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## Burnout and Social Support in Bafq's Miners

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**Methods:** This investigation was a descriptive and analytical, cross-sectional study. 250 out of 700 miners working at Bafq's Iron Ore Mine were selected randomly to participate in this study. To collect data, Maslach Burnout Inventory (MBI) and Adolescent Family Caring Scale (AFCS), besides some items on demographic characteristics and job satisfaction were used. The collected data were analyzed using SPSS Software, version 16, operating descriptive analysis and Pearson Correlation Test, T-test, and Regression analysis.

**Findings:** The mean age of miners was  $34.73 \pm 6.83$ . 90% of them were married and native residents. More than 70% of the subjects had mild emotional exhaustion and depersonalization, however, reduced sense of personal accomplishment was severe among more than 70% of workers. There was a significant correlation between burnout level and social support and its three dimensions  $P < 0.05$ .

**Keywords:** burnout, social support, job satisfaction, miners, workers.

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# Burnout and Social Support in Bafq's Miners

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**Findings:** The mean age of miners was  $34.73 \pm 6.83$ . 90% of them were married and native residents. More than 70% of the subjects had mild emotional exhaustion and depersonalization, however, reduced sense of personal accomplishment was severe among more than 70% of workers. There was a significant correlation between burnout level and social support and its three dimensions  $P < 0.05$ . The social support level was good enough among over 80% of the workers, besides, more than 58% of them reported more than average job satisfaction. There was a significant correlation between job satisfaction and burnout level ( $p < 0.05$ ). According to linear regression analysis, house ownership and job satisfaction were the best predictors of burnout.

**Conclusion:** More than two third of workers had no problem in terms of burnout. Also, levels of social support and job satisfaction were more than average among over 70% of workers. However the level of personal accomplishment feelings was very low, which can be studied further.

**Keywords:** burnout, social support, job satisfaction, miners, workers.

## 1. INTRODUCTION

Work in mines is one of the most dangerous jobs, all around the world. Among different jobs, accidents, especially those leading to death, happen in mines(1). Figures showed that 10% of accidents are due to hardware problems, while 90%

happen because of problems of human forces. It is proved that working in mines causes different diseases and studies revealed that miners' life expectancy was considerably shorter than that of other worker (2). Nowadays, different mental and emotional pressures in job environment cause stress among people. Factors such as role confusion, lack of social support, and organizational changes, if continued, may lead to burnout(3). Burnout affects the individual, as well as his/her organization, and in a longer period of time may affect the society(4).

It is estimated that an average of 37 million workdays are lost due to mental disorders, neurological problems, and headache; and in many cases, burnout caused absence and workday loss(5). Scholars have defined burnout differently. Freuden Berger was the first one who defined this term in late 1960s. He had seen symptoms of exhaustion among his staffs and called it the staff burn out syndrome(6). The first one suffering from depression is the individual him/herself. Unsuitable work condition, thinking to be inefficient in the organization, lack of personal development and few opportunities to promote in the organizational hierarchy system are among factors causing burnout(7).

Burnout refers to the state of physical and mental exhaustion and lack of motivation which may cause absence, workday loss, and decrease in motivation, and in some cases leads to physical disorders and cardiovascular dysfunction(8). However, social support is introduced as a useful adjustment recourse to manage stressful circumstances in workplace and is known as a reducer of bad stressful effects of workplace(9-11). Social support refers to the interpersonal interaction with friends, colleagues, managers and other people which may include mutual, informal, automatic and useful exchanges(12). Job satisfaction is defined as the indicator of the level of interest in the job and enjoying doing that(13).

Some studies revealed that human services jobs caused burnout (15). However, it seems that research on miners, because of their hard work situation, is also possible. It is noticeable that economically, mines are part of national treasures; therefore, it is important to pay attention to miners' physical health and mental abilities.

Concerning the importance and difficulties of mining, the factors which provide the condition for burnout in this workplace, and limited studies done in this regard particularly on miners in Iran, the hypothesis of this study was "the levels of social support and job

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satisfaction have some influences on miners' burnout". Therefore, it aimed at investigating levels of burnout, social support and job satisfactions among mine workers.

