Examining Psychic Consequences in Firefighters Exposed to Stress

Hrvoje Lalić¹, Leonardo Bukmir² and Mensur Ferhatović³

¹ Department of Occupational and Environmental Medicine, Health Center of Primorsko-Goranska County, School of Medicine, University of Rijeka, Rijeka, Croatia
² Department of General Practice Medicine, School of Medicine, Health Center of Primorsko-Goranska County, University of Rijeka, Rijeka, Croatia
³ Metropolitan Fire Department, City of Rijeka, Rijeka, Croatia

ABSTRACT

The total of 178 firefighters from the Littoral Mountainous County, the Republic of Croatia, have undergone psychotestings in three groups – 99 professionals from city Rijeka, 44 professionals from suburb and 35 volunteers from suburb. The scores of PSS 10 Cohen Stress Perception Scale, COPE questionnaire, STAI X1 anxiety test as condition and STAI X2 anxiety test as trait personality and Beck Depression Inventory were analyzed. The results have shown that firefighters do not suffer from negative effects of stress. There is slight anxiety as condition in city firefighters and medium anxiety as trait personality in all firemen. All firefighters are often problem-oriented, need only occasionally compassion of environment and sometimes react by avoiding to face stress. They differ significantly by depression (p<0.001), which is negligible in relation to ordinary population. «Working anxiety», i.e. medium anxiety which is a distinctive trait of their personality becomes the necessary initiator of functioning in the most difficult working conditions.

Key words: firefighters, psychotestings, stress

Introduction

Firefighters belong to working population that perform jobs under particular working conditions almost daily exposed to hard work in non-physiological conditions of adverse microclimate¹. Besides physiological burden, firefighters are exposed to mental stress to which their autonomous nervous system reacts². Preventive programs and social resources play a major role in preventing stress in specific working population³. Individuals that show high level of antagonism towards environment and low level of efficiency run a considerable risk of developing PTSD after being exposed to traumatic experience, which means that specific personal traits can be constitutive markers of vulnerability leading to development of psychopathological symptoms⁴. Because of that psychotesting is very important in examining future employees in such professions to attain adequate professional selection. Even psychophysically fit candidates have to undergo special training in order to learn how to cope with traumatic experience and avoid the possible development of PTSD⁵. Besides classic psychotesting, there are various other methods like auditory startle response measuring electromyograms of orbicularis oculi muscles, and speed of skin conductivity as the response to auditory stimulus, with the purpose of finding the vulnerability factor for posttraumatic stress⁶. The recent research has shown that posttraumatic stress in firefighters causes also functional changes in CNS which was proved by positron emission tomography (PET) which showed considerably diminished flow of regional cerebral blood in affected individuals⁷. Coping strategies are very important in avoiding PTSD. Firefighters and rescue workers are the population with a high risk of developing PTSD and other psychic disorders while the risk increases with the time spent in the job⁸. Dissatisfaction with the job and negative social adjustment raise PTSD frequency, which is not the case with motivated firefighters⁹. Besides stressors at work, stressors in family life, as well as self-assessment of own condition and health make an important factor¹⁰. It is known that firemen are often exposed to CO₂ as a product of burning.
The studies have shown that inhaling high concentrations of CO₂ may in later years result in spontaneous panic attacks. There is nowadays a classification of a number of psychic disorders, but one should be careful in diagnosing them as they are often just reactive neurotic and depressive conditions, not real sicknesses. Elevated anxiety and trait vulnerability predispose the incidence of real psychiatric disorders. Special education, the basic knowledge of psychology as well as physical fitness, going in for sports, should in these specific occupations be «the defense» from developing any psychic disorders.

The purpose of the research is to find out whether exposure to stress causes psychic consequences in the examined firefighters, and whether with the years spent in the job very stable individuals developed anxiety, feeling of stress and depression symptoms.

Material and Methods

The total of 178 firefighters from the Littoral Mountainous County, Republic of Croatia, grouped as professional firefighters from the city of Rijeka, professional firefighters from the suburbs and volunteer firefighters from the suburbs took the written psychotest in the surgery of occupational medicine in Rijeka.

