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WORKPLACE STRESS IN THE UNIVERSITY CLINICAL SETTINGS: COMPARISON BETWEEN THE CARDIAC UNIT AND EMERGENCY CENTER MEDICAL STAFF

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SUMMARY

***Background**: Stress at work is a specific type of stress arising from the work environment. Stress of the medical staff has been investigated in recent years by the medical institutions of different countries. The aim of this study was to examine the stress levels in medical staff of Department of Cardiac Surgery and Center of emergency medicine (CEM) in the Clinical settings, and to compare them.*

***Subjects and methods**: We conducted a cross-sectional study which included 55 patients between 21 and 50 years of age. The study group consisted of 30 employees from the Department of Cardiac Surgery of Mostar University Clinical Hospital, while the control group comprised 25 employees from the CEM. Research instruments were the Occupational Stress Questionnaire for Hospital Health Care Workers (OSQ-HHCW), General Health Questionnaire (GHQ 28) and a Stress MGMT-TEST A.*

***Results**: The subjects from the control group had significantly higher stress experience in "bombing" with new information ($p=0.028$), unavailability of literature ($p=0.039$), poor communication with superiors ($p<0.001$), conflicts with patients ($p=0.042$) and inappropriate public criticism ($p=0.007$). The highest stress level showed F1 group of stressors, concerning the organization of work and funding. CEM employees had statistically significantly higher level of stress on public criticism and lawsuits compared to the study group ($p=0.013$), as well as higher score on the anxiety/insomnia subscale ($p<0.001$), social dysfunction scale ($p=0.002$) and on the depression subscale ($p<0.001$).*

***Conclusions**: Stressors from the group of organizational factors have proven to be the most common stressors in both groups. However, in some areas within the impact of workplace stress, CEM employees had significantly greater vulnerability compared to employees of the Department of cardiac surgery. Further studies are needed to establish the frequency and intensity of stress among health professionals, and to clearly determine the risk factors for its development.*

***Key words:** workplace - stress - medical staff - hospitals - emergency medicine*

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INTRODUCTION

Stress, according to its simplest definition, repressents a state of impaired psychophysical balance of the individual which is caused either due to physical or mental or social vulnerability of an individual or person close to him (Havelka 1999). Nowadays, work-related stress occupies the second place among health problems of the work in Europe (Amorosi & Pettinelli 2013). Stressful situations at the workplace and work related stress have significant repercussions on the people's mental and physical health. On the other hand, work-related stress has important consequences for organizations too (García-Campayo et al. 2015). According to some authors the workplace represents an ideal place for the prevention of psychological disorders and improvement of worker's mental health (Amorosi & Pettinelli 2013).

Stress and types of stressors in physicians who work in hospitals and outside hospitals have been investigated in recent years inside health institutions of different countries of the world (Milosevic 2010). It is generally considered that medical profession represents a very stressful occupation (Tomljenović et al. 2014). Medical profession namely has some specific stressors like an extensive workload, many working hours, or long night shifts. Furthermore, physicians work in emotionally demanding environments with patients, families, or other medical staff. They must make quick decisions while faced with a quite frequent information overload (Rössler 2012). Jobs associated with maximum stress are those in the intensive care units, departments for burns, emergency and operating rooms (Chong et al. 2004).

Stress is also considered as very important for the nursing profession. Back in 1984, in the Nursing Mirror journal, Hingly wrote the following: "Nursing is, by its very nature, a profession that is experiencing high levels of stress. The nurse is daily confronted with real suffering, pain and death, as few other people do. Many of nursing interventions are not grateful and spiritualized. Many are, by normal standards, unpleasant. Others are often degrading, and some are simply frightening" (Havelka 1999).

Numerous studies conducted in a population of nurses demonstrated an association between certain diseases with stress at work, such as emotional exhaustion, physical exhaustion and pain in the lower back. Low levels of decision-making and high demand, typical for the nursing profession, may be associated with increased risk of coronary heart disease and these mental disorders. Among Chinese nurses the most common causes of stress are the imbalance between investment and gain, poor image of sisterhood in society, and organizational problems. In countries in transition the number of nurses leaving their workplace has increased (Stansfield & Candy 2006).

