Predictors of the work-related depressive symptoms among blue-collar male employees of an industrial unit in Iran

Masoud Lotfizadeh1,2, Shadi Rahimzadeh3,4, Saeid Zareiy5
1Department of Community Health, Shahrekord University of Medical Sciences, 2Social Determinants of Health Research Center, Shahrekord University of Medical Sciences, Shahrekord, 3Noncommunicable Diseases Research Center, Endocrinology and Metabolism Population Sciences Institute, Tehran University of Medical Sciences, 4Department of Epidemiology, Shahid Beheshti University of Medical Sciences, 5NAHAJA Health Research Center, AJA University of Medical Sciences, Tehran, Iran

Address for correspondence:
Dr. Masoud Lotfizadeh,
Department of Community Health, Shahrekord University of Medical Sciences,
Shahrekord, Iran.
E-mail: masoud_lotfizadeh@yahoo.com

ABSTRACT

Background and Aim: Possible associations between depressive symptoms and work-related parameters have frequently been discussed in the literature. The present study was aimed to evaluate the work-related depressive symptoms and their possible-related parameters among male employees of Esfahan Steel Company (ESCO) as one of the most important industrial sites in Iran. Materials and Methods: With a cross-sectional design and a stratified random sampling method in 2010, a total of 400 male employees were enrolled from the operational parts of the ESCO. Results: Among 400 participated employees, 245 (61.3%) were rotational duty employees and 358 (89.5%) were reported making <$500. After applying the linear regression model, some variables including: economic difficulties (P = 0.022, odds ratio [OR] = 0.558, 95% confidence interval [CI] = 0.339–0.919), family-related problems (P = 0.003, OR = 0.303, 95% CI = 0.138–0.669), and work environment (P < 0.001, OR = 0.244, 95% CI = 0.140–0.426) were found to be significantly associated with higher depressive symptoms among the participants. Conclusion: The present study brought to light the predictors of occupational depressive symptoms among blue-collar employees of ESCO. More research is needed to find the causal relations between mental health and work-related parameters among Iranian employees.

Keywords: Depression symptoms, industrial, Iran, male blue-collar employees

Depression is known as one of the most important mental health problems in the world considered to be contributed significantly to the global rates of morbidity and mortality.1–3 Depressive symptoms introduced depression as the leading cause of disability and the fourth leading contributor to the Global Burden of Disease (GBD) in the year 2000.4,5 In fact, it is estimated to be the second leading cause of GBD by the year 2020.6 In addition, on a global scale, one of the important causes of early death and disability-adjusted life years is depression.7 In a study on Tanzanian health workers, there was an increase in the number of patients with depressive symptoms.8 Furthermore, recent studies have documented the high prevalence of depression in developed and developing

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Lotfizadeh M, Rahimzadeh S, Zareiy S. Predictors of the work-related depressive symptoms among blue-collar male employees of an industrial unit in Iran. Ind Psychiatry J 2016;25:160-5.
countries, i.e., 1 in 5 of farmworkers in the USA may have an episode of stress, anxiety, or depression.\(^{[8-11]}\) It has also revealed that about 78.98% of health administrative was depressed.\(^{[12]}\) It might be worth to mention that lowered mood and motivation, anxiety/tension, loss of appetite and interest, decreased energy and fatigue, sleep disturbances, gastrointestinal problems, irritability, emotional distance, poor concentration, and feelings of guilt or low self-worth might be among the most important depressive symptoms.\(^{[13,14]}\)

Moreover, the possible association between depressive symptoms and work has frequently been discussed before.\(^{[2,15-18]}\) For example, Haslam \textit{et al.} investigated nine focus groups of employees and found a relationship between anxiety/depression and impaired work performance and safety.\(^{[19]}\) In another study conducted by Edimansyah \textit{et al.} on 728 male assembly automotive workers in Malaysia, psychological job demand, job insecurity, and hazardous condition were found as the related parameters of stress, anxiety, and depression.\(^{[20]}\) Wang \textit{et al.} also conducted a study to evaluate occupational stress and depression among hospital physicians in Taiwan and found the lowered depression among those with greater workplace social support and higher job control.\(^{[21]}\) Compared with the other work-related psychosocial problems such as alcohol abuse, burnout, unexplained physical symptoms, and “sick building syndrome,” depression have been suggested as the most likely adverse psychosocial outcome as well.\(^{[22]}\)