## II. METHODS

This study was a cross-sectional, descriptive, and analytical study conducted to investigate the burnout, social support and job satisfaction among miners of Bafq. Bafq is a town in Yazd Province, having several iron ore mines. The population of Bafq is around 40000, and 10000, or in other words, most of the men in the town, work in iron ore mines. Since the town is located within a desert and is far from other cities, iron ore mines are the main working opportunities for the workers.

The statistical population under investigation included all workers who had worked in mines within the last year. The sample size, based on statistical formula, was estimated as 250 workers out of 700. Then a stratified random sampling was done to select appropriate proportion of workers working in different parts of the mine.

Having the consent of mine managers and workers to fill the questionnaire and ensuring them to remain anonymous and keep the information confidential, the selected miners filled the questionnaire. Moreover, the topic of study and the questionnaire were accepted by Ethical Committee of Shahid Sadoughi University of Medical Sciences, Yazd. The questionnaire was categorized into four parts including Maslach 22-item Burnout Inventory, 12-item social support questionnaire, one question on job satisfaction, and the last part contained 14 items on demographic characteristics such as age, educational level, residency, income, employment, work shift, and number of children.

Maslach Burnout Inventory (MBI) was introduced by Maslach and Jackson in 1982 to measure burnout rate(16). This inventory consisted of 22 items which measure three aspects of burnout, 9 items dealt with emotional exhaustion, 5 items measured depersonalization, and 8 items were about reduced sense of personal accomplishment. The frequencies were estimated by scores ranged from 0 to 7 (never, a few times a year, once a month or less, a few times a month, once a week, a few times a week, every day). Obtained scores were divided into three categories of low, average, and high. The scoring is reported in table 2. The higher the scores of emotional exhaustion, depersonalization, and reduced sense of personal accomplishment, the higher is the burnout level. Like other studies done in Iran(12, 17, 18). since the scores of frequency and severity were very similar and related and respondents were unable to distinguish them, The obtained scores of frequency and severity were alike;

therefore, only burnout frequency is reported. The reliability of the questionnaire was confirmed according to other studied conducted in Iran (5, 19-21).

To measure perceived social support, Adolescent Family Caring Scale (AFCS) was used(22). This scale contained 12 items which measures three categories of perceived support from family (4 items), from other important people (4 items), and from friends (4 items). All the items were scored from 0 to 5 (strongly agree, agree, no idea, disagree, strongly disagree). The total score of this scale ranged from 12 to 60. In Iran, after translation of the questionnaire by Masoudnia and comments of psychologists to normalize the scale, internal reliability coefficient for three aspects were calculated, using Cronbach's alpha(23). In the present study, the internal coefficient of questionnaire's items, using Cronbach's alpha were .76, .80, .85; respectively.

To measure job satisfaction level, a three-point question (1-3) (little, average, much) was used. Demographic questions were about educational level, residency, income, employment, house ownership, and work experience. The collected data were analyzed by SPSS 16, and statistical figures were explained. Finally based on data distribution, parametric tests were used, and Pearson Correlation Coefficient, Chi-Square, T-test, ANOVA, and Regression analyses were operated.

## III. RESULTS

Miners' mean age was  $34.73 \pm 6.83$ . Among 250 miners working in the production section, 234 (93.6%) were male. 57 (24%) workers had primary education, 97 (40%) had Diploma, and 87 (36%) had university degrees. 215 (90%) of workers were native residents and 103 (43%) were permanent employees. 153 (64%) worked in shifts. 167 (69%) of them owned personal houses. 174 (84%) of workers had incomes less than 12 million Rials. 154 (76%) of them had two children. Concerning work experience, 26 (53%) had less than 10 years of experience. The level of workers' burnout in terms of emotional exhaustion, depersonalization, and reduced sense of personal accomplishment are reported in Table 1.

Table 1 : Frequency of burnout and level of job satisfaction among miners

dimensions	Burnout , job satisfaction level		
	level	frequency	percentage
emotional exhaustion	low	175	72.6
	average	36	14.9
	high	30	12.4
depersonalization	low	184	75.1
	average	39	15.9
	high	22	9.0
Reduced sense of personal accomplishment	low	35	14.6
	average	36	15.1
	high	168	70.3
Job satisfaction	low	57	23.4
	average	82	33.6
	high	105	43.0

75% of miners had mild depersonalization and more than 72% of them had low emotional exhaustion. However reduced sense of personal accomplishment of around 70% of workers were sever. 70% of miners showed average and high job satisfaction.

