

Original Article

Predictive Power of Injuries Reporting Rate and its' Dimensions by Perceived Organizational Support for Safety

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Abstract

Background and Purpose: Researchers have mentioned that perceived organizational support for safety may predict occupational accidents and psychological distresses in the workplace. The present study examined the degree of perceived organizational support for safety related to injuries reporting rate and its dimensions among workers' Isfahan Steel Company.

Materials and Methods: A self-administered anonymous was distributed to 189 workers. The survey included demographic factors, injuries reporting rate and its components (physical symptoms, psychological symptoms and accidents) and perceived organizational support for safety. The data were analyzed using Multivariate and correlation techniques.

Results: The results showed that: (1) there were significant correlations between perceived organizational support with injuries reporting rate and its' dimensions namely physical and psychological symptoms ($P < 0.050$); (2) There was not a significant relationship between perceived organizational support and accidents ($P > 0.050$); (3) Multivariate analysis indicated that perceived organizational support significantly predicted respectively about 14, 13 and 10 percent of the variance of variables of injuries reporting rate, physical symptoms and psychological symptoms ($P < 0.050$).

Conclusion: Improving employees' perception of support can be important to prevent the development of job injuries and to promote employees' safety and well-being.

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Key words: Safety, Support, Injury, Mental disorders, Somatoform disorders, Employees

1. Introduction

The steel industry has one of the highest injuries of fatal and non-fatal accidents/injuries every year. As a high-risk industry, there is a need to investigate factors that affect the occurrence of these accidents to be able to protect workers (1). Researchers showed that the high levels of support in organizations may reduce occupational diseases, and accidents are experienced by workers (2). Managers and supervisors of organization play a critical role in supporting the professional standard, expectations, and requirement that are conducive to a more supportive occupational setting as well as have critical role in the provision of workplace support (3).

Social exchange theory (4) has been used to explain how managers' behavior of the organization informs worker perceptions of organizational support and, in turn, effects employee behavior (5). According to this theory, arbitrary behavior is motivated by the reciprocity (6). That is, social goodwill is gained (or lost) by individuals to the extent that behaviors are perceived to meet (or fails to meet) informal exchange obligations; When behavior meet these social obligations, the exchange process is generative and the cycle continues. In terms of safety, when organization agents such as supervisors and managers convey concern for worker safety by valuing suggestions for improving safety, workers develop attitudes that their organization has a positive orientation toward theirs' safety and wellbeing, which in turn increases the probability that employees will participate in safety related exchanges (6,7) and participation in other safety-related actions; When safety related exchanges do not occur or are inconsistent, workers may be less willing to share ideas or be proactive about safety activities (8,9). This feeling of social support may generate a sense of approval and the possibility of positive individual outcomes (10).

Employees' belief that the organization has

a favorable or unfavorable orientation toward safety is fostered by their assignment of humanlike characteristics to the organization (11). Levinson (1965) noted that employees tend to view the organization as a living entity because it has responsibility for the actions of its agents (12); Therefore, they develop global beliefs concerning the extent to which their organization values their contributions and cares about their safety and well-being (perceived organizational support) (5,11). Organizational support theory considers the development, nature, and consequences of perceived organizational support (5,13,14).

Perceived organizational support denotes the general perception concerning the extent to which workers perceive their organizations' contributions and concern for their well-being (15-17). Workers with supportive perceptions compensate organizational support with loyalty, efficiency and increased productivity. They display greater emotional attachment and internalize organizational values and norms with stronger feelings of loyalty and faithfulness (5,14,17). Based on this theory, it is logical to expect that differences in perceptions of organizational support will affect differently employees' safety perceptions and their safety related activities (18). While the positive impact of perceived organizational support as a desirable organizational outcome has been well documented, there is surprisingly little evidence on the empirical relationship between perceived organizational support and job injuries. A notable exception is the study of Hofmann and Morgeson that examined the effects of perceived organizational support on safety communication, safety commitment, and accidents (6). The aim of the present study was the examination of the degree that perceived organizational support for safety related injuries reporting rate and its dimensions (physical symptoms, psychological symptoms and accidents). Previous studies have been mainly focused on

particular industries (19,20), and no attempt has been made to describe the relationship between perceived organizational support for safety and injuries reporting rate among Steel industry workers. Also, less research has focused on psychosocial dimensions of workplace such as perceived support.

