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The predictive power of injuries reporting rate and its dimensions by fatalism among the workers of a steel company

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Abstract

Fatalism, an obstacle to the adoption of safe behaviors, describes the belief that injuries are unavoidable and occur due to haphazard or fate. This study aimed to determine the degree of fatalism related to injuries reporting rate and its dimensions among the workers of a steel company. Study participants consisted of 250 employees working at a steel company who were selected through stratified random sampling method. Data was collected by the fatalism questionnaire of Williamson and et al. the scale of injuries reporting rate and its components (physical symptoms, psychological symptoms and accidents) by Barling and et al. as well as demography questions. Data was analyzed using Pearson correlation coefficient and MANOVA. The results showed that there were significant correlations between fatalism with injuries reporting rate and its dimensions: physical symptoms, psychological symptoms and accidents. Besides, multivariate analysis indicated that fatalism significantly predicted about 21%, 9%, 21% and 14% of the variance of the injuries reporting rate, physical symptoms and psychological symptoms and accidents. Changing fatalism culture in work environments may be important to prevent occupational diseases and accidents and to promote workers health.

Keywords: Accidents, Somatoform Disorders, Mental Disorders, Wounds and Injuries

Introduction

In the developed and developing countries, occupational accidents is known as one of the most important factors contributing to hurt workers' physical and mental health [1]. A number of studies have addressed occupational accidents in different occupational groups in various industries [2]. However, few studies have focused on occupational accidents in Steel industry. The highest fatal and non-fatal accidents/injuries every year belongs to steel industry. To protect employees we need to investigate the factors that affect the occurrence of these occupational injuries [3]. Kouabenan [4] showed that fatalistic beliefs are very common among those working at inferior positions and also among those involved in occupational accidents.

Fatalism is an obstacle to the adoption of safe working behavior [5]. Fatalism

emerges from the belief that injuries are unavoidable and happen due to haphazard or fate [6]. It is negatively related with reporting job risk and is positively related with self-care disorder [7]. Believe in fatalism have negatively influenced the acceptance of safe work practices [8]. Fatalism is described as the complicated psychological construct that may be recognized by the perceptions of worthlessness, powerlessness, hopelessness, and futile [9]. Believe in fatalism may facilitate the attitude that accidents are unprofitable and consequently, it increases helplessness among workers [10]. The results of Patwary, O'Hare and Sarker [11] showed that fatalistic beliefs among the personnel of an organization that attributed these events to "fate" reflectedd their perceived lack of control over accidents and revealed a lack of organizational awareness which may occur within a culture of fatalism. Researchers showed that fatalism is related with the lack of training in work environments [12] and may be considered as an attitude variable [13].

The consequences of fatalistic beliefs have been studied comprehensively in some disciplines [14]. Shaffer [15] indicated that fatalists favor individual or individual fate in their explanations and believe that, regardless of the actions one might take, injuries are inevitable. The fate attributions defined by fatalists show their perceived lack of control over hazards. People are less likely to prepare for natural mishaps if they believe that their preparedness will not significantly affect the likelihood and the extent of injuries that actually happen; they only believe in their fate [4]. Patwary et al. [11] found that fatalism was related with occupational stress and increased substance abuse problems.

Nonetheless, there is surprisingly little evidence on the empirical relationship between fatalism and job injuries. Research about fatalism may have many advantages for organizations and individuals for increasing employees' safe behaviors and promoting safety level in workplace [5, 16]. The present study aimed to determine the relationship between fatalism with injuries reporting rate and its dimensions (physical symptoms, psychological symptoms and accidents).

Method

The current correlation study was a cross-sectional design. The sample (n=250) was selected by the stratified random sampling method from employees working at Isfahan Steel Company in 2012. The population consisted of subgroups (or classes) and then random sampling technique was used to select the sample members from each class. Furthermore, the participants provided written informed consent to complete the self-administered anonymous questionnaires. A total of 250 (96%) workers returned the questionnaires.

Demographic data included age, gender, marital status, education, and the years of working experience. Marital status was classified as married or not married (including divorced and widowed).

Injuries reporting rate was measured using twenty-seven items from revised safety-related scale by Barling et al. [19]. Workers were informed to respond based on the events that had occurred during the previous 12 months on their job. A scale ranging from never to five or more times was used to measure the workers' responses. Barling and et al. [19] concluded that this questionnaire had high internal reliability (α Cronbach was from 70% to 80%) and was consistent with the tenth version of International Classification of Diseases.

Fatalistic beliefs were measured using fatalism scale of Williamson and et al. [17] . The items of fatalism scale refer to the views of importance and controllability of safety hazards [17]. The scores of participants were obtained by adding their responses to questionnaire items. It was based on a 5-score Likert style from 1 (strongly disagree) to 5 (strongly agree). Williamson and et al. [17] reported that the reliability (α Cronbach) of fatalism scale was 0.79. Besides, Munteanu [18], reported

the internal reliability of this scale 0.79 using Cronbach's alpha.

