

Assessment of Psychological Distress among Workers of a Confectionary

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Objective: Psychiatric distress and work related stress may have a profound effect on an individual's well-being. The aim of this study was to estimate the prevalence rate of mental health problems and their distribution by age, educational level, marital status and years of employment in a chocolate manufacturing company in Iran. The General Health Questionnaire (a widely used screening instrument) which detects a wide range of psychological problems, mainly anxiety/depression spectrum, was used in this study.

Method: The study group consisted of 144 workers who were screened using the GHQ-28 in the Persian language version. Workers with a GHQ score of 6 or more were defined as having psychiatric distress. Multiple logistic regression was performed to assess the odds ratios (ORs) for mental health problems including age, years of employment, marital status and educational level of the GHQ.

Results: The prevalence of suspected mental health problems increased with age and years of employment (range 16.7%-41.2% and 15.2%-36.8%, respectively). The increased risks for mental health problems were observed for the range 11-20 (OR = 3.1; 95% CI 1.1-8.4) and >20 years employment (OR=3.7; 95%CI 1.2-11.3).

Conclusions: The study results demonstrated a significant association between years of employment and suspected mental health problems.

Key Words:

Food industry, Mental health, Occupational Health, Prevalence

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According to the World Health Organization, the next two decades may witness worldwide changes in the pattern of epidemiology of diseases. Non-communicable diseases such as mental disorders may replace infections (1). The epidemiological studies in Iran have been conducted on limited populations and in a few numbers of cities; the prevalence of mental disorders in these cities vary from 11.9% to 23.8% (2). The General Health Questionnaire (GHQ), which is a popular and widely used instrument in research worldwide (3-5), screened non-psychotic mental health problems (6, 7) in this study. This self-administered questionnaire focuses on two major areas: 1) the inability to carry out normal functions 2) the appearance of new and distressing phenomena (6, 7). In 1988, Goldberg and Williams reported that the GHQ had been translated into nearly 38 languages, and been validated by over 50 validity studies (8). These validity studies were conducted mainly in Western European countries and the USA (8-11). Goldberg and Hillier's 28-item scaled version of the General Health Questionnaire (GHQ-28) has been used to measure the psychological aspect of quality of life (12). In 1999, the Persian version of the General Health Questionnaire (GHQ-28) was conducted in a study of health status in Iran; later on, the mentioned study was used in a national health survey (13, 14).

A widespread concern on job stress exists in post-industrialized countries. A study conducted in the USA concluded that 29% of workers experience various level of stress at their workplace (15). There is ample scientific evidence to suggest that prolonged exposure to job stress is associated with several types of chronic health problems including cardio-vascular diseases, particularly hypertension and psychological distress. In the USA, for example, expenditure on health care is nearly 50% higher for workers who report high levels of stress at work (16). Stress factors can affect job satisfaction, and health and safety of operators; they can also cause staff burnout (17, 18).

Using the Persian version of GHQ-28, this study investigated the suspected psychological distresses in workers of a leading chocolate and confectionary manufacturing company in Iran. The major activities of the mentioned company were production of different kinds of biscuits, chocolates, snacks and syrups.

Materials and Method

Participants

The participants of this cross-sectional study were selected from different departments of the company. Of the total sample of 344 workers selected to take part in the study, 144 (41.8%) were selected using stratified random sampling. The response rate was 100%. 144

workers between 21 to 60 years of age were screened using the GHQ-28. Subjects were also stratified by process, comprising Salty Crunchy, Biscuit, Chewing gum, Chocolate and Wafer. All workers were asked to answer a self-administered questionnaire concerning age, height, weight, tobacco smoking, years of experience, educational level and marital status. The GHQ-28 is a scaled Persian language version, which is comprehensible to almost every Iranian; validity and reliability of the version were approved in an independent study. Sensitivity and specificity of GHQ-28 were 84.7% and 93.8%, respectively. The responses were translated into scores with a maximum of 7 points in each section. We used a cut-off score of two for each subscales and six for the total score. Based on such scoring, if the total score was 5 or less (from 28) then the person would be regarded as healthy. The higher the GHQ-28 scores, the greater the degree to which the subject may suffer from a psychiatric distress (13, 14). The GHQ-28 incorporates four subscales: somatic symptoms (items 1-7); anxiety and insomnia (items 8-14); social dysfunction (items 15-21); and severe depression (items 22- 28) (19). Respondents rate themselves on a four-point severity scale according to how they recently experienced each GHQ item: "better than usual"; 'same as usual'; 'worse than usual'; or 'much worse than usual'. Depending on the severity of the choice selected, normally, each item is scored either '0' or '1'. A total score is computed by adding the scores of each individual item (7).

Statistical Analysis

The SPSS for Windows (version 11.5) was used for analyzing the data. Bivariate analyses with Pearson's chi-square test for 2_2 contingency tables were used to determine the associations of psychiatric morbidity (GHQ-28) with other variables. The odds ratios and their confidence interval were estimated using logistic

regression; and statistical signification was established at $p < 0.05$.