2. Materials and Methods

This cross-sectional study was administrated between January and February 2012 in Esfahan Steel Company (ESCO), Iran. ESCO (Zob Ahan-e Esfahan) opened in late 1960s, based close to the cities of Fooladshahr and Zarrinshahr, Esfahan Province, Iran country. ESCO is the first and largest manufacturer of constructional steel products in Iran (No = 8300) (21). In this study, in attention to the extent and distribution of the employees in the different parts of Esfahan Steel Company (Tohid Building, Navard part, blast furnace, steel making, coke, fire, railway, gas, oxygen plant, technical guidance etc.), was used of stratified random sampling to select sample members. In stratified random sampling, the strata are formed based on members' shared attributes or characteristics. A random sample from each stratum is taken in a number proportional to the stratum's size when compared with the population. These subsets of the strata are then pooled to form a random sample. Then simple random sampling or systematic sampling is applied within each stratum. This often improves the representativeness of the sample by reducing sampling error. It can produce a weighted mean that has less variability than the arithmetic mean of a simple random sample of the population. The sample size was calculated using SPSS (version 15, SPSS Inc., Chicago, IL, USA), Following the procedure recommended by Molavi (22). Given an, α level 0.05 and a power of 90 percent, the sample size required was estimated to be 180 subjects. Given the likelihood of failure to

complete or return questionnaire, almost 200 employees were selected using stratified random sampling and questionnaires were distributed among them. Informed consent was obtained from each participant and was approved the research by the appropriately constituted ethics committees where the work was done. The entry criterion for a person to this study was the employment at the company's sectors and the selection from among the members of his/her group randomly. The exclusion criterion of the individual was the delivery of incomplete questionnaire and lack of interest in participating in current research. 6 members of the sample due to lack of interest in the research topic, and 5 members due to incomplete questionnaires (in total 11 people) were excluded of the main sample. 189 completed questionnaires were collected (95% rate of return). In order to control the confounding factors, questionnaires were completed by sample members in a quiet environment and away from the noise. Employees writing stated their satisfaction on participating in this research and in order to avoid bias in answering questions in the questionnaire. Furthermore, a covering letter explained the purpose of the study, and that participation in the study was confidentially was guaranteed. They were given to ensure that their responses would be confidential and responses by managers and supervisors will not see anyway and the results will be evaluated collectively, not individually. Respondents were asked to return completed questionnaires inside the sealed envelopes either to the person who had distributed them or directly to the research team. This study approved and financially supported by research committee of faculty of psychology and educational sciences of Esfahan University and Esfahan Steel Company. Also, No ethical hazard is known to authors of the research. All participants have agreed with participation in this study.

Validated instruments were used for data collection on perceived organizational support for safety, injuries reporting rate and dimensions (physical symptoms, psychological symptoms and injury). At first, all questionnaires were translated from English into Persian and independently back-translated into English by a second translator. The few discrepancies between the original English and the back-translated version resulted in an adjustment in the Persian translation based on direct discussion between the translators. At next step, psychometric characteristics of instruments were examined. Linguistic validation was performed by three experts of the psychology department and five experts of safety and health departments. Thus, the questionnaires were piloted and finalized with an advisory group of workers to ensure that the scales items were comprehensible and appropriate to the context. Moreover, conceptual analysis was confirmed the content validity of all instrument. The questionnaires were distributed to workers with the help of union steward. Participants were assured of confidentiality and informed consent in written format was acquired from each them. The following questionnaires were used:

- Demographic factors. Five demographic factors, namely age, gender, marital status, education, and years of working experience, were included. Marital status was classified as married or not married (including divorced and widowed).

