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Compassion Fatigue among Physicians and Nurses Working in the Intensive and Critical Care Units of Hospitals in Ulaanbaatar, Mongolia

Sodnom Bazarragchaa[1], Tseden Purevdorj[2], Battsetseg Turbat[1], Delgermaa Enkhdalai[3], Bayarmagnai Lkhagva[4], Munkh-Erdene Luvsan[2]

[1]Department of Traditional medicine, Mongolian University of Pharmaceutical Sciences, Ulaanbaatar, Mongolia; [2]Department of Health Policy, School of Public Health, Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia; [3]Department of Traditional Medicine, Ach Medical University, Ulaanbaatar, Mongolia; [4]Department of Epidemiology and Biostatistics, School of Public Health, Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia

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Corresponding Author
Munkh-Erdene Luvsan, PhD
Health Policy, School of Public Health, Mongolian National University of Medical Sciences, Ulaanbaatar 14210, Mongolia
Tel: +976-99170640
E-mail:
munkherdene@mnums.edu.mn

Objectives: The purpose of this study was to investigate the current state of the burnout and secondary traumatic stress among physicians and nurses in units of hospitals in Ulaanbaatar, Mongolia. **Methods:** We used a validated questionnaire of the ProQOL-5 Scale to assess the compassion fatigue of physicians (n=58) and nurses (n=139) who worked in critical and intensive care, neurosurgery, internal, burn, and palliative care units. We used a descriptive analysis to estimate the correlation between burn out and secondary traumatic stress scores across demographic categories. **Results:** A total of 197 study participants were recruited in our study. There were 78.7% of all participants had a higher risk of developing burn out and 82.2% of all participants had a higher risk of developing secondary traumatic stress respectively. High levels of burn out were identified among physicians compared with nurses (20.7% vs. 25.9%) respectively, with physicians having a higher prevalence of secondary traumatic stress than nurses by 5.8%. The increased prevalence of secondary traumatic stress was significantly correlated with the number of patients cared for per day ($r=0.207$, $p<0.01$) and the unit in which the care provider worked ($r=0.163$, $p<0.01$) by the univariate and bivariate analyses. **Conclusion:** Participants with higher prevalence of burn out and secondary traumatic stress work in high stress units and cared for more patients per day. Physicians had a higher prevalence of burn out that nurses.

Key words: Burnout, Compassion Fatigue, Quality of Life, Secondary Traumatic Stress

Introduction

In 1991, Figley first used the term "compassion fatigue" in relation to Post Traumatic Stress Disorder at the First World Conference of the International Society for Traumatic Stress in Amsterdam, The Netherlands (June 21-26, 1992) [1]. This cost of caring is known as compassion fatigue, which is defined as the emotional and physical burden created by the additive trauma of helping others in distress and leading to a reduced capacity and interest in being empathetic towards

future suffering [2]. This is distinct from "burnout", which is defined as cumulative stress and mental exhaustion from the demands of daily life caused by a depletion of the ability to cope with the environment [3]. The Professional Quality of Life Scale (ProQol) was developed in 2005 by Stamm (ref) to assess quality of life of those who care for others. This scale was updated to version 5 (ProQOLS-5) in 2010. Professional quality of life examines the positive aspects ("Compassion Satisfaction", CS) and the negative aspects ("Compassion Fatigue", CF) of caring for others. CF is divided into two parts, "Burn Out" (BO) and "Secondary Traumatic Stress" (STS) [4]. Recent literature indicates a very high prevalence of burnout among medical practitioners when compared to the general population, drawing increased attention to this issue, but it is important to consider that burnout is only part of the spectrum of emotional distress encompassing compassion fatigue used personal accomplishment [2, 4, 5]. Although the elements of compassion fatigue are related, secondary traumatic stress is an effect of experiences with the specific types of patients, whereas burnout is an effect of environmental stressors and is not unique to health care providers. Compassion fatigue can potentially trigger multiple emotions and behaviors, such as sadness, grief, chemical dependency, somatic complaints, detachment, anger and changes in belief systems [6]. These emotional processes have the potential of detrimentally affecting the professional performance.

Previous studies of compassion fatigue and burnout in doctors and nurses have shown that when compared to nurses who work in a less stressful environment, nurses working in overly stressful conditions are more prone to mental and physical exhaustion, resulting in more missed days of work and higher rates of attribution. In addition, patient satisfaction and, more important, patient safety, are directly linked to nurses' job environment [7-10]. These findings have triggered studies of fatigue and burnout among other healthcare providers such as physicians and most of the studies conducted since 2000 have been on non-nursing personnel. A study in 2011 of burnout and job stress of Mongolian doctors and nurses found higher burnout rates as measured in personal, work related, and client related scores [11]. To our knowledge, there are no additional comprehensive studies of the compassion fatigue, burnout and compassion satisfaction in Mongolia by using ProQol questionnaire.