The Questionnaires of fatalism, injuries reporting rate and its' dimensions are presented in Table 1.

Table 1 *The Questionnaires of injuries reporting rate and fatalism*

Scales	Questions	Sources
Injuries reporting rate	In the last months, how frequently have you experienced these on the job?	Adapted from Baling and et al. [19]
	Physical Symptoms	
	Headache or dizziness	
	Persistent fatigue	
	Skin rash/burn	
	Strain or sprain (e.g. back pain)	
	Cut or puncture (open wound)	
	Temporary Loss of hearing	
	Eye injury	
	Electrical shock	
	Respiratory injuries (e.g. difficulty breathing)	
	Dislocated/fracture bone	
	Hernia	
	Psychological Symptoms	
	Loss much sleeps due to work related worries.	
	Been unable to concentrate on work related tasks.	
	Felt constantly under strain	
	Felt incapable of making decisions.	
	Been losing confidence in myself	
	Been unable to enjoy my normal day-to-day activities.	
	Accident	
	Was exposed to chemicals such as gases and fumes.	
	Over exerted myself while handing, lifting or carrying.	
	Slipped, tripped or fell on the same level.	
	Fell from height	
	Was struck by a moving vehicle	
	Was struck by flying/falling object(s)	
	Struck against something fixed or stationary	
	Was trapped by something collapsing, caving in or overturning	
	Contacted moving machinery	
	Other (Please specify)	
The samples of fatalism scale questions	If I worry about safety all the time I would not get my job done.	Adapted from Williamson and et al. [17]
	I cannot avoid taking risks in my job.	
	Accidents will happen no matter what I do.	
	I can't do anything to improve safety in my workplace.	

After translating the questionnaires of fatalism, injuries reporting rate and its dimensions by kiani et al. [16], the original questionnaires along with their Persian versions were presented to three faculty members of psychology department and four safety and mental health professionals; thus, about 22 versions of each scale were presented to the sample of workers and they were asked to opine about the questions and their reliability. After studying preliminary opinions and confirming the face and content validity of revised scales by experts and workers, the final scales were developed and were individually presented to the workers. Total items of two questionnaires were little changed to be consistent for using at Steel industry. Lastly, to ensure that the assessed occupational injuries were specific to Steel industry, we provided these twenty-seven items on the organization description of most frequently experienced injuries in this industry. The injuries reporting rate questionnaire is a tool for collecting data about reporting injuries rate and it includes three components namely physical symptoms, psychological symptoms and accidents [19]. In the current research, internal reliability coefficients (α Cronbach) for the questionnaire and its components (physical symptoms, psychological symptoms and accidents) were respectively calculated 0.83, 0.74, 0.72 and 0.80.

In the present study, the reliability of fatalism scale was obtained using Cronbach's alpha and split-half methods, respectively, 0.79 and 0.78. Data was analyzed using of Pearson correlation coefficient and MANOVA. All analyses were conducted using the SPSS-15 and the level of significance was <0.05.

Results

Almost the majority of participants were male because the main occupational groups were selected from production line in this study. Ages ranged from 18 to 53; the mean age of the participants was 30 (SD=±5.58 yr). Sixty two percent of the participants were high school graduates and 38% were university graduates. Eighty eight percent were married and 12% were unmarried. Almost half of the participants (42%) had been employed for more than 16 years, 28%were employed between 6 to 15 years and 30%for less than 6 years.

The mean, standard deviation and internal correlations of the study variables are presented in Table 2.

As it is seen, the relationship between fatalism with injuries reporting rate and its dimensions (physical symptoms, psychological and accidents) is significant (P<0.01).

Table 2 *The mean, standard deviation variable and internal correlations of the study*

Variable	N	$\bar{X}$	SD	Correlations				
				1	2	3	4	5
Fatalism	250	20.07	2 .53	1				
Injuries reporting rate	250	37.42	8.05	-0.45**	1			
Physical symptoms	250	14.86	3 .67	-0.30*	0.73**	1		
Psychological symptoms	250	9. 88	3. 44	-0.46**	0.76***	-0.63**	1	
Accident	250	12.67	8.04	-0.37**	0/71**	0.48**	0/39*	1

*P<0.05, **P<0.01

To assess the predictive power of injuries reporting rate and its dimensions by fatalism the canonical correlation method was used through Multivariate analysis. The results are presented in Table 3.

As it is observed in Table 4, fatalism predicted almost 31% of variance of injuries reporting rate and its dimensions (P<0.01). The univariate analysis of variance for the criterion variables considering the predictor variable of fatalism is presented in Table 4.