Until now, many types of questionnaires were used to estimate the subjective experience of stress (Milosevic 2010). Medical profession certainly needs reliable and effective instrument to quantify exposure to certain stressors, and thus help preserve and maintain mental health and working ability of employees. Such research should certainly be conducted separately between different medical specialties, since the exposure and effects of stress within them are not equal.

Given the fact that medical staff in Cardiac Surgery wards is continuously involved in the treatment of life-threatened patients and performing therapeutic procedures (cardiac surgery) in the states of cardioplegia (stopped heart), it is expected that the approximate level of their stress is in relation to stress of the health professionals who work in Emergency Unit, where there is a real danger for the life of patients.

The aim of this study was to examine the levels of stress of the medical staff of the Department of Cardiac Surgery and Center of Emergency Medicine (CEM) in the University Clinical Hospital Mostar, and compare them with each other, in order to contribute for finding a preventive measure for stress at work, which can be helpful in finding a way for more appropriate information, training and protection.

SUBJECTS AND METHODS

Subjects

The study included 55 subjects between 21 and 50 years of age who work as health professionals (nurses and technicians of medium and higher professional education, doctors and other health professionals with university degrees) in the University Clinical Hospital Mostar. The study group consisted of 30 employees from the Department of Cardiac Surgery while the control group comprised 25 employees from the CEM.

Before the implementation of the study approval of the ethics committee was obtained. This study conforms to the provisions of the Declaration of Helsinki in 1995 (as revised in Edinburgh 2000). Participation in the study was voluntary and anonymous. All subjects signed an informed consent form after receiving a detailed description of the study.

Methods

The study was a cross-sectional, made by interviewing. To cover the variables that are considered relevant for the assessment of stress levels at the workplace following research tests were applied:

Occupational Stress Questionnaire for Hospital Health Care Workers (OSQ-HHCW) (Milosevic 2010)

The questionnaire was created and validated in the School of Public Health "Andrija Štampar" in Zagreb. In the first part of the questionnaire there are general data relating to socio-demographic characteristics (gender, age, level of education, occupation, professional degree, job title, length of total employment, length of employment at current job, working hours). The second part of the questionnaire consists of 37 questions relating to the organization of work, shift work, career advancement, education, professional demands, interpersonal communication, communication within health care professionals and patients, and fear of the risks and hazards to health. Stressors are evaluated on Likert scale from 1 (not at all stressful), 2 (rarely stressful), 3 (sometimes it's stressful), 4 (stress) and 5 (extremely stressful).

Questions about the stressors are grouped in six factors, which are obtained by factor analysis:

- *Factor one (F1)/Workplace Organization and Financial Affairs* - includes 10 items (inadequate incomes, inadequate financial resources, inadequate working space, small possibility of promotion; poor communication with superiors; insufficient number of employees; poor organization of work; everyday contingencies; administrative work; work overload).
- *Factor two (F2)/Public criticism and lawsuits* – includes seven items (the threat of lawsuits; inadequate expectations of patients; inappropriate public criticism; wrong informing of the patients; conflicts with the patient, disability to separate professional and private life; 24-hour responsibility).
- *Factor three (F3)/Risks and hazards at workplace* - includes six items (fear of ionizing radiation; fear of inhalation anesthetics; fear of contamination; fear of exposure to cytostatics; fear of injury with a sharp object; dealing with incurable patients)
- *Factor four (F4)/Conflicts and Communication at Work* - includes four items (conflicts with colleagues; conflicts with other associates; poor communication with colleagues; conflicts with superiors).
- *Factor five (F5)/Shift Work* - includes four items (night work; shift work; overtime work; 24-hour emergency guards).
- *Factor six (F6)/Professional and intellectual demands* - includes six items (introduction of new technologies, "bombing" with new information; lack of continuous education; the pressure of time limits; unavailability of literature; time limit for patients).