- Perceived organizational support for safety. Perceived organizational support for safety with 15 items of Hayes et al. (23) were measured. Questions in the questionnaire refer to perceptions about managers attitudes and values of an organization related to safety issues. Two samples of the questions in this scale were: “our organization provides enough safety training programs,” “our organization conducts frequent safety inspections.” Respondents indicated the extent of agreement

with each statement on a 5-point Likert-type scale (1 = strongly disagree; 5 = strongly agree). The scores of participants were obtained by adding their responses to a 15-items questionnaire. Munteanu (24), in her study, calculated the internal reliability of this scale using Cronbach’s alpha 0.81. Evidence of reliability of this scale, as administered to Iranian relevant populations, in this research, by Alpha Coefficient is 0.78 and by Split-half is 0.77. The validity coefficients of questions are between 0.22 and 0.76 that all the validity coefficients are significant at $P < 0.001$.

- Injuries reporting rate. This questionnaire is a tool for collecting data about reporting injuries rate of Barling et al. (25) and it includes three components namely physical symptoms, psychological symptoms and injuries.

- Physical symptoms scale. This scale is a 20 items questionnaire of Barling et al. (25). It is made based on the frequency of physical symptoms that employees have experienced them in their jobs during the past month. Scoring is based on a Likert style of five degrees from 1 (never) to 5 (more than 5 times). Sum of the scores given to items is reported as the total score of physical symptoms for a worker. Prior studies surveying many industrials and organizations provide evidence for high internal reliability and criterion validity of the scale (24). Internal consistencies (Cronbach’s α) in this study in Iran were 0.72, which was good for this scale.

- Psychological symptoms scale. This scale is a tool with 7 items of Barling et al. (25). It is based on the frequency of psychological symptoms that employees have experienced them in their jobs during the past month. Scoring is based on a Likert style of five degrees from 1 (never) to 5 (more than 5 times). Psychological distress scores are from 0 to 28 that high scores indicate more psychological distress experienced by the individual. Munteanu (24) reported the internal validity of this scale using Cronbach’s alpha 0/83. Also,

she showed that this scale had good criterion validity. Internal consistencies (Cronbach's α) in this study in Iran were 0.74, which was good for this scale.

- Injury. This scale is a tool with 10 items of Barling et al. (25). It is based on the frequency of injuries that employees have experienced them in their jobs during the past month. Scoring is based on a Likert style of five degrees from 1 (never) to 5 (more than 5 times). Munteanu (24) reported the internal reliability of this scale using Cronbach's alpha 0/83. Also, she showed that this scale had good criterion validity. Internal consistencies (Cronbach's α) in this study in Iran were 0.80, which was good for this scale.

The score of injuries reporting rate is obtained from the sum of these three dimensions. Munteanu (24), in her study, calculated the internal reliability of this scale using Cronbach's alpha 0.80. Evidence of reliability of this scale, as administered to Iranian relevant populations, in this research, by Alpha Coefficient is 0.83 and by Split-half is 0.81. The validity coefficients of questions are between 0.21 and 0.83 that all the validity

coefficients are significant at $P < 0.001$.

In order to calculate the internal correlation coefficients between perceived organizational support for safety, injuries reporting rate and dimensions (physical symptoms, psychological symptoms and injury), Person correlation technique were performed and to determine the amount of shared variance between these variables was used of multivariate and Univariate analysis. Multivariate statistics is a form of statistics encompassing the simultaneous observation and analysis of more one outcome variable at time. All analyses were conducted using the SPSS program version 15 and level of significances was set at $\alpha = 0.05$.

3. Results

Almost the majority of participants were male because the main occupational groups were at production line in this study. Ages ranged from 18 to 53; the mean age of the participants was 34 yearr (standard deviation [SD] = 5.58 years) and average work experience was 12 year (SD = 3.2 years) (Table 1).

