ACTA UNIVERSITATIS LODZIENSIS
FOLIA PSYCHOLOGICA 10, 2006

https://doi.org/10.18778/1427-969X.10.03

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# PTSD AND NEGATIVE EMOTIONS AS CONSEQUENCES OF VARIOUS TYPES OF TRAUMATIC EVENTS AMONG FIRE-FIGHTERS

## INTRODUCTION

Job-related stress is a common phenomenon and numerous studies proved its negative outcome on both employees' performance and their physical and mental status (Alfredson, Theorell, 1983; Cox, Cox, 1995; Fletcher, 1988; Pieper et al., 1984; McFarlane, 1988; Ullman, Siegel, 1996; Schabraq et al., 1996; Levi, 1987). If we are talking about stress at work we usually have in mind an effect of stressors' influence which, by acting gradually and for a long period of time exhaust individual's resources allowing the person to adapt to stressogenic situations. Meanwhile, there are numerous vocational groups which experience not only that lengthy (or, one can say, chronic) stress but also a suddenly appearing, short-lived and intensive reaction-provoking strong stress as a permanent element of work for members of the group (De Frank, 1988). Fire-fighters, police officers and other emergency services belong to these groups. Members of these groups, in virtue of their duties, are exposed every day to a form of strong stress, namely a traumatic stress, which is a result of their participation in a traumatic event, i.e. the one in which an individual's life is directly under threat, they experience a serious injury or their physical integrity is in danger, or a fire-fighter or a policeman is a witness of

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Supported by Polish Scientific Research Committee; grant PBZ 010-11/1.

death, threat for life, serious injury to other human beings. Participation in a traumatic event may lead to the development of post-traumatic stress disorder – PTSD. The PTSD syndrome was introduced as a sickness unit into a psychological disorders classification manual by American Psychiatric Society in 1980 (*Diagnostic*..., 1980). According to DSM-IV (*Diagnostic*..., 1994), the latest edition of the manual from 1994, the post-traumatic stress disorder appears, whenever:

A. A person was directly exposed to a traumatic event or was a witness of such an event, which:

1) caused or could cause death or serious injury or constitute a threat to physical integrity of an individual or other persons;

2) brought out an intense fear, feeling of helplessness or feeling of horror.

B. Traumatic event is continuously renewed in the individual's consciousness as intrusive reexperiencing of thoughts, images of traumatic events.

C. There is a persistent tendency to avoid any signals associated with the event, as well as emotional numbness manifesting in the following.

D. There are persistent symptoms of hyperarousal, which have not taken place before the event.

E. The disorders mentioned in sections B, C and D last for longer than a month.

F. The disorders caused a clinically significant distress or deterioration of functioning of the individual in his (or her) family, at work or other spheres of life significant to the individual (*Diagnostic*..., 1994).

Epidemiological studies undertaken in the United States yielded that the number of people who experience a trauma is high, notwithstanding a common opinion about that. According to studies conducted by N. Breslau et al. (1991, 1998), F. H. Norris (1992), E. Bromet et al. (1998) on large, representative samples, 40 to 90% of the whole population have contact with traumatic events during their lives and 5 to 10% of them develop the PTSD syndrome. These discrepancies result from differences in examined communities and applied research methods.

One can expect that frequency of contacts with traumatic situations among people exposed to such events due to their professional duties is even higher than in the whole population. Comparative studies of American and Canadian fire-fighters conducted by W. Corneil et al. (1999) confirm such assumptions. Having analysed documentations in the examined units the authors showed that 85% of members of the Canadian group and 90% of members of the American group had contact with at least one traumatic event a year. In a research carried on by the authors among 469 fire-fighters from all life-saving and extinguishing units of the

whole former Łódź province, it has been proved that 82% of all the examined persons had participated in traumatic events while on duty, incidentally, 70% of them had taken part in more than one such event (K o n i a r e k, D u d e k, 1999).

A traumatic experience, the etiological factor in the development of PTSD, is very common in the fire-fighters community. In Poland there are 21,000 fire-fighters performing daily a life-saving and extinguishing activity. How many of them suffer very serious psychological life disorders caused by the nature of their duty?