General health questionnaire (General Health Questionnaire - GHQ 28) (Sterling 2011, Virtanen et al. 2007)

GHQ consists of 28 questions which are used for the assessment of somatic symptoms, anxiety, insomnia, social dysfunction and depression. Answers to the questions are sorted by Likert scale of agreement with the statement from 1 to 4. Although there are different methods to score the GHQ-28, we used scoring from 0 to 3 for each response with a total possible score from 0 to 84. In this version of GHQ there is a possibility of assessment not only the total sum, but also the profile of the total sum of the individual subscales. It is precise because of these features, and this version is considered particularly useful. Through factor analysis, this version of the GHQ questionnaire has been divided into four subscales each containing seven questions. These are: A - somatic symptoms (1-7), B - anxiety/insomnia (8-14), C - social dysfunction (15-21) and D – severe depression (22-28). For subscales there are no limits but they are used in the creation of individual diagnostic profiles, so more information on anxiety and depression is one of the advantages of this version. In order to identify cases based on the GHQ-28 version of the questionnaire it is necessary to use the total sum of all subscales.

Stress MGMT-TEST A (Devilly 2004)

Stress management test contains 32 questions relating to the range of techniques aimed at controlling one's level of stress, especially chronic stress, usually to improve daily functioning. In this context, the term "stress" refers to a stress with significant negative consequences. Answers to the questions are sorted by Likert scale from 1 to 4 according to agreement with the following statements related issues.

Statistical analysis

For all continuous variables, the basic descriptive statistical parameters are described (mean, standard deviation), whereas for categorical variables were calculated percentages of individual values. For analysis of the normality of continuous variables Kolmogorov-Smirnov test was performed. The differences in the frequency of certain responses to categorical variables expressed at nominal levels were tested by χ^2 test. To test the difference between the two groups on continuous variables t-test for independent samples was used. P values less than 0.05 were considered statistically significant. All statistical analyses were performed with statistical software package SPSS 14.0 for Windows.

RESULTS

The overall response rate was satisfactory and, at the end of the study, we analyzed the results of 55 subjects. Four subjects have not completed testing because questionnaires were not properly filled. The study group (employees of the Department of cardiac surgery) included 9 male and 21 female subjects, while the control group (CEM employees) included 10 male and 15 female subjects. Average age of subjects was 32.8±5.6 and 75% of subjects were younger than 35 years. Sample structure by professional attainment was as follows: 72.7% of nurses / technicians and 27.3% of doctors. The average total work experience was 7.1±5.2 years. In a further comparison of the two groups with respect to other socio-demographic characteristics statistically significant differences were not observed, so their homogeneity has been confirmed (Table 1).

Table 1. Sociodemographic characteristics of the study and control group

Demographic variables	Study group (n=30)		Control group (n=25)		*p*
	M±SD	N (%)	M±SD	N (%)	
Sex					
female		9 (70.0)		10 (40.0)	0.437
male		21 (30.0)		15 (60.0)	
Age (years)	32.8±4.2		32.9±7.1		0.794
< 25		4 (13.3)		2 (8.0)	
25-34		19 (63.3)		17 (67.8)	0.679
35-44		5 (16.7)		4 (16.2)	
>45		2 (6.7)		2 (8.0)	
Profession					
nurses		24 (80.0)		16 (64.0)	0.184
doctors		6 (20.0)		9 (36.0)	
Working years	7.2 ±4.7		7.06±6.6		0.610
Marital status					
married		17		12	0.521
unmarried		13		13	

Table 2. Comparison of the study and control group according to the level of stressors at the workplace (measured by OSQ-HHCW)