Our study goal was to investigate the compassion fatigue among physicians and nurses in the critical and intensive care units of some hospitals in Ulaanbaatar, Mongolia.

Materials and Methods

Study population

This study was based in the Central hospitals, Specialized medical centers, and the District general hospitals of Ulaanbaatar, Mongolia using cross sectional study design. A total of 197 participants, physicians (n=58) and nurses (n=139) were involved in our research. The study was distributed to physicians and nurses who are working in critical and intensive care, neurosurgery, internal, burn, and palliative care units.

Measurements

We used the ProQOL-5 scale which contained 3 subscales, one for measuring compassion satisfaction, and the other two subscales (BO, and STS) for measuring CF. The ProQOLS-5 is structured as a 30-item self-report measure in which respondents are instructed to indicate how frequently each item was experienced in the previous 30 days. Each item is anchored by a 6-item Likert scale (0=never, 1=rarely, 2=a few times, 3=somewhat often, 4=often, and 5=very often). Scoring requires summing the item responses for each 10 item subscale [4].

The ProQOL measure is best used in its continuous form. However, many investigators prefer to have cut off scores to study relative risks or protective factors and use cut off scores set at the 25th and 75th percentiles [4]. The scales for the low, medium and high level t-scores were defined for BO as follows: the low level t-score was 19-42 (cut off score for the ProQOLS was 43); the average level t-score was 44-55 (cut off score is 50); the high t-score was 56-77 (cut off score is 56). If individual's score on the BO scale was below 18, this probably reflected positive feelings about their ability to be effective in their work. The scales for the low, medium and high level t-scores were defined for STS as follows: a low level t-score was 42 or below (cut off score for the ProQOLS - 42); the average score was 44-55 (cut off score was 50); the high level score was 56 or more (cut off score was 56).

Statistical analysis

The statistical package for the social sciences (SPSS) version 20 was used for the statistical analyses. The collected data was expressed as the mean± standard deviation (SD) and categorical variables were summarized as frequency counts and percentages. We evaluated associations of the BO and STS scores with demographic categories using bivariate correlation analysis (p-value<0.05 was considered statistically significant) and Cronbach alpha. Correlation analysis was performed to analyze the relationships among independent variables influencing BO, STS in order to avoid multi-collinearity problem in the multiple regression analysis. We checked independent variables, if the value of tolerance was less than 0.2 or 0.1 and, simultaneously, the value of variance inflation factor was less than 3, the multi-collinearity was considered to be problematic. Multiple regression analysis was performed to identify the factors influencing compassion fatigue.

The ages of the providers were grouped into 5-year intervals, from 20 years of age to 50 and over. We reported the scores as numerical values and analyzed them as continuous data and ordinal data in three categories: high, average and low levels of BO and STS. The raw BO and STS scores were converted to Z and t-scores as described in ProQOL-5 manual using 3 steps. The first step, the BO scores were reversed for the items as instructed in the ProQOL manual. The second step, summed the item for each subscale by using an equation as below, to estimate Z score [4]. The absolute value of Z represents the number of standard deviations between the raw score and the population mean.

The third step, convert the Z scores to t-scores, which was also a conversion of individual scores into standard form, with score mean=50 and the score standard deviation=10.

Results

1. The demographic characteristics among all participants of study

A total of 197 subjects were included in the study, 28.9% of them were physicians and 70.6% of them were nurses. The ages of the subjects ranged from 22 to 56 years with mean age of 34.5 (±8.5) years old. In our study, 84.8% of the participants were female and 95% of the nurses were female. The study participants had in average of 9.23 (±8.06) years working in health sector and there was no statistical significant difference in number of years worked in health sector between physicians and nurses (p>0.05). The physicians were more likely to work extra hours more than nurses (86.2% of physicians and 74.8% nurses) (Table 1). The gender and workload of the physicians and nurses were significantly different (p<0.001).