The aim of the research undertaken by us was to answer the following questions:

– How often do fire-fighters of the State Fire-Brigade were exposed to traumatic events?

– What are the features of the events and what is a direct reaction to them?

– How often do symptoms of post-traumatic stress disorder appear in participants of the events and how many fire-fighters have developed PTSD syndrome?

– Are there relationships between features of a traumatic events such as: type and intensity of reaction and feelings caused by the event, number and type of traumatic factors present in the event and intensification of PTSD symptoms/occurrence of PTSD?

Answers to the first three questions will allow us to define a range of the phenomenon, which are effects of health-threatening traumatic ordeals, being a significant and constant feature of the fire-fighters's duty. An answer to the fourth question will be important in organizing and supervising activities intended for prevention and reduction of PTSD development in fire-fighters with traumatic experience.

## PARTICIPANTS

The research has been undertaken on the representative sample of fire-fighters employed in randomly drawn rescuing-and-fire-extinguishing units (RFEU) of the State Fire-Brigade'a. The units were drawn from a list of all RFEU delivered from the Central Command of the State Fire-Brigade.

In total, 974 fire-fighters from 40 RFEU were examined. The aim of the research was explained to the participants; they were informed about the voluntary character of the participation in the research and its anonymous character. The participants filled out the supplied questionnaires in groups,

under a supervision of one of the researchers. The time of filling the questionnaires out was 40–90 minutes.

The age of the examined fire-fighters was between 21 and 54 years, the average age was 33.5 years (s = 5.90). They began their work as fire-fighters when they were 18 to 42 years old (the average age of commencement was 23.2 years, s = 4.01). Period of service of the persons in RFEU ranged between 1 and 27 years (the average period of service was 10.3 years, s = 5.47).

Most of the persons examined had a secondary school education (553 persons – 57.0% of the total number). 2.1% of them (20 persons) had high education, 3.9% (38 persons) – primary education, 37.1% (360 persons) – vocational education. The group of married men made 83% of the total number, 78.5% of the examined men had children.

## METHODS

A measure to determine an occurrence/non-occurrence of PTSD and to define continuum of intensification of each PTSD symptom was a Questionnaire – PTSP (K-PTSD). The Questionnaire was an adaptation of a tool applied by Ch. Watson et al. (K o n i a r e k et al., 2000). It consists of the following sets of questions:

1. One question concerning participation in a traumatic event and request for its description.

2. Seventeen questions concerning frequency or intensity of occurrence of three groups symptoms characteristic for post-traumatic stress disorder, i.e. reexperiencing (5 questions – REEX subscale), avoidance (7 questions – AVOID subscale), arousal (5 questions – AROUS subscale); the examined persons estimated an intensification or frequency of the symptoms on a 7-point scale, with a description to every point (1 = never/nothing at all, ..., 7 = always, constantly/extremely strong).

3. Two questions enabling to establish whether the symptoms (all or some) the 17 above mentioned questions were talking about, have appeared for more than a month in the past and whether they have lasted for a month or more. K-PTSD allows us to estimate an intensity of each of the 17 PTSD symptoms, intensity of each of the symptom groups (re-experiencing, avoidance, arousal), total intensity of symptoms (TRAUMA – scale), as well as to state if an examined person suffers a post-traumatic stress disorder.

A person who ascertained that at least 1 reexperiencing symptom, 3 avoidance symptoms, and 2 arousal symptoms appeared frequently

enough (value 4 on a scale of intensification/appearance frequency) and those symptoms persisted for more than a month, has been classified as suffering from PTSD.

Cronbach's *alpha* – internal correlation coefficient for individual scales of K-PTSD amounts as follows: REEX – 0.78; AVOID – 0.74; AROUS – 0.87; TRAUMA – 0.90. Factor analysis and examination of the group of patients who filled out the K-PTSD and who, according to psychiatrists, suffer the post-traumatic stress disorder syndrome confirmed validity of the questionnaire (Koniarek et al., 2000).