Question	Result (mean±SD)		t-test	*p*
	Study group	Control group		
1.Work overload	3.8±1.1	3.6±1.2	0.374	0.710
3. Overtime work	4.1±1.2	3.9±1.4	0.346	0.731
4. Shift Work	2.4±1.3	2.1±1.2	0.868	0.389
5. Night work	3.5±1.9	3.0±1.3	1.517	0.135
6. Emergency 24h	3.1±1.2	3.0±1.4	0.452	0.623
7. The pressure of time limits	3.8±1.2	3.2±1.3	1.689	0.097
8. Time limit for patients	3.6±1.7	3.3±1.3	0.867	0.390
9. Introduction of new technologies	4.0±1.0	3.6±1.2	1.193	0.238
10. Bombing with new information	3.1±1.5	3.9±1.1	-2.253	0.028
11. Lack of continuing education	3.9±1.1	3.7±1.3	0.412	0.697
12. Unavailability of literature	2.3±1.3	3.1±1.4	-2.114	0.039
13. Inadequate financial resources	2.7±1.2	3.3±1.2	1.655	0.104
14. Inadequate workspace	2.9±1.3	3.2±1.3	0.887	0.396
15. Inadequate personal income	2.6±1.2	3.6±1.4	-3.007	0.004
16. Poor communication with superiors	1.7±0.9	3.0±1.3	-3.810	<0.001
17. Poor communication with colleagues	2.7±1.5	3.0±1.4	0.765	0.403
18. Little opportunity for advancement	3.6±1.3	3.3±1.5	0.723	0.431
19. Administrative Tasks	2.6±1.3	2.8±1.5	0.352	0.709
20. Insufficient number of employees	2.7±1.5	2.7±1.5	0.105	0.987
21. Everyday contingency	3.5±1.3	3.7±1.2	0.373	0.708
22. Conflicts with superiors	3.3±1.2	3.4±1.3	0.453	0.617
23. Conflicts with colleagues	3.8±1.3	3.4±1.3	1.009	0.317
24. Conflicts with other co-workers	2.3±1.1	2.8±1.2	1.472	0.147
25. Conflicts with patients	2.2±0.9	2.8±1.2	-2.085	0.042
26. Inappropriate public criticism	2.0±1.4	3.0±1.4	-2.783	0.007
27. The threat of lawsuits	2.9±1.4	2.4±1.3	1.326	0.190
28.Disability to separate professional and private life	3.9±1.4	3.6±1.2	0.864	0.302
29. 24-hour responsibility	3.4±1.3	3.1±1.4	0.782	0.324
30. Inadequate patient expectations	3.5±1.6	3.2±1.4	0.912	0.317
31. Wrong information to patients	2.7±1.6	2.3±1.2	1.402	0.167
32. Dealing with incurable patients	2.2±1.3	2.2±1.2	0.161	0.884
33. The fear of ionizing radiation	2.1±1.3	2.5±1.3	1.017	0.314
34. The fear of inhalation anesthetics	3.2±1.4	3.7±1.2	-1.402	0.167
35. The fear of exposure to cytostatic	2.6±1.2	3.1±1.2	-1.490	0.142
36. Fear of contamination	3.0±1.2	2.9±1.3	0.417	0.638
37. Fear of injury with a sharp object	2.6±1.2	2.7±1.3	0.436	0.609

Comparison of study and control group according to the level of stressors at the workplace is presented in Table 2. In both groups of subjects as the most important stressors were cited work overload, poor organization of work, the time limit for patients, introduction of new technologies, lack of continuing education, little opportunity for advancement, "bombing" with new information, conflicts with superiors and colleagues, everyday contingencies, 4-hour responsibility, inadequate patient`s expectations, not being able to separate professional and private life and the fear of inhalation anesthetics. The subjects from the control group had significantly higher stress experience in "bombing" with new information (p=0.028), unavailability of literature (p=0.039), poor communication with superiors (p<0.001), conflicts with patients (p=0.042) and inappropriate public criticism (p=0.007).

Table 3 presents the comparison of mean scores of stressor groups between study and control group (as measured by OSQ-HHCW). The highest stress level showed F1 group of stressors, concerning the organization of work and funding. CEM employees had statistically significantly higher level of stress on public criticism and lawsuits compared to the study group (p=0.013). There were no statistically significant differences in mean scores of other stressor groups between the study and control group, as well as in the overall stress experience.