As it is seen, fatalism variable significantly

Table 3 *The multivariate analysis (MANVOA) of the predictor variable of fatalism based on the criterion variables of injuries reporting rate and its dimensions*

Effect	Value	F	Error df	Sig.	Partial Eta Squared	No cent. Parameter	Observed Power
Pillai's Trace	0.31	6.79	246	.001	0.31	20.37	0.97
Wilk's Lambda	0.68	6.79	246	.001	0.31	20.37	0.97
Hotelling's Trace	0.44	6.79	246	.001	0.31	20.37	0.97
Roy's Largest Root	0.44	6.79	246	.001	0.31	20.37	0.97

Table 4 *The univariate analysis of variance for the scores of injuries reporting rate and its dimensions according to the predictive variable of fatalism*

Dependent Variable	Sum of Squares	Mean Square	F	Sig.	Partial Eta Squared	Observed Power
Injuries reporting rate	640.49	640.49	12.14	.001	0.21	0.92
Physical symptoms	60.32	60.32	4.83	.033	0.09	0.58
Psychological symptoms	120.65	120.65	12.58	.001	0.21	0.94
Accidents	42.99	42.99	7.44	0.009	0.14	0.82

predicted respectively about 21%, 9%, 21% and 14% of the variance of injuries reporting rate, physical symptoms and psychological symptoms and accidents variables ($P<0.05$).

Discussion

The results of the present study indicated that fatalism significantly predicted injuries reporting rate, physical symptoms and psychological symptoms. This is consistent with the findings of the previous studies [5,11,13,20]. Mearns et al. [11] concluded that fatalism beliefs are related with occupational accident occurrence. Harrell [20] concluded that a higher likelihood of an occupational accident is associated with increased fatalistic orientation of employees. These results may be interpreted on the basis of the following possibilities:

First, Researches showed that fatalism beliefs are related to perceived helplessness and uncontrollability [9]. The perception of uncontrollability usually occurs when people have previously failed to achieve their career goals. If people think that they are unable to control events and attribute them to internal/stable/global causes, they would perceive helplessness; Helpless individuals perceive future events uncontrollable [21]. Studies indicated that helplessness was related with coping style of denial and avoidance, decreasing the well being, and increasing depression, anxiety, physical illness and injuries occurrence [22,23].

Second, Kouabenan [4] concluded that fatalistic workers take bigger risks because they have limited knowledge of accidents and week attitude toward safety issues, which makes them to misestimate the possibility of their occurrence. Forjuoh and Li [24], stated that, 'The lack of knowledge about the causes of injury, along with the low level of education in many countries...has resulted in people's adherence to the fatalistic theory of injury as acts of God'. Also, Henning and et al. [25] showed that fatalism was negatively related to safety attitudes. Safety attitude is related to other variables which are associated with the occurrence of accidents such as: safety compliance practices [26], risk behavior [27] and breaking safety rules [28].

Third, fatalism can be considered as a sub-set of external locus of control [29]. Employees with internal locus of control tend to believe that they can prevent accidents and injuries.

In contrast, those with external locus of control tend to believe that accidents and injuries are due to forces outside their control, such as fate, or fatalism [30]. Gonçalves, Silva, Lima and Meliá [31] revealed that the occurrence of accident is positively associated with external attributions and dangerous behaviors and is negatively associated with internal attributions. When individuals hold 'un-scientific views about accidents or disease causation, it is taken as the evidence of their training need. This view is located within the health promotion courses which underline the values of rationality, logical thought, planned decision making, self-efficacy and an internal locus of control [32, 30]. Training can help employees to the belief that they have the control of their lives and the capacity to act effectively and decisively. Thus by rational belief in given health actions, their chance of pursuing these actions is much greater than those having a different self-concept. Individuals need to believe that everybody is charge of one's own life; this belief is a key value of the effective health promotion courses [32]. Many studies, especially those in the healthcare context, indicate that purposive educational programs may be successful so long as they recognize the effect of individual and cultural attitudes and beliefs [33, 34]. Also, Silva et al. [35] studied the role of 'safety climate' on the individuals' sense of the accidents occurrence . They found that individuals who worked in a positive safety climate tended to make more internal attributions compared with employees worked in a negative safety climate. Thus, promoting safety climate can help to perceive the role of fate and chance in injuries occurrence.

Conclusion

The current study found a relationship between occupational injuries and fatalistic beliefs. Our finding suggest that the injuries reporting such as physical and psychological symptoms are simple indicators of the fatalism culture in organization, and coping strategies can be used for alleviating this symptoms in order to change this culture. Therefore, fatalism beliefs should be changed to optimize the physical and mental health of workers. The present study needs to be replicated in different populations and with more empirical support. The findings of this study should be interpreted with caution because the cross-sectional design of the study and the participants (i.e., a group of employees) exert some limitations on the generalizability of the findings. Furthermore, the limitations of using self-repotting instruments should not be overlooked. However, the limitation of self report surveys is usually accepted because they are considered as the most practical way to collect data and reflect individual attitudes and behaviors [36, 37].

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Contributions

Study design: FK, MRKH
Data collection and analysis: FK
Manuscript preparation: MRKH, FK

Conflict of Interest

"The authors declare that they have no competing interests."

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