Direct reactions accompanying participation in a traumatic event emphasize its significance and its power of influence. The persons examined were asked to point out all physiological reactions (tears, crying; tremble of body, hands and/or legs; vomiting, nausea; histeric laugh; faint; dizziness) which appeared during or immediately after the event and to evaluate an intensity of emotions (fear; helplessness; desire to withdraw; compasion forr victims; feeling of guilt; anger; feeling of shame; disgust and repugnance) accompanying the event on a 5-point scale with a description to every point (1 = did not happen, ..., 5 = very strong emotions). To enable the participants to describe a traumatic event they participated in, 7 traumatising factors that can appear in events in which fire-fighters take part were distinguished (health and life threat, injuries experienced by a saver or his colleagues, presence of children among casualties, horrible sights). The examined persons stated if an individual factor had been present during the event they took part in.

## RESULTS

There were 839 persons (86.1% of all the examined fire-fighters) who were witnesses/participants of traumatic events while on duty, though vast majority of them – 78% – took part in more than one such event, 39 fire-fighters (3.9% of all the examined fire-fighters and 4.9% of witnesses/participants of the events) were talking about an event which took place within last month, the others – about events they experienced more than one month before the date of the research. If about 4% of the examined persons participated in a traumatic event, it means that in a year period almost half of the total number (12 months x 4%) has a chance to participate in such an event.

On the basis of analysis of traumatic events descriptions one can say that 63.4% of the events the examined fire-fighters were talking about, were connected with various accidents, and 20% – with a fire. The other events

could not be classified unequivocally into one of the above categories, or could be counted as exercises, conveyances to a destination, contact with corpses of persons dead for a long period of time).

For many of the fire-fighters the events described by them were really extraordinary experiences. The list of their reactions and number of fire-fighters who ascertained an occurrence of the individual reactions are presented in Tab. 1.

Table 1

Frequency of occurrence of individual reactions accompanying a traumatic event ($N$ = 839)

| Reactions | $N$ | % of participants of events |
|---|---|---|
| Tears, crying | 144 | 17.2 |
| Tremble of a body, hands and/or legs | 388 | 46.2 |
| Vomiting, nausea | 77 | 9.2 |
| Hysteric laugh | 40 | 4.8 |
| Faint | 13 | 1.5 |
| Dizziness | 43 | 5.1 |
| None of the above reactions has occurred | 360 | 42.9 |

Almost 43% of participants of events considered by them as traumatic have marked any of the reactions stated in Tab. 1. The others indicated at least one of the six reactions and in almost all cases (46.2% of all participants of events) it was tremble of a body, hands and/or legs.

Reactions of the examined persons were an external expression of emotions and feelings accompanying participation in the traumatic event.

The dominant feelings of fire-fighters taking part in a traumatic event are compassion and helplessness (Tab. 2). The third feeling in succession is fear, then desire to withdraw, anger, disgust and repugnance. Intensification of feelings accompanying traumatic events expresses the character of actions undertaken by fire-fighters/life-savers – extraction of victims of accident from car wrecks, taking away of burnt people, health and life threat to themselves and their colleagues.

It is impossible to say how often the feelings and reactions the examined persons were asked about, would appear in a community of non-fire-fighters confronted with experiences the fire-fighters have passed through. It seems, however, that the frequency the fire-fighters admit to fear, tears, desire to withdraw, and other feelings and reactions lets us ascertain that numerous traumatic experiences and some kind of ''getting used'' to events which accompany them in their professional life do not make them unsensitive to experiences exceeding experiences of common people.

