

## Victims of Occupational Accidents Considering Hardiness, Perceived Social Support, Risk Perception, and PTSD Injuries (Posttraumatic Disorder) and Depression Psychological Factors: A Review

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**ABSTRACT:** The presented study aims to investigate psychological factors in people who are suffered from occupational accidents and injuries. The method of the review is post-event or casual-comparative method, which is performed through available sampling from Ilam province (two groups of 25 injured and 25 non-injured people that have been matched). Mississippi structured inventory, Beck depression inventory, perceived social support questionnaire, Kobasa hardiness inventory, and risk perception inventory are used for data collection. Independent t-test was used to compare means, which was significant at 95% confidence level. But this difference was not significant in Mississippi questionnaire. Also, significance level in correlations was less than 0.05 indicating a correlation between them. Depression was seen in sample group but there were no symptoms of PTSD. The correlation studies also have shown the important role of perceived social support of individuals from family and others in development of this disorder, and that this factor has shown a good relation with hardiness (especially in challenge sub-scale) and risk perception.

**Keywords:** Occupational Accidents, Posttraumatic Stress Disorder, Social Protection, Hardiness, Risk Perception

REVIEW ARTICLE  
PII: S2322-47891500001-5  
Received 26 Oct. 2014  
Accepted 15 Jan. 2015

### INTRODUCTION

Work-related accidents are the third cause of death in the world, and are introduced as one of the most important factors of health, social, and economical risk in developing and industrial countries (Bakhtiari et al., 2011). Also, accidents are counted as the first cause of death at the age of younger than forty years old in the world, which since of having high rate in death is considered as one of the causes of disability that not only imposes high costs on families, but also imposes heavy costs to health and treatment system and government organizations (website of Technical and Vocational Training Organization, 2010), The act 60 of social security says, according to social security act, accident is incidental, and it is not predicted that it occurs under effect of external factor(s) and leads to physical or mental injuries to insured. Workplace accident is an important economical phenomena yet, periodic fluctuations in workplace accidents are not well known, and these fluctuations can occur since of work hours and kind of activity, but work place accidents occur under effect of vulnerable behaviors (Boone et al., 2001). Today, it has been recognized that development of technical methods, processes, and equipments alone are not effective in reducing accidents and injuries, but also human factors, including mental characteristics, play an important role in this regard (Mohamadfam et al., 2009). About 80 percent of accidents are caused by the actions and behaviors of employees, such as anxiety, risks, lack of

skill, fatigue, depression, financial problems, physical or mental defect, mismatch between knowledge and mental, physical abilities (website of Technical and Vocational Training Organization, 2014). The World Health Organization has set the work-related accident as an epidemic phenomenon in the field of public health (occupational health and work trend report, 2003-2008).

According to IRNA, based on statistics published by the Social Security Organization (SSO), number of occupational accidents in 2011 has increased 110 percent over the previous year (Bakhtiari et al., 2011).

Results of a longitudinal study performed during six months on accident victims, showed that these people are patients who are more likely to be affected by PTSD and depression, and it indicates the need for financial resources to prevent mental damage costs in these people (Richmond et al., 2011). Posttraumatic stress disorders are viewed as psychological acute reactions against severe violence events. These events including, invasion; violation; natural accidents such as earthquake and floods; accidents like airplane crash, conflagration; or shocks caused by war such as bombing or torture rack, that they may occur at any age (Dadsetan, 2013).

PTSD is kind of combined disorder that is more than an answer to a horrible event and it cannot be explained by a simple model. Two self-regulative visual and verbal memoric systems, which act different from hormone effect resulted from stress intensity and lead to imbalance in the provision of shock memories, play role in this disorder,

that this retrieval of memories is result of competition between two systems (Berewin, 2007). PTSD is a disorder factor in multiple neurotransmitters orders including nor epinephrine, serotonin, glutamate in the hypothalamus – hypothesis axis (Ravindran and Stein, 2009).