Table 3. Comparison of mean scores of stressor groups between the study and control group (measured by OSQ-HHCW)

Stressors	Min	Max	Result (mean±SD)		t-test	*p*
			Study group	Control group		
F1-Workplace and Financial Affairs	35	95	62.7±16.7	59.1±18.4	0.769	0.445
F2- Public criticism and lawsuits	10.7	92.9	41.6±14.5	55.1±23.8	-2.574	0.013
F3-Risk and harmfulness	0	82.1	42.6±23.4	43.2±24.7	-0.125	0.901
F4-Conflicts and communication at work	0	100	34.1±25.7	44.0±26.9	-1.382	0.173
F5-Shift Work	12.5	93.8	57.3±30.4	51.2±21.1	0.835	0.408
F6-Professional and intellectual demands	10.7	82.1	34.5±17.9	39.7±20.5	-0.999	0.322
Overall stress experience	0	100	49.6±13.3	52.4±18.4	-0.656	0.515

Table 4. Comparison of mean scores of GHQ-28 items between the study and control group

Have you recently	Result (mean±SD)		t-test	*p*
	Study group	Control group		
1. felt perfectly well and very healthy?	2.2±0.8	2.4±0.9	-0.737	0.465
2. felt that you needed a good rest?	3.1±0.8	3.1±0.9	-0.249	0.805
3. felt hectic and out of strength?	2.3±1.0	2.6±0.7	-1.073	0.288
4. felt sick?	2.1±1.1	2.0±0.9	0.249	0.804
5. had any pain in your head?	2.0±1.0	1.8±0.7	0.957	0.343
6. felt squeezing and pressure in your head?	1.8±0.9	1.8±0.8	0.325	0.746
7. had a lot of mood swings?	2.0±0.9	1.8±0.8	1.140	0.259
8. lost a lot of sleep?	2.1±1.1	2.3±0.8	-0.410	0.683
9. had trouble falling asleep after you wake up?	1.8±0.8	2.5±1.1	-2.653	0.010
10. felt constantly tense?	2.2±0.8	2.2±1.0	0.133	0.895
11. felt nervous and was in a bad mood?	2.2±0.9	2.4±1.0	-0.845	0.402
12. felt frightened and panic for no good reason?	1.6±0.9	2.6±0.9	-4.047	<0.001
13. felt that the world climbed on top of her head?	2.2±1.0	2.1±0.9	0.576	0.567
14. felt nervous and anxious all the time?	1.8±0.8	2.7±1.0	-4.013	<0.001
15. tried to do something and be busy?	2.1±0.7	2.1±0.9	-0.118	0.906
16. knew to stay for a long time doing everyday things?	2.3±0.8	2.5±1.0	-0.464	0.645
17. felt emptiness in things that are good?	1.9±0.7	2.5±1.0	-2.860	0.006
18. were satisfied with the way you've done a certain task?	2.4±0.9	2.3±1.0	0.276	0.784
19. felt the useful working things?	2.8±0.8	2.8±1.0	-0.057	0.955
20. he felt capable of making decisions?	2.7±0.8	3.0±0.9	-1.055	0.296
21. felt that you can enjoy your daily activities?	2.4±1.0	2.9±0.7	-2.131	0.038
22. thought of yourself as a worthless person?	1.3±0.5	2.6±0.9	-7.044	<0.001
23. felt hopelessly?	1.4±0.5	1.8±1.0	-1.666	0.102
24. I'd think that there is no point in living?	1.1±0.3	1.8±1.1	-3.316	0.002
25. thinking about the possibility of escape from reality?	1.5±0.8	1.4±0.8	-0.420	0.676
26. saw that sometimes you can not deal with the situation because you do not let nerves?	1.4±0.8	2.0±1.1	-2.085	0.042
27. wished you were dead and away from it all?	1.3±0.8	1.9±0.9	-2.478	0.016
28. thinking about suicide?	1.1±0.4	1.5±1.0	-2.175	0.034

Table 4 shows the comparison of mean scores of GHQ-28 items between study and control group. The subjects from the control group had significantly higher assessed average grade of the question No. 9 (had trouble falling asleep after you wake up?) (p=0.010), question No. 12 (felt frightened and panic for no good reason?) (p<0.001), question No. 14 (felt nervous and anxious all the time?) (p<0.001), question No. 17 (felt emptiness in things that are good?) (p=0.006), question No. 21 (felt that you can enjoy your daily activities?) (p=0.038), question No. 22 (thought of yourself as a worthless person?) (p<0.001), question No. 24 (think that there is no point in living?) (p=0.002), question No. 26 (saw that sometimes you can`t deal with the situation because you do not let nerves?) (p=0.042), question No. 27 (wished you were dead and away from it all?) (p=0.016) and question No. 28 (thinking about suicide?) (p=0.034), when compared with the study group (Table 4).