Table 2

Intensification of emotions and feelings accompanying a traumatic event (range of possible results: 1, ..., 5), ($N$ = 839)

| Feelings | $xA$ | $s$ | % of estimation on level 3 and higher | % of estimation on level 4 and higher |
|---|---|---|---|---|
| Fear | 2.0 | 1.24 | 28.1 | 15.0 |
| Helplessness | 2.5 | 1.50 | 43.9 | 31.0 |
| Desire to withdraw | 1.7 | 1.22 | 20.0 | 13.2 |
| Compassion for victims | 3.8 | 1.38 | 70.8 | 60.7 |
| Feeling of guilt | 1.3 | 0.82 | 6.7 | 3.6 |
| Anger | 1.7 | 1.17 | 17.0 | 9.7 |
| Feeling of shame | 1.2 | 0.68 | 4.8 | 2.8 |
| Disgust and repugnance | 1.6 | 1.08 | 14.1 | 9.1 |

The acquired information shake, to some extent, an opinion that a norm among fire-fighters is to present themselves as ''strong'', non-emotional men, with an attitude for an efficient activity. It is possible that the anonymous character of the research and explanation of its aim helped them expose themselves and reveal their reactions they would never be willing to do in different circumstances.

Traumatic events in which the examined fire-fighters took part, could be different in number and types of traumatic factors present in the event. It is difficult to evaluate if in a particular traumatic event experienced by a particular person a threatened health (or even life) of a life-saver was more important than the fact that he saw horrible sights, as far as the development of post-traumatic disorder symptoms is concerned. However one can assume that both the type of a traumatic factor and number of those factors in one event may decide about an intensity and power of post-traumatic reactions.

In Tab. 3, the information which permits us to ascertain what traumatic factors the examined persons have met in traumatic events they participated in, is enclosed.

For vast majority (82%) of fire-fighters who experienced a traumatic event, the event involved horrible sights exceeding scenes that so called common people are not able to imagine. For nearly 40% of fire-fighters such an event was connected with a direct threat to health/life of their colleagues and for 1/3 of the examined persons – with a direct threat to their own health/life and/or with the presence of children among victims.

The above mentioned features describing a traumatic event do not exclude one another – in one event one or several types of traumatic factors could occur. Tab. 4 shows the number of traumatic factors existing in events experienced by the examined fire-fighters.

Table 3

Presence of individual traumatic factors in traumatic events, the examined persons participated in ($N$ = 839)

| Type of trauma | $N$ | % of participants of events |
|---|---|---|
| Direct threat to health/life of a rescuer | 271 | 32.4 |
| Injury/intoxication of a rescuer | 67 | 8.0 |
| Direct threat to health/life of a colleague | 326 | 39.0 |
| Injury/intoxication of a colleague | 103 | 12.0 |
| Death of a colleague | 15 | 1.8 |
| Presence of children among victims | 267 | 32.0 |
| Horrible sights | 681 | 82.0 |

Table 4

Presence of various numbers of traumatising factors in a traumatic event experienced by examined persons ($N$ = 762)

| Number of traumatic factors | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| $N$ | 279 | 208 | 141 | 75 | 44 | 13 | 2 |
| % of traumatic events participants | 36.6 | 27.3 | 18.5 | 9.8 | 5.8 | 1.7 | 0.3 |

In one traumatic event experienced by the fire-fighters, on average two types of traumatic factors occur.

The consequences of participation in traumatic events in the form of post-traumatic stress disorder symptoms were very differentiated in the examined community. The range of results possible to be acquired in K-PTSD, which was used to measure the intensity of PTSD symptoms, is 17–119 points. The results of the examined group are contained in Tab. 5.

Table 5

Results in scales and total result in K-PTSD ($N$ = 866)

| | $x$ | $s$ | Range |
|---|---|---|---|
| Re-experiencing (5 questions) (reex) | 11.04 | 5.04 | 5–30 |
| Avoidance (7 questions) (avoid) | 13.66 | 5.96 | 7–40 |
| Arousal (5 questions) (arous) | 9.60 | 5.19 | 5–30 |
| Total result (17 questions) (trauma) | 34.28 | 14.78 | 17–90 |

The results acquired by the examined fire-fighters are comparable to the results acquired by a group of RFEU fire-fighters from former Lodz Province ($N = 469$) and employees of Ambulance Service – members of outgoing teams ($N = 88$), examined earlier with the same method. The results in these groups in individual scales are as follows, respectively: Reexperiencing – 7.4 and 8.4; Avoidance – 12.7 and 13.8; Arousal – 10.8 and 10.6; total result – 30.8 and 32.7 (K o n i a r e k, D u d e k, 1999).