Studies indicate that, positive and negative signs individually have no diagnostic value, and cannot alone be a good predictive for clinical studies, but a set of symptoms should be considered in clinical investigations (Rona *et al.*, 2013). This disorder doesn't increase or decrease due to sexual differences, but its incidence rate among women may be shown more than men due to previous stressor factors and life and family conditions (Polusny *et al.*, 2013). Standing scale, and also precedent panic attack show a positive significant relation with PTSD (Marshall – Brenz *et al.*, 2011). Negative knowledge about self and the world underlies the disorder (Shahar *et al.*, 2013).

The main trait of the disorder is, incidence of recurrent and disturbs memories or iterative nightmares, which comes with clear visual reproduction or without such reproductions. Emotional numbness, over alertness, sleep disturbance, feeling guilt, memory impairment, and avoidance of event memory reminders are common in this disorder (Kennrely, 2004). The World Health Organization has predicted that by 2020, this disorder will be the second largest disease in the world (Kenny *et al.*, 2011).

Studies show that, about 90 percent of rape victims, 70 – 90 percent of torture victims, more than 50 percent prisoners of war, 20 – 25 percent survivors of the earthquake and flood, and 15 percent victims of car accidents involve in PTSD. Sever stress can also lead to this disorder although it doesn't threat the person's life, such as death of a loved one (Ganji, 2012).

Stress imposes large financial and non-financial costs to employees and employers (Landi and Kont, 2011). The cumulative characteristic of stress causes that over the time, compressed stresses change to major crisis (Aghamiri *et al.*, 2011).

Personality characteristics of people affect their vulnerability rate toward crisis, and according to such definition the person's characteristics and perception type of under crisis people are more important than crisis factor for injury establishment. (Mental Health Organization, quoted from Aghamiri *et al.*, 2011.) Increasing alertness toward life's violent events has made it necessary to pay attention to people's reactions and the manner in which they deal with stressor elements (Astora, 2006).

In the last 20 years, increased studies about depression have shown the possibility of complicated relations between depression and stress so that, not only stress does increase the risk of catching depression, but also depression or depressive vulnerability in turn will lead to stressor events, at least in cases where a person is under influence of personal factors. So, the role of depression in production and prediction of established stress is protected here (Lui and Alloy, 2010). Although sadness is not equivalent to depression, but radical sadness or sadness

without excusable cause are within depression framework (Dadsetan, 2012).

Since depression disorder can cause changes in the field of patient's thoughts and lead to feeling emptiness, futility, and useless in a person, and can establish behaviors such as suicide, so it is of great importance (Sadok and Sadok, 2012). Depression can lead to suicide, addiction, low confidence and its consequences, and generally disorder in different occupational, family, and social functions, that directly and indirectly imposes heavy costs to society (Sharifi *et al.*, 2001).

PTSD is associated with increased risk for suicide, depression, and disorder in performance (Naylor *et al.*, 2013). Depression and PTSD are the most common effects of shock among survivors of accident with physical, emotional, and financial factors which their life is significantly affected by accident. An appropriate evaluation of depression and PTSD will be very impressive to have a correct understanding of possible consequences of the disorder and also on development of pharmacological and behavioral treatments (Steel *et al.*, 2011).

In a study about victims of motor accidents, results showed that development of PTSD disorder and its severity is associated with neurosis and conscience. Kind and severity of injuries propounded as one of the main reasons for increase in the disorder (Meretz *et al.*, 2012). Environmental indicators, such as inflammation, immunity, stress, and oxidant defense have more potential to cause depression (Lopresti *et al.*, 2013).

Studies of training hardiness and tolerance and their relation with perceived stress in university students showed that, increased tolerance and hardiness leads to reduction in their perceived stress (Mohamadi Hasel *et al.*, 2011). The hardiness concept is rooted in existential psychology. The word means endurance, ability, and tolerance for difficult situations, bravery, dare, audacity, and stamina (Longman and Arian poor, quoted from Azad Yekta, 2010).

Kobasa was one the first researchers who has tried to identify moderators variables of stressor factors based on Sallie theory. He has investigated the hypothesis that, the personality structure of individuals who are experiencing a high degree of stress without disease is different from those who get sick in stressor conditions. He named this kind of personality character as a structure called "Hardiness" (Kobasa, quoted from Shir Mohammadi *et al.*, 2010). According to Sozan Kobasa and Salvatore Medi, resistant (hardiness) has three properties:

1. Control: The belief that one can influence the events of his/her life, means sense of personal control
2. Commitment: Having goal and participation in events and activities and communication with people
3. Struggling: Tendency to perceive changes as stimulants or situations for development instead of thinking of them as a threat to security (Saraphino, 2007).