2. Levels of BO and STS in physicians and nurses

Figure 1a, shows the BO and STS percentages by levels; and Figure 1b shows the mean t-score of BO and STS in all participants. Low BO scores were found in 21.3% of the participants (mean t-score 36.2±4.7), average levels in 54.3% (mean t-score 49.6±3.9), high levels in 24.4% (mean t-score 62.6±5.0) (Figure 1a, Figure 1b). Low levels of BO were identified is 20.7% of physicians (mean t-score 36.2±4.7) and

Table 1. The demographic characteristics of participants

Demographics		Total (n=197)	Physicians (n=58)	Nurses (n=139)	p-value
Age, mean (SD)		34.5 (8.5)	35 (7.3)	34.3 (8.89)	0.078
Gender	Male, n (%)	30 (15.2)	23 (39.7)	7 (5.0)	0.000
	Female, n (%)	167 (84.8)	35 (60.3)	132 (95.0)	0.000
The professional working years in health sector, mean (SD)		9.23 (8.06)	8.16 (7.07)	9.68 (8.42)	0.618
Overtime work, n (%)	Yes	154 (78.2)	50 (86.2)	104 (74.8)	0.004
	No	43 (21.8)	8 (13.8)	35 (25.2)	

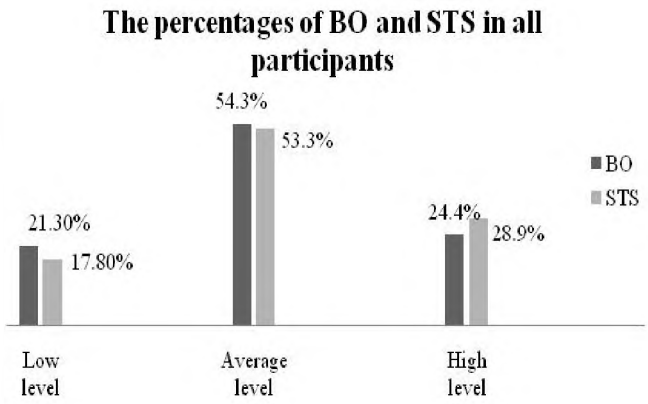

Figure 1a. The percentage of BO and STS for all participants. The low level cut off score for BO was 43; for STS it was 42; the average level of was 50 for both BO and STS; for the high level of BO and for STS it was 56 or more.

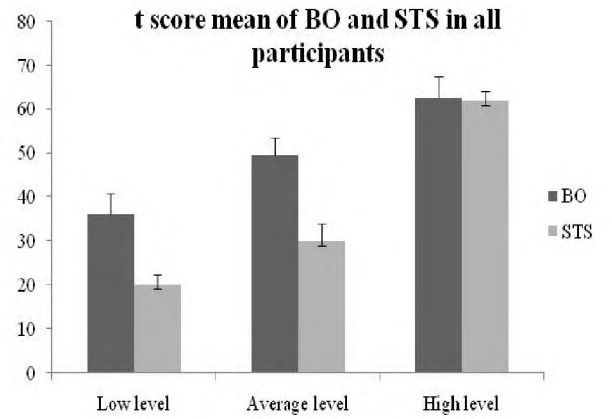

Figure 1b. The mean t-score of BO and STS for all participants. The low level t-score=19-43; the average level score =44-56; the high-level score was 56 or more.

Table 2. Low and high levels of BO and high level of STS by professions

	Physicians		Nurses	
Low level of BO	20.7%		21.6%	
High level of BO	20.7%		25.9%	
	Mean t-score	SD	Mean t-score	SD
Low level of BO	36.2	4.7	35.6	4.6
High level of BO	62.3	4.0	63.87	5.3
High level of STS	62.6	4.8	56.8	1.0

in 21.6% of nurses (mean t-score 35.6±4.6) respectively. High levels of BO were found in 20.7% of physicians (mean t-score 62.3±4.0) and in 25.9% nurses (mean t-score 63.87±5.3) (Table 2).

STS levels were low in 17.8% of the participants (mean t-score 20.1±2.2), average in 53.3% (mean t-score 30.0±4.0) and high in 28.9% (mean t-score 62.0±2.0) of the participants (Figure 1a, Figure 1b). Physicians had a higher prevalence of high STS compared to nurses (mean t-score 62.6±4.8) versus mean t-score 56.8±1.0) ($p<0.000$).