The result of 58 or more points in K-PTSD scales acquired 80 peersons (9.6%). The average total result for this 80 persons group is 66.6 points. In the tested group of Łódź fire-fighters, 10.3% of the examined persons with the highest scores made the result of 48 or more points (with the average result for this group being 58 points) in the same questionnaire, and in the group of employees of Ambulance Service 10% of persons with the highest scores acquired the results of 58 or more points (the average result for this group was 63 points). On the basis of the researches made in the three groups of life-savers already examined by the K-PTSD questionnaire one can notice some regularity: about 10% of the examined persons who have the highest level of post-traumatic symptoms acquire results of 50 or more points in K-PTSD, and the average result of this group amounts to 58 or more points. Not all these persons contained in that 10%-group of the highest level of symptoms we can be considered as suffering post-traumatic stress disorder syndrome, since not in all cases the symptoms lasted for at least a month. To evaluate the significance of these results, we should quote the results of the survey made by Ch. W a t s o n et al. (1991), in which the method adapted by us was employed. The average result of the group of Vietnam war veterans who became psychiatric ward patients after traumatic war experience, was 58.2%. The patients suffered PTSD syndrome, as the disorder symptoms lasted for more than a month.

Apart from the measurement of intensification of the three groups of PTSD symptoms, the K-PTSD questionnaire enables preparing diagnoses of post-traumatic stress disorder syndrome appearance.

Table 6 shows the number of fire-fighters complying/non-complying with the criteria allowing to consider a particular person as a one suffering the PTSD syndrome.

Results presented in the table show that 4.2% of the professionally active fire-fighters and every twentieth of traumatic events participants suffered the post-traumatic stress disorder on the day of examination. Post-traumatic disorder syndromes occurred in such an intensification that one can say about PTSD in 2.2% of the examined population. The symptoms lasted for over a month in the past, though people were not troubled by them at the time of the examination yet. PTSD developed in 7.4% of fire-fighters who participated in traumatic events while at work.

Table 6

Number of fire-fighters for whom a post-traumatic stress disorder occurred/did not occur ($N$ = 839) – participants of traumatic events

| Persons who experienced | $N$ | % of participants of traumatic events | % of the examined group |
|---|---|---|---|
| Symptoms which lasted for at least a month and still last | 41 | 4.9 | 4.2 |
| Symptoms which lasted for at least a month, but do not occur any longer | 21 | 2.5 | 2.2 |
| Symptoms, but they did not last for more than a month | 7 | 0.8 | 0.7 |
| Symptoms have not occurred | 770 | 91.8 | 79.0 |

Table 7 presents intensification of PTSD symptoms among the persons PTSD was ascertained to and in two other groups.

Table 7

Intensification of PTSD symptoms among fire-fighters in whom a post-traumatic stress disorder occurred/did not occur ($N$ = 836)

| Persons who experienced | $N$ | Reex | Avoid | Arous | Trauma |
|---|---|---|---|---|---|
| Symptoms, which lasted for at least a month and still last | 41 | 20.3 | 26.2 | 21.3 | 67.8 |
| Symptoms, which lasted for at least a month, but do not occur any longer | 21 | 19.0 | 26.3 | 18.9 | 64.1 |
| Symptoms, but they did not last for more than a month | 7 | 18.9 | 22.6 | 17.7 | 59.1 |
| Symptoms have not occurred | 767 | 10.3 | 13.6 | 8.7 | 31.4 |
| $F$ | | 102.23 | 171.84 | 170.42 | 195.53 |
| $p<$ | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Pairs of groups which differentiate on level $p<0.05$ | 4x1,2,3 | 4x2,1,3 | 4x1,2,3<br>3x1<br>2x1 | | 4x1,2,3 |

The average results of 62 fire-fighters for whom the post-traumatic stress disorder syndrome was or is recorded, were as follows: in REEX scale – 19.8 points, in AVOID scale – 26.3 points, in AROUS scale – 20.5; with total result – 66.6 points. Among the earlier examined Łódź fire-fighters, the ones who suffered PTSD got the following results, respectively: 14.1; 25.1; 24.1, and 63.3. Patients for whom psychiatrists diagnosed PTSD and who filled K-PTSDs acquired the following results, respectively: 18.7; 29.8; 29.9, and 77.7 (Koniarek et al., 2000).