Longitudinal studies about hardiness and reaction to stressor situations showed that, reaction to stressor situation in people with hardiness has a better consequence

since of their personality features such as coping style and self-efficacy, than others (Delahaj et al., 2010).

There is a negative relation between scores of social protection and depression rate. People can reduce stress intensity through various methods: First, by joining social and religious groups, one can enjoy from more social support. Second, they can increase sense of resistance and control of their own and others through giving responsibility and having responsibility (Saraphino, 2007). Social support prevents mental disorders through strengthening self-esteem and reducing negative effects of stress (Krause, 1987).

People who are exposed to traumatic events often think that they have failed. Social support is effective in promoting health and reducing negative effects of work place and society- induced stresses, and the more social support increases, the more mortality and incidence of physical and mental are prevented in people (Callaghan and Morissey, 1993).

The results of a meta-analysis showed that, the affection rate of the amount of relation between mental health and social support in Iran is higher than average. This point out to the importance of providing reinforcement ground of social support among people (Moradi et al., 2011). Perceive social support has a moderator effect on number and severity of PTSD symptoms and suicide behavior in these individuals (Panagiotti et al., , 2013).

Attachment anxiety has positive significant effects on PTSD, MDD (Major Depression Disorder), and perceived social support. These findings state that, personality features and differences has a core and unique role in predicting changes and problems of mental health and interpersonal relations, and exposure to trauma during the time (Besser and Neria, 2010). Attachment rate, coping style with stress, and social stress are stated as the main factors, which maintain and expand PYSD symptoms (Christiansen et al., 2013). Recent meta-analysis studies suggest that, social support has an important role in setting posttraumatic symptoms in these patients.

Women with breast cancer had been diagnosed with 22% moderate to high depression, 12% PTSD, that factors such as, disease progression, harmful interactions, less social protection support, lower educational level, and lower age are stated as mental simultaneity, and higher level of anxiety (Mehnert and Koch, 2008). Given to strengthening action of perceived social support in the field of stressful experience researcher, scholars have emphatically insisted on the need to review it.

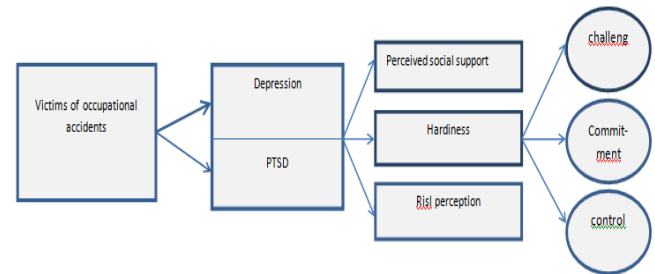
Term risk is defined in different ways, but the main definition is that, the person is in a situation that has to experience some risks (Short, quoted from Zare and Sgeibani, 2011). But, all concepts of risk have a common element, that is the distinction between reality and possibility (Rosa, quoted from Zare and Arab Sheibani, 2011). Investigations have shown that, people don't have equal estimation of risk while they are estimating it about

themselves and their families (Zare and Abdollah zade, 2012).

Many studies have shown that those who are more at risk than those who don't expose themselves at risk take less risk, that this findings is consistent with logical decision making. In Hablemitoglus (2008) study, results showed that, those female university students who have logical life style have avoidance tendencies, means they take less risk. This finding in line with the health belief model, is an example from the perspective of behavioral decision –making in the context of health (quoted from Zare, and Abdollah zadeh, 2012).

Stanovich (2006), in a study to assess the impact of logic-oriented and perception of risk proved that, this toll has validity and reliability to use in assessing risk perception, and also concluded that the higher is an individual's risk perception, the more he will be inclined to make rational decision (quoted from Zare and Arab Sheibani, 2012).

The main hypothesis of the research is that, there is a significant different between injured people and control group who haven't experienced occupational accident in the field of hardiness, social support, and depression.