Results

Demographic characteristics of the workers are demonstrated in Table 1. The mean \pm SD age and duration of employment were 37.8 ± 10.1 and 14.5 ± 8.9 , respectively. In total, 30 (20.8%) of the workers were smokers and 124 (86.1%) were married. Among the subjects, 31-50 years group (63.2%) and 11-20 years group (41.7%) had the highest age frequency and employment duration respectively.

Table 2 illustrates the results of descriptive statistics of scores for the four subscales of GHQ-28, showing that somatization has the lowest percentage score (21.5%) among the subscales, while depression has the highest percentage score (36.8%).

There were significant differences between age and period of employment and social dysfunction ($P < 0.005$ and $P < 0.008$), respectively.

In addition, there were significant differences between educational status and social dysfunction and depression ($P < 0.023$ and $P < 0.028$), respectively. No significant effect of marital status was found on subscales (Table 3).

Based on the logistic regression analyses (Table 4), the following conclusions were drawn:

- (a) Single workers had a relative risk of mental health problems of 1.6 compared with married workers.
- (b) The risk of suspected mental health problems increased with age.
- (c) The highest risk of suspected mental health problems was related to duration of employment > 20 years (OR=3.7; 95% CI=1.2-11.3) and 11-20 years (OR=3.1; 95% CI=1.1-8.4) compared to duration of employment < 10 years.
- (d) With increasing educational level, the risk of suspected mental health problems decreased.

Table 1. Demographic characteristics of the sample (n=144)

	Chewing gum (n=43)	Biscuit (n=36)	Salty Snack (n=19)	Chocolate (n=25)	Wafer (n=21)	Total (n=144)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Age (years)	$\bar{X} = 33.7(SD \pm 9.8)$	$\bar{X} = 37.0(SD \pm 9.0)$	$\bar{X} = 37.3(SD \pm 9.8)$	$\bar{X} = 41.4(SD \pm 10.2)$	$\bar{X} = 43.1(SD \pm 9.4)$	$\bar{X} = 37.8(SD \pm 10.1)$
≤ 30	19 (44.2)	6 (16.7)	5 (26.3)	5 (20.0)	1 (4.8)	36 (25.0)
31-50	21 (48.8)	27 (75.0)	12 (63.2)	16 (64.0)	15 (71.4)	91 (63.2)
> 50	3 (7.0)	3 (8.3)	2 (10.5)	4 (16.0)	5 (23.8)	17 (11.8)
Duration of employment (years)	$\bar{X} = 10.8(SD \pm 8.9)$	$\bar{X} = 13.2(SD \pm 7.1)$	$\bar{X} = 14.7(SD \pm 8.5)$	$\bar{X} = 18.6(SD \pm 9.3)$	$\bar{X} = 19.9(SD \pm 7.9)$	$\bar{X} = 14.5(SD \pm 8.9)$
≤ 10	19 (44.2)	13 (36.1)	7 (36.8)	6 (24.0)	1 (4.8)	46 (31.9)
11-20	17 (39.5)	18 (50.0)	6 (31.6)	7 (28.0)	12 (57.1)	60 (41.7)
> 20	7 (16.3)	5 (13.9)	6 (31.6)	12 (48.0)	8 (38.1)	38 (26.4)
Educational status						
Diploma	19 (44.2)	23 (63.9)	15 (78.9)	22 (88.0)	19 (90.5)	98 (68.1)
Diploma +	24 (55.8)	13 (36.1)	4 (21.1)	3 (12.0)	2 (9.5)	46 (29.9)
Marital status						
Single	12 (27.9)	4 (11.1)	3 (15.8)	1 (4.0)	0 (0)	20 (13.9)
Married	31 (72.1)	32 (88.9)	16 (84.2)	24 (96.0)	21 (100)	124 (86.1)

Table 2. Score for the subscales of the GHQ-28 test

Scores	Somatization		Anxiety		Social dysfunction		Depression	
	n	%	n	%	n	%	n	%
0	89	61.5	73	50.7	75	52.1	63	43.8
1	24	16.7	29	20.1	33	22.9	28	19.4
2	12	8.3	16	11.1	17	11.8	17	11.8
3	9	6.3	14	9.7	12	8.3	15	10.4
4	4	2.8	6	4.2	4	2.8	6	4.2
5	1	0.7	1	0.7	2	1.4	13	9
6	5	3.5	4	2.8	1	0.7	1	0.7
7	0	0	1	0.7	0	0	1	0.7
Total	31	21.5	42	29.2	36	25	53	36.8