The factors which decide on PTSD presence (intensification of PTSD symptoms) include a type of stressors acting on a traumatic event participant, their intensification and a related intensity of feelings, type and power of reaction accompanying the participation in a traumatic event (Green, 1994; Joseph et al., 1995).

The analysis shows the relation between intensification of symptoms/appearance of PTSD and a type of a traumatic event the fire-fighters participated in, kinds of traumatic factors in the event, and intensity and types of reactions accompanying the event.

Having analysed descriptions of situations the examined persons consider as traumatic one can say that 195 events were related to a fire, 503 – to accidents, mainly road ones, and 97 – to other situations (e.g. suicide attempts – jump from a high building, accidents while on duties, contact with corpses). Significant differentiation of intensification of PTSD symptoms after traumatic events related to fires in comparison to intensification of symptoms related to the other two situation types has been ascertained.

The data displayed in Tab. 8 indicate that the most common source of traumatic moments for fire-fighters is what they experience while coming with help to victims of accidents. However, the intensity of the experiences, expressed by an intensification of post-traumatic symptoms, is significantly lower than traumatic experiences related to fire-extinguishing actions. This differentiation can be explained by the fact that both these life-saving activities are different as far as traumatic factors a rescuer can meet are concerned. In general, there are no direct threat to life and death of rescuers and their colleagues when they give help to victims of accidents. A rescuer and his colleagues do not experience injuries or intoxication, which are elements of fire-extinguishing actions. Therefore, in traumatic experiences related to accidents, such factor as fear has not come out.

Table 8

Intensification of PTSD symptoms in various rescue situations, when a traumatic event occurred ($N$ = 795)

| Character of actions | $N$ | K-PTSD scale | | | |
|---|---|---|---|---|---|
| | | reex | avoid | arous | trauma |
| Fire | 195 | 12.0 | 14.5 | 10.8 | 37.3 |
| Accidents | 503 | 10.8 | 13.5 | 9.2 | 33.4 |
| Others | 97 | 10.8 | 12.8 | 8.9 | 32.4 |
| F | | 4.506 | 3.167 | 7.840 | 5.771 |
| $p<$ | | 0.011 | 0.043 | 0.004 | 0.003 |
| Group pairs different on level $p<0.05$ | | 1x2 | 1x3 | 1x3,2 | 1x3,2 |

Fear appeared to be the feeling accompanying a traumatic event which correlates in the strongest way with PTSD symptoms level – as it results from Tab. 9.

Table 9

Correlation between feelings accompanying a traumatic event and PTSD symptoms level ($N$ = 836)

| Feelings | Reex | Avoid | Arous | Trauma |
|---|---|---|---|---|
| Fear | 0.44 | 0.41 | 0.45 | 0.48 |
| Helplessness | 0.32 | 0.26 | 0.31 | 0.32 |
| Desire to withdraw | 0.33 | 0.36 | 0.35 | 0.38 |
| Compassion for victims | 0.15 | 0.12 | 0.15 | 0.15 |
| Feeling of guilt | 0.25 | 0.26 | 0.27 | 0.28 |
| Anger | 0.22 | 0.22 | 0.27 | 0.26 |
| Feeling of shame | 0.28 | 0.26 | 0.28 | 0.30 |
| Disgust and repugnance | 0.25 | 0.29 | 0.29 | 0.30 |

The second feeling, as far as its power of connection with PTSD symptoms level is concerned, is a desire to withdraw from a traumatic situation. This desire to withdraw is partly connected with fear and horrible sights. The coefficient values of correlation between PTSD symptoms and other feelings, except sympathy towards victims, are around 0.30. The sympathy towards victims, the most common and the strongest feeling in a traumatic events participants community (see Tab. 2), presents the weakest correlation with PTSD symptoms level.

Fear and helplessness are the feelings which define traumatic events. One should not be, though, surprised with their highest coefficients of correlation with PTSD symptoms.