Unlike the developed nations, the assessment of mental health among employees of industrial units remains limited in Iran if not absent. To date, there was no formal literature could be found exploring the relationship between depressive symptoms and its detrimental effect on workers in Iranian work contexts. Given the importance of such research, the aim of this study was to evaluate work-related depressive symptoms and its possible-related parameters among male employees of Esfahan Steel Company (ESCO) as one of the most important industrial sites of Iran.

**MATERIALS AND METHODS**

**Design and setting**

Data were extracted from the self-report information of employees who worked in the operational units of ESCO, one of the largest Iranian governmental companies. Another report has also been extracted from this data set before.\(^{[23]}\)

**Esfahan Steel Company**

ESCO is one of the largest industrial sites in Iran which was established in the year 1965. This company started to produce various types of steel in the year 1971. ESCO is mainly divided into two categories including operational and nonoperational parts, in which nowadays approximately 6000 employees are working. Operational employees are blue-collar workers who work in steel production process, while nonoperational employees are white-collar individuals such as managers who do office works. Several events and facilities such as recreation trips, educational programs, national and international athletic events, and health-care services are provided to increase mental and physical quality of life of the employees and their family members in ESCO.

**Participants and sampling**

The total number of 380 respondents, which rose to 440 to increase the confidence level, was enrolled in the study, while 40 were excluded due to their incomplete questionnaires. All 400 selected participants were male workers who had at least 1-year work experience in ESCO and were sampled based on the stratified random sampling method from September to December 2010, while employees with long-term leave or absence in the time of the study and employees with severe mental illness or other serious diseases with regular psychological medication (according to ESCO health center’s report) were excluded from the study.

It should be mentioned that this research is a screening study, neither diagnostic nor therapeutic. However, the detected (severe) patients will refer to a specialist for further treatment.

**Ethical procedures**

Informed written consents were taken from the participants and the manager of ESCO. All the questionnaires were anonymous, and we assured the participants that their information would be kept confidential. This study was also approved by the Head of the Research and Development Department of ESCO.

**Pretests**

Two different types of pretests (formal and informal) were conducted prior to the main study. The informal pretest was designed to make any correction in question wording, content, and ensure the clarity of scenarios and was administered to 25 participants similar to the main study participants. With a Cronbach’s alpha of 0.87, the formal pretest was also conducted in March 2008 on 36 ESCO employees who were not participated in the main study. The results of these two pretests supported the researchers to improve the questionnaires to be more easy-to-understand for the participants.

**Process**

The questionnaires were filled out through interviews, and no financial incentives were offered to the participants. Each interview lasted at least 20 min.
Lotfizadeh, et al.: Work-related depressive among blue-collar employees in Iran

Research instruments
The main questionnaire included two main parts; in the first part, sociodemographic data including age, number of children, marital status, monthly income, educational level, rotational duty, and the years of work experience were asked. An outcome-related questionnaire was designed based on the depression scale extracted from the validated depression, anxiety, and stress scale (DASS 42). This three-dimensional standard questionnaire was suggested for the first time by Lovibond and Lovibond in the year 1995 and rapidly became popular due to its easy understandable design. Each subscale contained 14 questions, and all items were rated on a 4-point scale, where 0 = does not apply to me and 3 = applies to me very much or most of the time.24 In the depression scale questionnaire, 14 items were designed specifically to assess depression. This scale comprised following 14 items: “I couldn’t seem to experience any positive feeling at all,” “I just couldn’t seem to get going,” “I felt that I had nothing to look forward to,” “I felt sad and depressed,” “I felt that I had lost interest in just about everything,” “I felt I wasn’t worth much as a person,” “I felt that life wasn’t worthwhile,” “I couldn’t seem to get any enjoyment out of the things I did,” “I felt down-hearted and blue,” “I was unable to become enthusiastic about anything,” “I felt I was pretty worthless,” “I could see nothing in the future to be hopeful about,” “I felt that life was meaningless,” and “I found it difficult to work up the initiative to do things.” Since the DASS questionnaire is designed to use, especially in developed countries (with the cutoff point of 10),24 based on the receiver operating characteristic curve, the cutoff point was reevaluated by the authors. The participants who were scored 10 or higher were considered as depressed. The depression scale questionnaire was translated and validated by a group of public health tutors and professors in Shahrekord and Isfahan University of Medical Sciences. Based on a Cronbach’s alpha of 0.84, internal reliability of the questionnaire as a DASS subscale was found to be high.