From the city of Rijeka 99 professional firemen were examined of the mean age 38.49±9.02. Their mean height was 180.58±6.11 cm, and the mean weight 88.70±12.62 kg. Their mean BMI was 26.

From the suburbs 44 professional firemen who underwent psychotesting were of the mean age 38.50±8.93. Their mean height is 179.81±6.79 cm, mean weight 90.38±14.02 kg and mean BMI 27.

The third group consisted of 35 volunteer firefighters from the suburbs. Their mean age was 29.48±11.49. Their mean height was 181.94±5.88 cm and mean weight 87.54±15.93 kg. The mean BMI was 25.

The firefighters wrote five psychotests: PSS-10 Stress Perception Scale, COPE questionnaire on coping strategies, STAI X1 anxiety test as condition, STAI X2 anxiety and depressive conditions, not real sicknesses. Surely, elevated anxiety and trait vulnerability predispose the incidence of real psychiatric disorders. Special education, the basic knowledge of psychology as well as physical fitness, going in for sports, should in these specific occupations be «the defense» from developing any psychic disorders.

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Mean scores of 30.73 in professional firefighters from the city are at the beginning of the medium anxiety scale.

Anxiety as trait personality, test STAI X2 is found in all three groups of examinees as medium without significant differences, mean scores 36.27 in professionals from the city, 35.56 in professionals from suburbs and 35.83 in volunteers from suburbs.

The results of COPE questionnaire show that all firemen are often problem oriented, mean scores 22.97 in volunteer firefighters to 24.4 in professionals from suburbs. Only sometimes they seek social support and only occasionally ventilate their emotions, mean scores from 8.80 in professionals from the city to 9.57 in volunteers from suburbs. Only sometimes they turn to avoidance as a way of confronting stress, mean scores 11.4 in professional firemen from suburbs to mean scores 12.42 in volunteer firemen from suburbs.

The results have shown that for PSS analysis, STAI X1, STAI X2, COPE questionnaire, the firefighters do not differ from ordinary population.

Although negligible mean scores were received for depression, according to the answers to Beck Depression Inventory firefighters differ significantly (p<0.001), (Figure 1). Such low scores are under the values compared with ordinary population.

Linear regression analysis has shown slightly positive correlation between age and increased anxiety as trait personality (Figure 2).

Discussion

The low points achieved by the examined firefighters at the scales of stress, anxiety as condition and depression may be another proof for the researches to support the need for regular exercise and training in order to enhance psychophysical abilities. With firefighters, who have much in common with the police and the army, the right leadership is of great importance, as it has to contribute to satisfaction in work, and eliminate possible symptoms caused by stress. Chief of fire department, who carries out debriefing after interventions in traumatic situations, takes on the role of a psychologist in preventing adverse symptoms. As PSS test scores indicate that the examined firemen do not show stress, it may be concluded that their chiefs of departments play their role professionally. Almost daily they meet severe accidents, but firefighters have developed individual ability to cope with traumatic experiences. All three groups

<table>
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<th>Area</th>
<th>N</th>
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<th>Height (cm) X</th>
<th>Weight (kg)</th>
<th>BMI (score)</th>
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<th>AnxPer</th>
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</tr>
<tr>
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<td>179</td>
<td>90</td>
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<td>87</td>
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of the examined firefighters with hardly and exceptions are often problem oriented, and only occasionally they seek support and compassion of those around them. Only sometimes they resort to avoidance as the confrontations strategy against incident – related stressors. It is an additional confirmation of the need for permanent coping skill training not only by firefighters but by all emergency personnel\textsuperscript{21}.