Table 1. Demographic characteristics of the sample members (N = 189)

	Frequency	Frequency percentage (%)
Age		
18-29 years	68	36
30-41 years	68	36
42-53 years	53	28
Sex		
Male	170	90
Female	19	10
Marital status		
Married	113	60
Single	76	40
Education		
Master degree	22	12
University graduates	45	24
High school graduates	113	60
Primary school graduates and lower	9	4
Work experience		
5 years and lower	68	36
6-15 years	45	24
16-25 years	45	24
26 years and higher	31	16
Shift status		
Shift	120	64
Not shift	69	36

Mean, standard deviation and internal correlations of variables under study are presented in table 2.

As can be seen relationship between perceived organizational support with injuries reporting rate and its' two dimensions namely physical and psychological symptoms is significant ($P < 0.050$). There was not a significant relationship between perceived organizational support and accident ($P < 0.050$).

Examining the data on perceived organizational support, injuries reporting rate and its dimensions showed that there was homogeneity of variances ($F = 0.33, P = 0.8700 > 0.050$) and also, the data were normally distributed. To assess predictive power of injuries reporting rate and its dimensions by perceived organizational

support were used of the canonical correlation method that is performed with Multivariate analysis. The results are presented in table 3.

As in table 4 is observed, perceived organizational support predicted almost 16% of the variance of injuries reporting rate and its dimensions ($P < 0.050$). Univariate analysis of variance on the criterion variables considering predictor variable of perceived organizational support are presented in table 4.

As can be seen perceived organizational support variable respectively about 14, 13, and 10 percent of the variance of variables of injuries reporting rate, physical symptoms and psychological symptoms significantly predicted ($P < 0.500$). Also, perceived organizational support about 4% of the variance of accident predicted, but these effects are not statistically significant ($P > 0.050$).

Table 2. Mean, standard deviation variable, and internal correlations under study

Variable	N	\bar{X}	SD	Correlations					
				1	2	3	4	5	
Perceived organizational support	189	22.79	4.47	1					
Injuries reporting rate	189	40.57	9.55	-0.37**	1				
Physical symptoms	189	15.75	3.78	-0.36**	0.66**	1			
Psychological symptoms	189	10.30	4.25	-0.31*	0.69***	-0.60**	1		
Accident	189	14.51	3.75	-0.21	0/71**	0.49**	0/35*	1	

* $P < 0.05$, ** $P < 0.01$

Table 3. Multivariate analysis of the predictor variable of perceived organizational support based on the criterion variables of injuries reporting rate and its' dimensions

Effect	Value	F	df	Error df	Sig	Partial Eta ²	No cent. parameter	Observed power
Pillai's trace	0.15	2.71	3	185	0.03	0.16	8.15	0.81
Wilk's lambda	0.85	2.71	3	185	0.03	0.16	8.15	0.81
Hotelling's trace	0.17	2.71	3	185	0.03	0.16	8.15	0.81
Roy's largest root	0.17	2.71	3	185	0.03	0.16	8.15	0.81

Table 4. Univariate analysis of variance on scores of injuries reporting rate and its' dimensions according to predictive variable of perceived organizational support

Dependent variable	Sum of Squares	df	Mean square	F	Sig.	Partial Eta ²	Observed power
Injuries reporting rate	617.39	1	617.39	7.69	0.008	0.14	0.82
Physical symptoms	95.47	1	95.47	7.54	0.008	0.13	0.76
Psychological symptoms	88.67	1	88.67	5.32	0.025	0.10	0.32
accidents	32.03	1	32.03	2.33	0.13	0.04	0.81

4. Discussion

The results of the present study indicated that perceived organizational support significantly predicted injuries reporting rate, physical symptoms, and psychological symptoms. This is consistent with the findings of the previous studies (26-28) and can be interpreted on the basis of the following possibilities:

First, the importance of perceived organizational support seems reasonable. Organizational support is essential to motivating employee to excel and provision of support in workplace. Previous research showed high levels of social support were related to decreased work stress and a greater appreciation of the work (29). The mechanism behind this relationship is that when worker perceive they have a high level of social support to draw on, they are fewer likely to estimate their environment as stressful, and managing various work demands, therefore less likely to susceptible the psychological and physical symptoms. The support of manager and supervisor may prepare the employee to feel better enable to adjust with work demands. The perception of support is a resource that reduce perceive of stressor in the workplace. Previous research indicated that the level of burnout was reduced if the worker feels able to negotiate about work problems with supervisor and managers (30).