The hypothetical pattern of the relation between variables

## MATERIAL AND METHODS

This is a post-event or casual-comparative research, which is retrospective and is trying to achieve effect from cause. Its design is a criterion one in which a feature is investigated that one of the groups doesn't have it. The statistical universe is victims of occupational accidents who are involved in Act 60 of National Social Security. The subjects of sample group were 25 people whom were selected through available sampling from Ilam province, and compared with 25 healthy and non-injured people that were matched according to demographic and work variables, and their average age was between 30 to 45 years old.

### Research Tools

**The Mississippi PTSD scale:** This test is a self-report scale that is collected by Keen et.al (1988), and is used to assess the severity of posttraumatic stress disorder. It has 35 items, and subjects reply to the items with a five-rate scale. The alpha Cronbach coefficient for the test is

obtained in the range of 0.94 to 0.86. This scale is validated in Iran by Godarzi (2002), and its alpha Cronbach coefficient is reported for 0.92.

**The Beck depression inventory:** This inventory was made by Beck and published in 1987. The inventory has 21 questions and is designed to evaluate depression intensity among youngsters and adults. The questions included mood, pessimism, sense of fail, auto gnosis, guilt, punishment, self-aversion, feeling self-guilty, suicide thoughts, cry, irritability, resignation, doubt, interpretation and imagination of body, work difficulty, insomnia, tirelessly, lack of appetite, loss of weight, preoccupation respect to body, and reduced sexual desire. The violence degree of depression is specified with a range of four degree from zero to three.

**Multidimensional scale of perceived social support:** This scale of subjective perceptions of adequacy evaluates social support in three sources of family, friends and other important, and has 12 items, which each item is rated on a five-degree range from completely disagree (1) to completely agree. In this scale, each of four articles is attributed to one of the family, friends, and other important functional group (Shokri *et al.*, 2012).

**Hardiness scale (investigating personal viewpoints):** This scale that is made by Kobasa is a 50 items inventory including sub-tests of challenge (17 questions), commitment (19 questions), and control (17 questions) which is formed based on four-choice likert scale, and has a domain from zero grade (quite wrong) to 3 (quite right) in 11 items. The test was translated by Ghorbani (1992), and its formal and content validity is computed. Studies show that hardiness components, means control, commitment, and challenge, have reliability

coefficient of 0.70, 0.52, 0.52, respectively, and the coefficient is computed 0.75 for whole hardiness characteristic.

**Bentlin, Slovic, Severson's risk perception list:** It is a seven propositional test that is scored based on Likert scale from quite agree (5) to quite disagree (1). Of course, scoring questions from 1 to 7 is reverse and total scores of seven items forms the total score of scale. Alpha Cronbach coefficient for this scale is reported 0.89.

## RESULTS

To compare injured and control groups between research variables, independent t-test was used. As is evident from the table, because values obtained for all variables are less than 0.05 except for Mississippi, it can be concluded that, there isn't a significant different between injured and control groups. But, results of Mississippi inventory are quite different, and since values for difference are more than 0.05, we can conclude that, the difference between injured and control groups are significant.

The correlation test was used to investigate correlation between variables. In the test, at first we study if there is any relation between variables. If the significance level is less than 0.05, it means that there is no relation between variables. Then, rate and intensity of the relation are examined. This rate is identified by the Pearson correlation coefficient. The closer is the coefficient to 1, the stronger is the relation between variables. As has been shown, the correlation between hardiness and perceived social support variables in injured group is at an acceptable level (0.533), and the correlation between risk perception and posttraumatic stress (0.877) and depression (0.516) is also in significant level.

**Table 1.** Comparison means of variables in both control and experiment groups

Variable	Groups	No	Mean	t-value	Freedom Degree	Significance Level
Hardiness	Injured	25 people	1.36	2.179	48	0.034
	Control	25 people	1.17			
Risk perception	Injured	25 people	3.53	-2.312	48	0.026
	Control	25 people	4.08			
Perceived social support	Injured	25 people	3.53	-2.371	48	0.024
	Control	25 people	4.08			
Mississippi	Injured	25 people	2.39	1.893	48	0.065
	Control	25 people	2.22			
Beck depression	Injured	25 people	1.78	3.758	48	0.001
	Control	25 people	1.26			

In non-injured group, hardiness is correlated with perceived social support (0.551) and depression (0.727); and also, risk perception variable has a good significant level with perceived social support (0.524).