Table 3. Distribution of suspected psychological disorders of Workers

Subscales	Somatization (Cut point = 2)			Anxiety (Cut point = 2)			Social dysfunction (Cut point = 2)			Depression (Cut point = 2)		
	n	%	X ² P-value	n	%	X ² P-value	n	%	X ² P-value	n	%	X ² P-value
Age (years)												
≤ 30	5	13.9		7	19.4		4	11.1		10	27.8	
31-50	22	24.2	NS	30	33.0	NS	23	25.3	<0.05	34	37.4	NS
> 50	4	23.5		5	29.4		9	52.9		9	52.9	
Duration of employment (years)												
≤ 10	6	13.0		11	23.9		4	8.7		11	23.9	
11-20	15	25.0	NS	19	31.7	NS	20	33.3	<0.08	25	41.7	NS
> 20	10	28.0		12	31.6		12	31.6		17	44.7	
Educational status												
Diploma	24	24.5	NS	32	32.7	NS	30	30.6	<0.023	42	42.9	<0.028
Diploma +	7	15.2		10	21.7		6	13		11	23.9	
Marital status												
Married	28	22.6	NS	37	29.8	NS	33	26.6	NS	48	38.7	NS
Single	3	15.0		5	25.0		3	15.0		5	25.0	

Table 4. Estimated logistic regression coefficients and odds ratios^a

	GHQ28 >6			
	n	Prevalence (%)	Adjusted OR	95% CI
Age (years)				
≤ 30	6	16.7	1	-
31-50	26	28.6	1.2	0.1-12.4
> 50	7	41.2	2.1	0.1-31.2
Duration of employment (years)				
≤ 10	7	15.2	1	-
11-20	18	30.0	3.1 ^b	1.1-8.4
> 20	14	36.8	3.7	1.2-11.3
Educational status				
Diploma	31	31.6	1	-
Diploma +	8	17.4	0.7	0.2-2.5
Marital status				
Married	35	28.2	1	-
Single	4	20.0	1.6	0.3-8.8

a- risk factors calculated simultaneously using logistic regression and expressed as Odds Ratios (OR) with 95% Confidence Intervals (95%) (GHQ28 >6 adjusted for age, duration of employment, educational status and marital status).

b- Results in bold type are statistically significant.

Discussion

The experience of stress reactions in the workplace is not an isolated phenomenon(20). A number of working life aspects have been linked to stress. Aspects of the work itself can be stressful, namely work overload (21, 22). The conflict between work and family relations and the impact of work on personal relationships may cause stress(22). Furthermore, physical conditions such as high noise levels, overcrowding in the workplace or a lack of privacy have been associated with stress (23). The results showed that by using score of 6 in GHQ-28 as a cut off point, %27 of suspected mental health problems. Whereas Arghami et al , Hashemi Nazari et al and Shahrokhi showed that the prevalence of suspected psychological disorders in workplaces of Iran according to the traditional ranking and cut point of 6 on the GHQ-28, were 43.8%,15.2% and 35%, respectively. Another previous study in Japan has reported that the prevalence of mental health problems was 5.4% (24-27) . In this study, comparing the results according to the GHQ-28 showed that the prevalence of suspected mental health problems are higher than what was found in the epidemiological studies of mental health problems in Iran (2). In this study, differences in methods and tools for screening and diagnosis as well as different classification systems and age groups may account for the minor differences in results. However, variation in stress levels may be due to demographic characteristics.

The current study shows that demographic characteristics (except marital status) are affected by social dysfunction. This study demonstrates that the prevalence of suspected mental health problems in the ages of 50 and over is more than the 31-50 and <30 years age group. This may be explained by reduction in physical vigor and the greater vulnerability of older people to stress as well as mental and physical diseases.

Lee et al showed that the study according to the GHQ-28 is approximately compatible (28). A study in Norway showed that the most common age group was 30-39 years(29) . The rate in the USA was more in the age group 25-34 (30).

The highest estimated prevalence of suspected mental health problems was found among workers with low levels of educational status. Socio-cultural constraints in such groups which pose limits on their coping styles in the face of stress may be considered as one of the main factors in causing suspected mental health problems. This finding was consistent with previous studies that were conducted in other countries(29-31). Logistic regression analysis in the current study showed that duration of employment exhibits a statistically significant effect on any scores of GHQ-28. The workers with less than ten years of employment had the lowest prevalence of suspected mental health problems. The experience and duration

of employment were found to negatively influence the prevalence of suspected mental health problems in workers. The reasons for this are unclear, but a lack of such correlation in years of employment may be due to the survey sample containing a considerably smaller number of group workers with 20> years of employment (n=38) compared with <10 years of employment (n=46). Another study showed that experience modifies the job stress and mental health of workers(32).

The present study shows that the prevalence of suspected mental health problems among the married workers is higher than the single (28.2% versus 20.0%) but Odd Ratio (OR) of suspected mental health problems among the single is higher than the married (1.6 times). It did not explain a statistically significant effect on mental health problems. The marital status may be an important factor maintaining the mental health of workers. In a study, it was reported that marital status was a powerful predictor of workplace mental distress for health workers (33). Furthermore, another study, in accordance with the GHQ, demonstrated that marital status was significantly associated with psychiatric disturbance (32) . However, one study failed to find such an association. In this study showed that marriage is economic and social stress factors such as financial matters, family management and child care (14).

Conclusion

Based on the results of the current study, it is estimated that 21.5-36.8% of the workers suffer from one or more of the suspected mental health problems and they need mental health services. This study demonstrates that employment duration was significantly associated with suspected mental health problems according to the GHQ. It may confirms the importance of incorporating psychiatric disorder in planning preventive and management programs.

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