Results of the answers to existing GHQ-28 subscales showed a statistically significant differences between the two groups. CEM employees had statistically significantly higher score on the anxiety/insomnia subscale ($p<0.001$), social dysfunction scale ($p=0.002$) and on the depression subscale ($p<0.001$), compared to the employees of the Department of cardiac surgery (Table 5).

Table 6 shows the comparison of mean scores of stress control items obtained by the stress MGMT-TEST A questionnaire, between the study and control group. CEM employees had significantly higher grade answer regarding question No. 7 ("I feel uncomfortable when confronted with new situations") ($p=0.020$), question No. 8 ("I feel that role that I play is not worth it") ($p=0.009$) and question No. 14 ("I'm looking for attention or service immediately") ($p=0.030$) when compared to the employees of the Department of cardiac surgery.

Table 5. Comparison of mean scores of GHQ-28 subscales between the study and control group

Subscales	Result (mean±SD)		t-test	*p*
	Study group	Control group		
Somatic symptoms	2.2±1.1	2.3±0.9	-0.530	0.596
Anxiety - insomnia	2.0±0.9	2.4±1.0	-3.854	<0.001
Social dysfunction	2.4±0.9	2.7±0.9	-3.084	0.002
Depression	1.3±1.0	1.7±1.0	-4.212	<0.001

Table 6. Comparison of mean scores of stress control items obtained by the stress MGMT-TEST A questionnaire between the study and control group

	Results (mean±SD)		t-test	*p*
	Study group	Control group		
1. I Usually blame myself when 'things go wrong'.	1.9±0.6	2.2±0.8	-1.652	0.104
2. I keep Problems in myself	2.5±0.8	2.5±0.9	-0.233	0.816
3. I Stay focused on commitments so that I forget personal problems.	2.1±1.0	2.5±0.9	-1.491	0.142
4. I express anger and frustration with people close to me.	1.7±0.8	2.0±0.7	-1.232	0.223
5. I see a negative change in the way of my behavior	2.2±0.9	2.5±1.0	-1.365	0.178
6. I focus more on the negative than the positive aspects	1.9±0.9	1.9±0.8	-0.115	0.909
7. I feel uncomfortable when confronted with new situations.	1.8±0.7	2.3±0.9	-2.389	0.020
8. I feel that "role" that I play is not worth it.	1.5±0.7	2.1±1.0	-2.704	0.009
9. I am late to meetings and to my other commitments.	1.6±0.7	1.7±1.0	-0.542	0.590
10. I react to negative criticism.	1.7±0.7	1.9±0.8	-1.233	0.223
11. I feel guilty if I sit and do nothing.	1.9±0.8	1.8±0.9	0.255	0.800
12. I feel I'm in a hurry, even if I'm not under pressure.	2.0±1.0	2.2±0.9	-0.600	0.551
13. I do not have time to read newspapers and other texts that I love.	2.1±1.1	2.2±1.0	-0.093	0.926
14. I'm looking for attention or service immediately.	1.5±0.6	2.0±0.8	-2.231	0.030
15. I do not show my true emotions at work or in the home.	2.0±0.7	2.1±0.1	-0.672	0.504
16. I'm taking more tasks than they can really make	2.2±0.9	2.2±0.7	0.062	0.987
17. I do not accept the advice of colleagues and superiors	2.0±1.1	1.9±0.9	0.283	0.778
18. I do not pay attention to my professional or physical limits	2.5±1.1	2.5±0.9	-0.047	0.963
19. For obligations I miss my hobbies and other interests	2.4±0.8	2.3±0.9	0.359	0.721
20. I'm dealing with the situation before I think about it	2.4±1.0	2.4±0.8	0.287	0.775
21. I do not have time to drink coffee with friends	2.1±1.1	1.9±0.8	0.926	0.359
22. I leave aside confrontation and resolve difficult situations as they arise.	2.0±0.9	2.1±1.0	-0.331	0.742
23. People are taking advantage of me when I do not act defensive.	2.2±0.9	2.4±0.8	-0.990	0.327
24. I feel embarrassed to say I am overwhelmed.	2.0±0.7	2.4±0.9	-1.908	0.062
25. I do not delegate tasks to others	2.4±1.1	2.4±1.0	0.248	0.805
26. I consider my responsibilities before I classify them by priority	2.6±1.1	2.7±0.8	-0.412	0.682
27. I find it hard to say no to the demands and pursuits of others.	2.3±0.7	2.6±1.0	-0.910	0.367
28. I feel that I have to finish all unfinished work every day.	2.5±0.9	2.6±0.9	-0.744	0.460
29. I think it can not cope with the obligations.	1.7±0.8	2.0±1.0	-1.108	0.273
30. I think that fear of failure stop me to take action	1.7±0.9	1.8±0.9	-0.719	0.475
31. My working life takes priority over my private life	1.9±0.9	2.0±0.8	-0.291	0.772
32. I become impatient if something that I expect does not happen immediately	2.3±0.8	2.6±0.6	-1.266	0.211