A very important factor for a preventive treatment of PTSD development is to get knowledge on the events that evoke the strongest symptoms of post-traumatic stress disorder. This knowledge will indicate what types of rescue action must be followed by debriefing meetings.

Table 10 show to what extent the presence of a particular traumatic factor differentiates a level of the symptoms in case of persons who have experienced a contact with the factor from the persons who have not.

PTSD symptoms appear in the strongest way after the events in which a rescuer or his colleague was injured or intoxicated (42.5 points), or a fire-fighter was killed (41.8 points). These data correspond with the information about fear and PTSD symptoms connection – the above mentioned types of trauma, which correlate with the symptoms to the greatest extent, most probably appear in situations accompanied by fear.

Table 10

Occurrence of a particular traumatic factor (1 – occurred, 2 – not occured) in a trumatic event versus intensification level of PTSD symptoms

| Type of trauma | 1 – occurred<br>2 – not occurred | *N* | Trauma | *F* | *p*< |
|---|---|---|---|---|---|
| Direct threat to health/life of a rescuer | 1<br>2 | 271<br>563 | 37.5<br>32.8 | 19.050 | 0.000 |
| Injury/intoxication of a rescuer | 1<br>2 | 66<br>767 | 42.5<br>33.6 | 22.740 | 0.000 |
| Direct threat to health/life of colleagues | 1<br>2 | 326<br>506 | 36.6<br>32.8 | 13.504 | 0.000 |
| Injury of a colleague | 1<br>2 | 101<br>733 | 41.8<br>33.3 | 30.290 | 0.000 |
| Death of a colleague | 1<br>2 | 15<br>819 | 41.8<br>34.2 | 3.944 | 0.047 |
| Children among victims | 1<br>2 | 266<br>566 | 37.0<br>33.0 | 13.403 | 0.000 |
| Horrible sight | 1<br>2 | 678<br>149 | 35.9<br>26.8 | 49.023 | 0.000 |

In one event various traumatic factors may appear. Correlation between the number of those factors present in an event described by examined persons and intensification of symptoms (TRAUMA) is 0.28 ($p<0.001$).

It has been established that the level of PTSD symptoms grows with age of the examined persons ($r = 0.25$) and it is even a bit stronger connected with period of employment ($r = 0.27$). It may indicate that the longer a person works as a fire-fighter, the more he experiences effects of traumatic events and, therefore, the effects accumulate and appear in a stronger form in connection with one particular event that the examined fire-fighters give an account of.

## SUMMARY AND CONCLUSIONS

Participation in a traumatic event is an etiological factor in the development of serious mental disturbances of an individual. The research was intended to determine what, if we use a language of occupational medicine, the exposure of fire-fighters to contact with this factor was, and to what extent this factor provokes symptoms adequate for a post-traumatic stress disorder syndrome. Contact with traumatic events is extremely common

among fire-fighters, it is also an immanent part of their professional life. Over 80% of all the examined persons have had contact, in most cases – numerous, with traumatic events. During the period of one year, almost half of the fire-fighters population has a chance to take part in a traumatic event. It means that almost every fire-fighter with a several years long period of employment in this profession has experienced a traumatic event.

In case of over 4% of the examined fire-fighters, traumatic events caused so strong and so long symptoms of post-traumatic stress that one can say the fire-fighters suffer the post-traumatic stress disorder syndrome. Since over 21,000 fire-fighters are employed in life-saving and extinguishing units we can say that about 880 of them start performing their everyday duties notwithstanding that their mental condition, according to DSM-IV criteria, would allow to regard them as sick persons. Moreover, more than 2% of the considered community constitute a group of ''convalescents'', i.e. persons who had suffered all symptoms of PTSD in the past, although the symptoms are not expressed at the moment. All the above results prove that about 260 persons out of the whole professional group are the ones who are particularly susceptible to a return of post-traumatic disorders, since previous traumatic experiences increase a risk of renewed disorders (G r e e n, 1994).

