associated factors. Moreover, our study included a small sample consisting of only HCPs working at SAMU 03. Future studies including a larger sample of HCPs working in different wards are required.

CONCLUSION

Our study revealed that HCPs had medium levels of STS, and BO during the COVID-19 pandemic. Age, comorbidities, professional status, and individual estimation of the risk of contracting covid-19 during work weighted BO. Only sex weighted STS.

The use of safety measures was associated with high levels of CS. Therefore, it will be necessary to use HCPs' quality of life to screen for potential psychological disorders. Furthermore, institutions must be involved in providing necessary safety equipment ensuring sufficient human resources, and promoting psychological care.

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