DISCUSSION

According to some previous studies it is well known that certain medical professions are more exposed to stress, and the high levels of stress were found in anesthetists, oncologists, infectious disease specialist who work with patients suffering from AIDS and the doctors employed in intensive care units (Shanafelt et al. 2002).To our knowledge this was the first study in our region that investigated levels of stress as well as differences of stress experience between Cardiac Surgery and Emergency Medicine employees, which included all employees of these departments.

The results of this study, performed to assess the intensity of stress experience and stressors recognition, have shown that health care workers employed in University Clinical Hospital Mostar are exposed to the full range of work stressors. If we consider that, in the University Clinical Hospital Mostar for the last few years, there was an increase in quality and expanding the number and types of health services with numerous changes in the organization of the health care system as well as in education of professionals, appearance of stressors at work is expected to be linked with these changes.

According to our results work stressors scaled on the top for most workers were primarily related to the excessive work load, poor organization of work, the time limit for the examination of patients, introduction of new technologies, lack of continuing education, little opportunity for advancement," bombing " with new information, conflicts with superiors and colleagues, every day contingency, 24-hour responsibility, no separation of professional and private life and the fear of inhalation anesthetics. The relatively large number of subjects cited fears of risks and hazards at work such as ionizing radiation, anti-cancer drugs, infection and accidental needle stick, which could be a message to management to improve education and protection measures and safety.

Health professionals in this study, as well as elsewhere in the world, recognize a small number of staff as one of their important problems. Health sector in the various countries of the world describes the general lack of nurses, which is related to a series of organizational and psychological problems (Booth 2002). Results of this study show that the organizational issues as stress factors are at the first place, as evidenced by data from the literature. Similar results were obtained in one study conducted in the University Clinical Center Tuzla, where various hospital doctors reported stressors from the group of Organization/finances as dominant. Authors explained this issue as a general regional problem (Selmanovic et al. 2011). However, poor organization of work is a stressor that health officials state in developed countries also (Aiken et al. 2002). Financial constraints are typical for countries in transition and in developed countries where doctors work in public institutions with limited budgets which cause stress, such as allegations of ophthalmologists in Canada (Golubic et al. 2009).

Previous literature is missing with data on stress-inducing professional requirements such as the introduction of new technologies; “bombing” with new information, the lack of continuing education, the pressure of deadlines, availability of literature and the time limit for the patients, while in this study they were identified as a source of stress, which may not necessarily be the cause of excessive stress. Preliminary research among radiologists showed that in radiology predictor of a good working ability was to introduce new and modern technologies that facilitate diagnosis (Lambert et al. 2004). Public criticism and lawsuits can cause dissatisfaction at work, which is closely linked to productivity. Literature data show that job satisfaction and job dissatisfaction is extremely important for the effect that stress causes in health care professionals (Knezevic et al. 2007).