We studied the main question of the research. The correlation coefficient in above table shows the rate of relation between variables. The closer is the rate to 1, the stronger is the relation between variables. Given to Pearson

correlation coefficient, that indicates severity between variables, we can understand that in injured group, the risk perception variable has a negative severity rate with posttraumatic stress and depression, that this reverse severity is higher in depression. According to table 3 we can say, in both injured and control there is no correlation between control and commitment variables but, this correlation exists between other variables.

**Table 2.** Rate of relation between variables

Items		Hardiness	Risk Perception	Social Support	Mississippi	Beck Depression		
Injured	Hardiness	Pearson Correlation Coefficient	1	0.366	0.137	0.275	-0.167	
		Significance Level		0.112	0.533	0.205	0.468	
	Risk Perception	Pearson Correlation Coefficient		1	0.380	-0.0307	-0.154	
		Significant Level			0.099	0.877	0.516	
	Perceived Social Support	Pearson Correlation Coefficient			1	-0.242	-0.453	
		Significant Level				0.265	0.039	
	Mississippi	Pearson Correlation Coefficient				1	0.507	
		Significant Level					1	
	Beck Depression	Pearson Correlation Coefficient					1	
		Significant Level						
	Control	Hardiness	Pearson Correlation Coefficient	1	-0.466	0.125	0.590	0.074
			Significant Level		0.019	0.551	0.002	0.727
Risk Perception		Pearson Correlation Coefficient		1	0.134	-0.625	-0.195	
		Significant Level			0.524	0.001	0.351	
Perceived Social Support		Pearson Correlation Coefficient				0.010	-0.491	
		Significant Level				0.962	0.013	
Mississippi	Pearson Correlation Coefficient				1	0.176		
	Significant Level					0.400		
Beck Depression	Pearson Depression Level					1		
	Significant Level							

## DISCUSSION

Occupational accident is an important economical phenomenon. Periodic fluctuations in workplace are not well known but, these accidents can be formed under effect of vulnerable behaviors. Meanwhile, human factors, including mental characteristics, play a very important role. As studies has shown, victims are more exposed to PTSD risk and depression (Richmond et.al, 2011), and this is what is shown in this study. Victims of occupational accident have well shown depression, but in the case of posttraumatic stress there was no significant difference between two groups. While, correlation studies show that hardiness and individual's resistance are important factors in the disorders incidence (Seyyed Khorasani Sadaghiani,

2011; Hystad, 2013; Nayyeri and Aubi, 2011; Gharehzad et al., 2013; Weiss et al., 2013; Fang Zang, 2011), and the challenge sub-scale here plays a more important role.

Also, examining correlations between variables shows the relation of hardiness and perceived social support too, but it doesn't mean that the more is a person's perceived social support, the more is his/her resistance and hardiness against stresses and accidents (Weiss et al, 2013). The risk perception is also another important factor that its relation with perceived social support is proved so that, risk perception in people has a reverse relation with disorder in victims. It means that risk perception factor, which is different among people, is an important factor in accident incident, which through its study on people it may be possible to prevent accidents in critical jobs. Finally,

perceived social support can play an important role in mental disorder reduction, including depression and PTSD, that we can consider it as the most important finding of the research (Kraus, 1987; Chun, cited of Beyrami, 2012).

Thus, it might be said that perceived social support in people due to hardiness and risk perception factors can play a key role in mental disorder reduction that this finding is consistent with results of a meta-analysis study which has shown that the relation between mental health rate and perceived social support in Iran is more than average (Moradi *et al.*, 2012). So we can say that, social protection of personnel from organizations, especially in critical jobs, can be counted as one of the important factors in reducing accidents and injuries, and the government investment in this field can prevent heavy financial costs and death.

It should be noted that, not enough research has been done in this area, especially in Iran, and it is one of the research's restrictions.

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