3. Univariate and bivariate analyses

The inter correlation among the all of the variable's means and standard deviations are presented in Table 2 of the demographic variables. Although the correlations were low, education ($r=0.244$, $p<0.05$) and profession ($r=0.203$, $p<0.05$) were significantly correlated with BO. Some variables, such as gender ($r=0.338$, $p<0.05$), profession ($r=0.756$, $p<0.05$), and education ($r=0.383$, $p<0.05$) were significantly and moderately correlated with STS. Although the correlations were low among the work-related variables, patients per day ($r=0.207$, $p<0.01$) and working units ($r=0.163$, $p<0.01$) were significantly correlated with STS. We found moderate negative correlation between BO and STS ($r=-0.304$, $p<0.05$). The Cronbach alpha for BO was 0.87 and for STS it was 0.75 (Table 3).

4. Multiple regression analysis for STS and BO

As seen in Table 4, comparison of gender, profession, education, patients per day, and work units characteristics revealed significant group differences in mean BO for profession, and education groups ($F_{5.191}=5.013$; $p=0.000$). Significant group differences in STS were identified for profession, education, patients per day, and work units groups, ($F_{5\ 191}=61.480$; $p=0.000$). Of note, profession and education were significantly different for both BO and STS. Patients per day and working units significantly affected STS ($p<0.05$) but did not influence

Table 3. Mean and standard deviations of the variables and their bivariate correlation

Variables	Mean	SD	Gender	Profession	Education	Patients per day	Over load per week	Working unit
Age	34.5	8.5						
Gender	1.9	0.4	-					
Profession	1.7	0.5	0.439**	-				
Education	1.2	0.4	0,107	0.249**	-			
Patients per day	20.4	8	-0.096	0.072	0.134	-		
Overload per week	14	8.6	-0.077	-0.015	-0.061	-0.05	-	
Working unit	1.9	1.3	-0.122	-0.069	0.167*	0.296**	-0.046	-
BO, α=0.87	35.9	5.1	0.06	0.244**	0.203**	0.049	0.12	0.059
STS, α=0.75	29.1	5.6	0.338**	-0.756**	-0.38**	-0.207*	0.078	0.163*

**Correlation is significant at the 0.01 level (2 tailed), * Correlation is significant at the 0.05 level (2 tailed)

Table 4. Multiple regression analysis showing factors affecting STS and BO

Variables	Secondary traumatic stress			Burnout		
	B	Beta	p-value	B	Beta	p-value
Gender	1.638	0.059	0.240	-1.990	-0.072	0.347
Profession	-15.465	-0.707	0.000	5.765	0.263	0.001
Education	-2.986	-0.129	0.006	3.502	0.152	0.034
Patients per day	-0.091	-0.194	0.000	0.024	0.051	0.458
Work units	0.983	0.126	0.007	-0.633	-0.081	0.246
F test	61.480	5.191	0.000	5.013	5.191	0.000
R square	0.617			0.116		

BO ($p>0.05$). The R square for BO was lower than STS (0.116 vs. 0.617). There was no interaction between gender and STS ($p>0.05$) or between gender and BO ($p>0.05$) (Table 4).

Discussion

In our research, we found that an average level of BO was identified 54.3% of the participants (mean t-score 49.6±3.9); and the high level of BO was found 24.4% (mean t-score 62.6±5.0) (Figure 1a, and 1b). In a previous study in 2010-2011 in Mongolia using the Copenhagen Burnout Inventory the average scores of personal, work-related, and client-related BO of medical doctors, nurses were 45.39, 44.45, and 32.46, respectively [11]. It is difficult to compare the results of this study to one just mentioned because different measurement instruments were used.

The rate of burn out identified in our study was less than the results of other countries. A study of hospital staff by Greece researchers reported that 56.1% of ICU nurses had a high level of BO; a survey in the United States revealed that the nurses working with HIV/AIDS patients had a high level of BO as measured using ProQOL version 5 [12, 13].

Our study showed a higher prevalence of high levels of BO (14.06% of the all participants) compared to the general population using the ProQOL ($p<0.001$). In another study of 153 healthcare providers that included oncology nurses (n=132), medical assistants (n=16), and radiology technicians (n=5) in inpatient nursing units and outpatient clinics in a cancer center in the mid-Western United States, 44% of inpatient staff scored at high level of burnout compared to 33% for outpatient staff using the Professional Quality of Life (ProQOL R-4) scale [5]. Our study was revealed high levels of BO in 20.7% of physicians (mean t-score 62.3±4.0) and in 25.9% of nurses (mean t-score 63.87±5.3) (Table 2). Josef et al. found a high prevalence of BO

(38.2%) among intensive care, plastics and reconstruction and burn clinicians, with burn clinicians having a greatly increased prevalence of BO compared to intensive care clinicians (OR =24.3, p=0.017) [14].