The Shift work among health professionals has been studied so far in various countries of the world. According to the literature it has been recognized as a stressor and a risk factor for health that may result from disorders of the biorhythm and sleep, through somatic and mental problems and disruption of family and private life (Booth 2002, Fischer et al. 2006).

In this study, a large number of health care workers with shift work were experiencing stressful 24-hour responsibility to carry out patient care, which was consistent with data from the literature on shift work (Knezevic et al. 2007). Among specific stressors that are important to the profession of health care professionals, subjects in this study cited conflicting relationships with patients who have unrealistic expectations of them. According to the literature this is particularly associated with the Emergency medicine departments where conflicts result from a mismatch of expectations between patients, family members and providers or consultants, as well as between nurses and other Emergency department staff. Patients and family members often may have unrealistic expectations about their Emergency department experience. A patient-centered approach to care is therefore very important in overcoming obstacles regarding communication process. Unrealistic expectations together with other factors (e.g. fear, anxiety) may have an important role in this process, and these factors must be recognized and appropriately managed to effectively communicate with patients (Adams 2013).

The study produced a statistically significant difference between the two groups in the presentation of certain stressors. The presentation of individual stressors on staff varies in relation to the department in which they work.

Employees of the CEM had significantly higher levels of stress intensity in the group of Public criticism and lawsuits as well as higher stress experience related to some of the stressors from the group of Organization/finances and Conflicts/Communication at work, when compared to employees of the Department of cardiac surgery. The higher influence of stressors from these groups could be related to the higher intensity of symptoms of anxiety/insomnia, depression and symptoms of social dysfunction in CEM employees. Although the cross-sectional design of the study can`t prove a causal link between these stressors and symptoms mentioned above, this could also be an important message to the hospital management in order to improve stress-management and to reduce psychosocial work stressors in CEM employees.

The combination of several questionnaires for determination of stress can be a good way to identify the factors that affect the level of stress in order to act preventively in a medical institution and in a specific group of employees. From the professional point of this study it is important to find a basis for drawing up the guidelines of preventive measures based on scientific evidence. In the literature there is a lack of evidence on the impact of stress on working ability. Personal capacities are changing with the development of various diseases while job demands grow, so changes that may impair the relationship between the personal issues and the possibility of employment are important to take into account to establish a professional harmony. All factors of stress at work cannot be eliminated, but it is important to take preventive measures to minimize those that can be reduced. Since different people can experience the same stressor in a different way, with different intensity and different sign, individual relationship with each of them should be found. Specifics of psychological stress depend on the characteristics of the individual, but also on the conditions and methods of work that differ within particular sectors.

Association between stressors and work capacity and other factors that may affect the ability to work would be useful to monitor over time and after the implementation of preventive measures so that we could be able to make the evaluation. It is also necessary to conduct an objective measurement of health in order to achieve more accurate estimates of the effects of stress and the impact on working ability.

Recommendations aimed at preventing stress in health care workers among others include the need of the implementation of the following activities: training and developing communication skills adapted to communicate with the patient and his family as well as developing communication skills within the professional teams, additional training in sensitizing health workers to develop empathy and a better understanding of patients and their needs.

CONCLUSIONS

This study has identified the large number of stressors at the workplace, which mostly had equal levels in both examined groups of health professionals. However, in some areas within the impact of workplace stress, CEM employees had significantly greater vulnerability compared to employees of the Department of cardiac surgery.

Further studies are needed to establish the frequency and intensity of stress among health professionals, and to clearly determine the risk factors for its development, which the administrative structures of hospitals and other institutions could later use and then implement quality programs for the prevention of this phenomenon. Prevention of stress at the workplace would significantly reduce the suffering of affected individuals, and probably would improve the level of health care (high stress and burn-out syndrome significantly reduced health care) and possibly would reduce costs in the health system (better care, fewer sick days).

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Contribution of individual authors:

Davorin Kozomara & Dragan Babić: study design, first draft, statistical analysis and approval of the final version.

Inga Marijanović: first draft, interpretation of data and approval of the final version.

Marija Kraljević & Teo Buhovac: data collection, search literature and analysis, approval of the final version.

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