Statistical analyses
The collected data were analyzed by the Statistical Package for the Social Sciences version 16 (SPSS Inc., Chicago, IL, USA) for Windows. For bivariate analysis, Mann–Whitney U-test and Chi-square tests were used. The logistic regression model was examined and determined the associated parameters of depression among the participants. Odds ratios and 95% of confidence intervals were also reported. A P < 0.05 was considered as significant.

RESULTS
Among participants, 351 (87.8%) were married, 79% had one or more children, 78.3% had attained high school diploma or higher, 245 (61.3%) were rotational duty employees, and 358 (89.5%) reported making <$500. The mean work experience of the respondents was 13.63 ± 7.5 years [Table 1].

Our study showed that depression is significantly associated with both work position and work environment (P < 0.001). A significant association was also seen between family-related problems (P = 0.001) and economic difficulties (P = 0.027). Moreover, a significant difference was seen in the depression scores in participants with higher psychological problems (P = 0.04) [Table 2].

Applying logistic regression, economic difficulties (P = 0.022), family-related problems (P = 0.003), and work environment (P < 0.001) pertained to higher depressive symptoms significantly [Table 3].

DISCUSSION
The findings of this study showed that the work environment, economic difficulties, and family-related problems were found to be associated with higher levels of depressive symptoms among employees of operational units in the ESCO. In this study, it has been found that the work environment was significantly

Table 1: Sociodemographic profile of the Esfahan Steel Company employees (n=400)

| Sociodemographic factors | Depress, n (%) | No depress, n (%) | P |
|--------------------------|----------------|-----------------|---|
| Marital status           |                |                 |   |
| Single                   | 35             | 14              | 0.91 |
| Married                  | 248            | 103             | 0.022 |
| Number of children       |                |                 |   |
| No children              | 47 (56)        | 37 (44)         | 0.54 |
| ≥ 1 child or more        | 165 (52.2)     | 132 (47.8)      | 0.625 |
| Education level          |                |                 |   |
| Primary and junior high school | 59          | 28              | 0.49 |
| High school diploma or higher | 224         | 89              | 0.675 |
| Monthly income (USD)     |                |                 |   |
| < 600                    | 27             | 15              | 0.02 |
| ≥ 600                    | 256            | 102             | 0.20 |
| Rotational duty          |                |                 |   |
| Yes                      | 179            | 66              | 0.20 |
| No                       | 104            | 51              | 0.20 |

Table 2: Perceived depression among the Employees of Esfahan Steel Company (n=400)

| Depression Levels          | n (%) |
|----------------------------|-------|
| No depression              | 123 (8.3) |
| Mild or moderate depression| 266 (6.5) |
| Severe depression          | 266 (6.5) |
| Extreme depression         | 3 (0.75) |
Lotfizadeh, et al.: Work-related depressive among blue-collar employees in Iran

Table 3: Predictors of occupational depression among the employees of Esfahan Steel Company (n=400)

| Predictor                      | β    | SE   | Exp(β) (OR) | 95.0% CI       | P   |
|--------------------------------|------|------|-------------|----------------|-----|
| Economic difficulties          | 0.101| 0.044| 1.885       | 0.014-0.188    | 0.005|
| Work environment               | 0.399| 0.055| 3.086       | 0.014-0.42     | 0.001|
| Children problems              | 1.012| 0.416| 2.752       | 0.13-0.67      | 0.01 |

SE – Standard error, OR – Odds ratio, CI – Confidence interval

associated with depressive symptoms among the participants.