The above mentioned information shows the range of the mental health disorder phenomenon in case of fire-fighters professional group, which is a result of their work. It seems that the problem has not been noticed by fire-fighters health-care responsible institutions. Likewise, the issue of responsibility of official institutions for health of their workers concerns other professional groups exposed to participation in traumatic events. The strategies leading to eradicate negative effects of stress, consisting in such changes in working environment that reduce a number and intensity of stressors flowing from this environment, are impossible to be achieved, since a contact with a stressor causing PTSD, i.e. with traumatic events, is a permanent feature of duty in life-saving and extinguishing units of a fire brigade. So, one can consider only activities directed at an individual, which will help the person to suffer the least possible mental costs of traumatic events and facilitate the person to survive difficult moments. The organisation of such an activity is a duty of an employer. This is a duty which is in his own interest as well.

Much attention in literature is dedicated to factors which cause that post-traumatic stress disorder syndrome develops in some participants of traumatic events leaving the others free. Some researchers point to certain features of an individual which increase a risk of a post-traumatic stress disorder. The hereby article has been based on the research, where these features of individuals have been taken into account; on the other hand, the features are subject of a separate article (D u d e k, K o n i a r e k, 2004).

Results presented in the article concern the relationship between certain features of a traumatic event and direct reactions on one hand and PTSD symptoms/appearance.

Traumatic events are related to providing help in many various accidents, none the less the strongest symptoms adequate to post-traumatic disorders are related to the events which have taken place during fires. It is in these actions that health and life of rescuers and their colleagues are in the greatest danger, they get hurt and become intoxicated, and these types of trauma provoke the strongest symptoms of PTSD. These types of action and traumatic events related to them are accompanied by the feeling which correlates to the greatest extent with the level of post-traumatic disorder – fear.

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## UCZESTNICTWO W ZDARZENIACH TRAUMATYCZNYCH I JEGO KONSEKWENCJE W POSTACI ZABURZENIA PO STRESIE TRAUMATYCZNYM WŚRÓD POLSKICH STRAŻAKÓW

Strażacy należą do grupy zawodowej, której członkowie są, z powodu nałożonych na nich obowiązków, prawie codziennie narażeni na zdarzenia traumatyczne. Stres doświadczany w takich sytuacjach może prowadzić do rozwoju zaburzenia po stresie traumatycznym (PTSD). Celem prowadzonych badań było ustalenie częstości narażenia na zdarzenia traumatyczne i rozwoju PTSD oraz określenie zależności pomiędzy cechami zdarzeń i emocjonalnymi reakcjami a manifestowaniem symptomów PTSD. Badania przeprowadzono w wylosowanych 40. jednostkach ratowniczo-gaśniczych wchodzących w skład Państwowej Straży Pożarnej. Badaniami objęto reprezentatywną grupę 974 polskich strażaków. Do pomiaru symptomów PTSD wykorzystano kwestionariusz PTSD-I opracowany przez Ch. G. Watsona i in. (1991). Do pomiaru cech zdarzeń traumatycznych i emocjonalnych reakcji na te zdarzenia opracowano odpowiednie pytania,

z których zbudowano kwestionariusz. Większość osób badanych (86,1%) stwierdziło, że co najmniej raz, podczas służby, uczestniczyli w zdarzeniu traumatycznym. Wśród 7,6% uczestników zdarzeń rozpoznano PTSD. Do najczęściej doświadczanych zdarzeń traumatycznych należały sytuacje wypadkowe (63,4%). Ponad połowa badanych ujawniała różnorodne fizjologiczne i emocjonalne reakcje spowodowane danym zdarzeniem traumatycznym. Dominującym uczuciem wśród uczestników zdarzeń było: współczucie i bezradność. Lęk należał do emocji najsilniej związanych z poziomem symptomów PTSD ($r = 0{,}48$; $p \leq 0{,}001$). Poziom symptomów PTSD korelował z wiekiem osób badanych ($r = 0{,}25$; $p \leq 0{,}05$) i długością stażu zawodowego ($r = 0{,}27$; $p \leq 0{,}05$).

**Słowa kluczowe**: stres traumatyczny, straż pożarna, zaburzenie po stresie traumatycznym.