Second, employees with the perception of support of organization realize that their health and safety for supervisory management is more important than the mere production; so they do not spend all my time for doing faster their jobs and do their work with more patience. On the other side, employees with the perception of work pressure have more job stress and want to do their work rapidly; therefore, at the time of working with organization machinery and perhaps even at the time of their passing involve in more accidents. The perception of employees about the company philosophy of production or safety, after the organization's policy towards

safety, was the second important factor in predicting safety performance (31). When employees perceive that their organizations are supportive, concerned, and interested in their safety and well-being, they are more likely to realize that their organizations value their safety as well (32).

Third, the theory of demand-control, describes work stress as developing from the structural or organizational aspects of the work environment and not the individual characteristics (33). A part of this theory is the interaction between the job demands is put on the employee and the management to coordinate those demands (34). Employees involved in positions with low control, high demands and low support, are in a higher danger of physical and psychological harm from work stress (35). Mcclenahan et al. concluded that high demands and low control and low support accounted for 26, 6, and 8 percent of the variance in job satisfaction, psychological distress and burnout, respectively (36). Lack of support and poor communication may act as stressors, and therefore leading to the perception of work stress (37). Providing essential information and skills about mental health, including occupational stressors, have desired effects on the mental health of employees, at least in the short term (38). Through providing information for subordinates or transferring attitudes or opinions about safety to them, often supervisors and managers act as a driving force affecting workplace safety (39). In order to minimize the occurrence of physical and psychological symptoms, it is important to provide support for employees (40). Also, studies have shown that supervisor support and the quality of communication between the supervisor and employees have a significant impact on learning transfer about safety issues (41).

About the existence of week relationship between perceived organizational support and accident can be said that in order to establish

this relationship also should be other conditions such as high-risk environments, unsafe equipment and machines, coworkers support, risk taking, etc. Parker et al. (2006) stated that focusing on managers' behaviors alone is scant for developing a more proactive workforce (42).

The strengths of this study included, first, that there is a great need for the accumulation of scientific research on the association between organizational support and injuries, and our study provides evidence that organizational support is of important in the etiology of physical and psychological symptoms. Second, in organizations should be taught to supervisors and managers how to establish good relations with subordinates. Indeed, most organizations spend all their time to design interventions for safety promotion. Although employees will learn ways to deal with safety issues, but when they enter the workplace, because of poor relations with supervisors and managers, involve in the paradoxical situation that cause learning from interventions becomes pale, again fall in the same destructive cycle of conflicts.

In summary, our finding suggest that the reporting of injuries such as physical and psychological symptoms are simple indicators of weak organizational support, and coping strategies can be used to alleviate this symptoms due to increasing support in organization. Also, we can say that in situations with low organizational support, workers are suffered physical and mental illnesses and leads to their burnout during time; but because the organizational support leads to accident, also should be other conditions such as risk conditions, low job control, high job pressure, and work overload, etc. In other words, organizational support for the Injuries is a necessary condition, but not enough. Therefore, organizational support should be minimized to optimize the physical and mental health of workers.

The present study needs to be replicated in different populations and needs more empirical support. Till then, the findings of the study should be interpreted with caution. Further, the cross-sectional design of the study and participants (i.e., a group of employee) exert some limitations on the generalization of the findings. Finally, the problems and limitations on the use of self-reporting instruments should not be overlooked. However, limitation is usually accepted due to the self-report surveys are considered the most practical way to collect data and to reflect individual attitudes and behaviors (8,9).

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