There are selected studies pointing the work environment and health outcomes such as depression.[17,22,25,26] Drawing on the demand–control model (which was developed by Karasek in 1979) and suggested that workplace stress is a function of job demand and level of existing control on person’s responsibility.[27] Work environment is divided into the following components: job demand, job control, social support, and factors related to the effort-reward imbalance.[28] Considering this theory, different studies found an association between lack of job control and lack of intrinsic rewards (such as bonuses, special gifts or awards, which are granted for a job well done to employees) with depression among computer software engineers.[29,30] In another study, Mausner–Dorsch and Eaton indicated the relation between work environment and the different forms of depression.[31] They suggested that the strength of the association could increase as the definition of depression could become more severe. However, it seems that attention to the components of the demand-control model might justify our finding. Higher depressive symptoms were found to be significantly associated with financial difficulties of the participants. Certain theories have been proposed to justify the relationship between financial difficulties and mental health; The effort-reward imbalance model has also been developed to identify conditions of failed reciprocity in social contracts, with a particular focus on work, and to predict reduced well-being and increased illness susceptibility as a consequence of this exposure.[32] In addition, based on the demand-control model,[33] the effort-reward imbalance and lack of intrinsic rewards were the other possible parameters, which might have led to depressive symptoms among the participants.

The prevalence of depressive symptoms was also associated with increased family-related problems among the employees of ESCO. Although we found no study having a similar outcome as the current project, based on the literature some studies have explored the relationship between occupational stress and family-related problems.[34,35] Some studies considered this association as a result of economic difficulties.[36,37] However, one has evaluated the association of work-related depressive symptoms and family-related problems.

Our results indicated that the perception of work-related psychosocial factors is also related to an elevated risk of depressive symptoms among the participants. In fact, psychosocial factors, especially stressful life circumstances are a major concern in the current research on the etiology of depression.[38,39] This framework views depressive symptoms as resulting from the interplay of several domains of variables, including personal and environmental resources, environmental stressors, and the individual’s appraisal and coping responses to specific stressful events. Consistent with another study, major depression was a leading cause of psychiatric morbidity which may be influenced by psychosocial factors in the workplace, although evidence so far remains circumstantial.[40] According to the Beck’s cognitive theory of depression, negative life events could increase the vulnerability of people to depression due to negative aspects such as loss and poorer outcome than expected performance.[41] This hypothesis also might partly justify the finding of this study.

There were also some limitations. The cross-sectional design of the present study precludes any causal relationship between work-related parameters and depressive symptoms among the employees of ESCO. In addition, all participants of this study were male employees. It must be mentioned that no woman employee is working in the operational units of the ESCO. Another limitation of this study was that all measuring symptoms were taken through self-report method, which may have introduced bias due to possible over-reports and/or under reports. However, findings from other studies using longitudinal designs have suggested possible relationships between job factors and depressive symptoms.[42,43] Stratified random sampling method remains another limitation, which prevented the results of the study to be generalizable to the general population. Despite the given limitations, it should be taken into account that the present study is the first study evaluating the predictors of depressive symptoms among blue-collar employees in Iran.