The examined professional and volunteer firefighters from suburbs show no anxiety as condition, while professional firemen from the city showed the lower level of medium anxiety. Anxiety is one of the basic elements of neuroticism. Variability of traumatic stimulus-response will be lower in persons with low neuroticism than in individuals with high neuroticism\textsuperscript{24}. Anxiety as trait personality is present among examinees in a moderate form. It is even necessary in a profession like firefighting. Namely, the studies carried out have shown that individuals with higher neuroticism perform better in a busy working environment than those without it\textsuperscript{25}. Furthermore, neurotics tend to increase the level of their effort in order to succeed an attaining the objective, particularly in performing difficult tasks\textsuperscript{26}. Whether or not an individual has developed neurotic disorder is hard to conclude because a normal and a neurotic person do not differ in showing their emotions verbally, which is not the case in acute psychic disorders\textsuperscript{27}. Again the experience of chiefs of fire departments is of utmost importance for emergency personnel\textsuperscript{23}. It may be concluded that the examined firefighters where anxiety in mid-thirties begins to fall until mid-seventies\textsuperscript{29}. Firefighters as individuals are always ready to take highest risks, they simply »must« sustain their level of medium anxiety as trait personality to be able to act in unnatural situations. The firefighter’s job is indispensable for the safety of human society, and firemen are recognized as such. They appreciate it and it helps them to avoid thoughts of suicide during short lapses into anxiety crisis or rare depression after some extremely traumatic professional experiences\textsuperscript{30}. It would be best to name medium anxiety as trait personality »working anxiety«, which may be classified among classic anxiety and depressive disorders\textsuperscript{31}. In examinees no correlation was found between their anxiety and smoking or drinking, as is the case in developing negative uncontrolled emotions – neuroticism\textsuperscript{32}. Well-developed coping skills help to avoid the onset of bipolar disorders caused by negative life experiences due to professional activities\textsuperscript{33}. Fatigue, work in shifts, overstraining may lead to chronic fatigue syndrome that has to be differentiated from depressive disorder\textsuperscript{34}. Surviving firefighters and other survivors of severe injuries may develop major depression\textsuperscript{35}. There were no such cases among the examined firefighters. The examinees did not show depression symptoms, and professionals from suburbs who had a significantly higher score than their colleagues, but still negligible, showed lower result than ordinary population.

It may be concluded that the examined firefighters who almost daily participate in acute stress interventions, as mentally exceptionally stable individuals, did not develop psychological consequences, and that »working anxiety«, i.e. medium anxiety which is a distinctive trait of their personality, is the necessary initiator of functioning in the most difficult working conditions.

\textbf{REFERENCES}

H. Lalić

Department of Occupational Medicine, Medical School, University of Rijeka, Braće Branchetta 22, 51000 Rijeka, Croatia.

e-mail: hlalic@inet.hr

ISPITIVANJE PSIHIČKIH POSLJEDICA KOD VATROGASACA IZLOŽENIH STRESU

SAŽETAK

U ovom istraživanju podvrgnuto je psihotestiranju 178 vatrogasaca iz Primorsko-goranske županije, Republike Hrvatske, podijeljeno na tri skupine – 99 profesionalaca iz grada, 44 profesionalaca iz okolnih mjesta i 35 dobrovoljnih vatrogasaca iz okolnih mjesta. Analizirani su bodovi dobiveni na PSS 10 Cohen skali percepcije stresa, COPE upitniku, STAI X1 testu anksioznosti kao stanja i STAI X2 testu anksioznosti kao osobine ličnosti, kao i Beckovoj skali depresivnosti. Rezultati su pokazali da vatrogasci nisu pod stresom, da postoji samo kod gradskih vatrogasaca blaga anksioznost kao stanje, dok umjerena anksioznost kao crta ličnosti postoji kod svih vatrogasaca. Svi vatrogasci su često problemu orijentiran, samo ponekad traže suočavanje okoline i ponekad reagiraju izbjegavanjem suočavanja sa stresom. Značno se razlikuju po depresiji (p<0.001) koja je zanemariva u odnosu na običnu populaciju. »Radna anksioznost«, odnosno umjerena anksioznost kao crta ličnosti postaje nužni pokretač djelovanja u najtežim radnim uvjetima.