According to a UK study, therapists who worked with trauma clients had average prevalance of compassion fatigure and average risk for burn out, 70% of therapists had scores that suggested they had a higher prevalence of secondary traumatic stress [15], and some study suggests clinicians, who care for chronically or critically ill patients, have a higher prevalence of burnout compared with other caregivers [16].

However, in our research, 53.3% of our participants had an average level of STS (mean t-score 30.0±4.0), and 28.9% had a high level of STS (mean t-score 62.0±2.0) (Figure 1a, and 1b). Dominguez-Gomez E, Rutledge DN et al. (2013) study showed the rate of the arousal, avoidance and intrusion symptoms of secondary traumatic stress among emergency nurses was 54%, 52% and 49% respectively measuring by the STS Survey in USA [17].

We found that BO was significantly related with education ($r=0.244$, $p<0.05$) and profession ($r=0.207$, $p<0.01$) while STS was associated with gender ($r=0.338$, $p<0.05$), profession ($r=0.756$, $p<0.05$) and education ($r=0.383$, $p<0.05$) using the univariate and bivariate analyses. Among the work-related variables, STS was significantly related to number of patients per day they cared for ($r=0.207$, $p<0.01$) and their work unit ($r=0.163$, $p<0.01$) (Table 3).

In a study of 142 nurses in a Korean hospitals using the Compassion Satisfaction/Fatigue Self-Test for Helpers produced by Figley and Stamm (1996) and modified by Shin (2007) for investigating CF and the Maslach Burnout Inventory to measure BO, the average assessment of CF was 15.2 (SD 6.6) for oncology healthcare staff and mean score of CF was 50.58 (SD 10.39), mean score of BO was 56.23 (SD 13.82) [4]. It is difficult to compare these results with ours because of the different measurement scales used. Potter et al. found a trend towards a higher prevalance of BO and compassion fatigue among nurses with higher level of education, but this trend did not reach statistical significance [3].

Some the researchers have found that staff with 6-10 years of experience had the highest percentage of high prevalence of burnout [3]. Employees with 11-20 years of experience in general care had the highest prevalence of compassion fatigue, followed by those with 6-10 years of experience [3]. However, our study result showed that the number of years worked was not correlated with prevalence of burnout.

Most previous research has demonstrated a significant prevalence of compassion fatigue among healthcare providers, particularly social workers, and approximately 82% of emergency nurses had moderate to high levels of BO, and nearly 86% had moderate to high levels of CF as measured by the Professional Quality of Life R-5 in USA [19-21].

In our study we identified differences in BO and STS for profession, education, patients per day, and work units groups ($F5.191=5.013$; $p=0.000$, $F5.191=61.480$; $p=0.000$). However, Sacco et al. reported that BO scores for critical care nurses varied significantly by age ($F5,201=3.2$; $p=0.008$) and the STS scores also varied significantly by age ($F5,206=3.0$; $p=0.01$). Among critical nurses, significant differences in BO and STS were found between acuity levels ($F1,194=8.6$; $p=0.004$; $F1,199=6.2$; $p=0.01$) [22].

Additional longitudinal research is need to identify the factors influencing compassion fatigue among physicians and nurses in Mongolia. In conclusion, there was a higher prevalence of BO (78.7% of all participants) and STS (82.2% of all participants) among physicians and nurses working in critical and intensive care, neurosurgery, internal, burn, and palliative care units. Further, we suggest that the physicians and nurses, who work in areas with a high prevalence compassion fatigue, have access to psychology services to improve their working environment.

Limitations of the study

Although our research achieved its goals, there were some limitations. Firstly, our research was conducted only on a small population of physicians and nurses and those recruited were mainly female. However, about 85% of workers are female in Mongolian health sector. Second, most participants of this study (42.6%) had less than 5 years of work experience and likely influenced results. Third, we didn't determine how many participants completed the ProQOL-5 after nightshift, working overtime, or after a critical situation resulting in 'a bad day'.

Our survey design was a one-time cross-sectional snapshot study. The participants of this survey were the physicians and nurses who are working at the stressful environmental conditions in hospitals of Ulaanbaatar, Mongolia. In the

future, our team intends to compare the rates of compassion satisfaction, burnout, and secondary traumatic stress of physicians and nurses who are working at the intensive and critical care units of hospitals in the other provinces of Mongolia with those in Ulaanbaatar. Also, in future studies we intend to collect longitudinal data so that we estimate the risks of developing compassion fatigue, burnout, and STS of physicians and nurses based on their demographic characteristics where they work, and what they do.

Conflict of interest

The authors state no conflict of interest.

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