CONCLUSION

Work environment, economic difficulties, and family-related problems found to be associated with higher depressive symptoms among blue-collar workers of a large industrial unit in Iran. Further research is needed to find if these factors could cause depression among industrial employees and to design proper interventions not only in Iran but also in other countries.
Acknowledgment
This study was supported by the Shahrekord University of Medical Sciences, Iran, and School of Medicine, (SKUMS). Special thanks are due to the managements of the Esfahan Steel Company and all others who assisted the authors in this research.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. Chua HC, Chan LL, Chee KS, Chen YH, Chin SA, Chua PL, et al. Ministry of health clinical practice guidelines: Depression. Singapore Med J 2012;53:137-43.
2. Munce SE, Weller I, Robertson Blackmore EK, Heinmaa M, Katz J, Stewart DE. The role of work stress as a moderating variable in the chronic pain and depression association. J Psychosom Res 2006;61:653-60.
3. Wang Z, Insliecht SS, Metzler TJ, Henn-Hasee C, McCaslin SE, Tong H, et al. A prospective study of predictors of depression symptoms in police. Psychiatry Res 2010;175:211-6.
4. Srivastava K, Ryali V, Prakash J, Bhat PS, Shashikumar R, Khan S. Neuropsychophysiological correlates of depression. Ind Psychiatry J 2010;19:82-9.
5. World Health Organization. Depression. Available from: http://www.who.int/mental_health/management/depression/definition/en/.[Last accessed on 2015 Sep 22].
6. Siegrist J, Effort-reward imbalance at work and health, and environmental stress frequency and intensity in adolescents of central area of Iran, 1381 (2002). Arak Med Univ Med Univ J (Rahavard Danesh) 2007;10:22-30.
7. Haslam C, Atkinson S, Brown SS, Haslam RA. Anxiety and depression in the workplace: Effects on the individual and organisation (a focus group investigation). J Affect Disord 2003;88:209-15.
8. Edimansyah BA, Rusli BN, Naing L, Mohamed Rusli BA, Winn T, Tengku Mohamed Ariff BR. Self-perceived depression, anxiety, stress and their relationships with psychosocial job factors in male automotive assembly workers. Ind Health 2008;46:90-100.
9. Lotfizadeh M, Moazen B, Habibi E, Hassim N. Occupational stress among male employees of Esfahan steel company, Iran: Prevalence and associated factors. Int J Prev Med 2013;4:803-8.
10. Haslam C, Atkinson S, Brown SS, Haslam RA. Anxiety and depression in the workplace: Effects on the individual and organisation (a focus group investigation). J Affect Disord 2003;88:209-15.
11. Edimansyah BA, Rusli BN, Naing L, Mohamed Rusli BA, Winn T, Tengku Mohamed Ariff BR. Self-perceived depression, anxiety, stress and their relationships with psychosocial job factors in male automotive assembly workers. Ind Health 2008;46:90-100.
36. Crouter AC, Bumpus MF. Linking parents’ work stress to child and adolescent psychological adjustment. Curr Dir Psychol Sci 2001;10:156-9.
37. Robinson BE, Flowers C, Carroll J. Work stress and marriage: A theoretical model examining the relationship between workaholism and marital cohesion. Int J Stress Manag 2001;8:165-75.
38. Stansfeld S, Candy B. Psychosocial work environment and mental health – A meta-analytic review. Scand J Work Environ Health 2006;32:443-62.
39. Bhui KS, Dinos S, Stansfeld SA, White PD. A synthesis of the evidence for managing stress at work: A review of the reviews reporting on anxiety, depression, and absenteeism. J Environ Public Health 2012;2012:515874.
40. Choi WG. Ethnic Koreans from China: Korean Dream, Adaptation, and New Identity; 2006. Available from: http://www.cct.go.kr/data/acf2006/multi/multi_0203_Woo-Gil%20Choi.pdf. [Last accessed on 2014 Jun 17].
41. Beck AT, Rush AJ, Shaw BF, Emery G. Cognitive Therapy of Depression. New York: Guilford Press; 1979.
42. Rugulies R, Bültmann U, Aust B, Burr H. Psychosocial work environment and incidence of severe depressive symptoms: Prospective findings from a 5-year follow-up of the Danish work environment cohort study. Am J Epidemiol 2006;163:877-87.
43. Stansfeld SA, Fuhrer R, Shipley MJ, Marmot MG. Work characteristics predict psychiatric disorder: Prospective results from the Whitehall II Study. Occup Environ Med 1999;56:302-7.
44. Niedhammer I, Goldberg M, Leclerc A, Bugel I, David S. Psychosocial factors at work and subsequent depressive symptoms in the Gazel cohort. Scand J Work Environ Health 1998;24:197-205.
45. Ferrie JE, Shipley MJ, Stansfeld SA, Marmot MG. Effects of chronic job insecurity and change in job security on self reported health, minor psychiatric morbidity, physiological measures, and health related behaviours in British civil servants: The Whitehall II study. J Epidemiol Community Health 2002;56:450-4.