Table 2 : Frequency of burnout among miners according to demographic characteristics

frequency of burnout demographic characteristics	Emotional Exhaustion			P value	Depersonalization			P value	Personal Accomplishment			P value
	severe N (%)*	moderate N (%)	mild N %		severe N %	moderate N (%)	mild N %		severe N (%)	moderate N (%)	mild N (%)	
9	5(9.41)	8(15.1)	40(75.5)	.781	5(9.3)	4(7.4)	45(83.3)	.028	35(97.3)	12(23.1)	5(6.9)	.327
By 12	14(14.9)	12(12.8)	68(72.3)		12(12.6)	13(13.7)	70(73.7)		71(77.2)	9(8.9)	13(14.1)	
By 13	2(7.7)	5(19.2)	19(73.1)		1(3.8)	4(15.4)	21(80.8)		18(69.2)	4(15.4)	4(15.4)	
≥14	9(15.0)	10(16.7)	41(68.3)		3(4.9)	18(29.5)	40(65.6)		39(63.9)	10(16.4)	12(19.7)	
					Work experience							
≤10 years	2(7.4)	2(7.4)	23(85.2)	.984	0		29(100)	.090	16(57.1)	7(25.0)	5(17.9)	.502
>10 years	2(8.3)	2(8.3)	20(83.3)		3(11.5)	1(3.8)	22(84.6)		11(50.0)	4(18.2)	7(31.8)	
					Income (ten thousands Rials)							
>800	9(9.7)	15(16.1)	69(74.2)	.509	4(4.2)	17(17.9)	74(77.9)	.273	65(69.9)	15(16.1)	13(14.0)	.245
810-1200	13(17.1)	10(13.2)	53(69.7)		10(13.2)	13(17.1)	53(69.7)		57(76.0)	5(6.7)	13(17.3)	
<1200	3(9.1)	7(21.2)	23(69.7)		2(5.9)	5(14.7)	27(79.4)		21(61.8)	7(20.6)	6(17.6)	
					Type of the job							
shiftwork	19(12.9)	23(15.6)	105(71.0)	.971	16(10.6)	23(15.2)	112(74.2)	.507	102(70.3)	21(14.5)	22(15.2)	.961
Regular working hour	11(13.3)	12(14.5)	60(72.3)		5(6.1)	14(17.1)	63(76.8)		57(68.7)	13(15.7)	13(15.7)	
					Type of employment							
permanent	12(12.0)	16(16.0)	72(72.0)	.544	9(9.0)	20(20.0)	71(71.0)	.424	71(71.7)	15(15.2)	13(13.1)	.756
contract	16(12.6)	18(14.2)	93(73.2)		13(10.0)	16(12.3)	101(77.7)		85(67.5)	21(16.7)	20(15.9)	
					Number of children							
≤2	7(11.3)	29(19.3)	104(69.3)	.232	16(10.5)	22(14.5)	114(75.0)	.543	105(69.5)	22(14.6)	24(15.9)	.698
>2	27(15.7)	4(8.9)	34(75.6)		3(6.7)	9(20.0)	33(73.3)		32(76.2)	5(11.9)	5(11.9)	
					House ownership							
owner	20(12.3)	29(17.8)	114(69.9)	.433	20(12.0)	23(13.9)	123(74.1)		117(73.1)	22(13.8)	21(13.1)	.477
renter	9(12.9)	7(10.0)	54(77.1)		1(1.4)	16(22.9)	53(75.7)	.027	47(65.3)	12(16.7)	13(18.1)	

Emotional Exhaustion (low = <13, moderate = 14–20, high = >21).DP, Depersonalization (low = <4, moderate = 5–7, high = >8).PA, Personal Accomplishment (low = >34, moderate = 33–29, high = <28).

N\* unequal relate to missing some of item

There was a significant difference between workers' scores on depersonalization and their house ownership P<.005. The difference between scores of depersonalization and educational level was also significant. P<.005.

There was no significant difference between scores of emotional exhaustion, depersonalization, and reduced sense of personal accomplishment and demographic characteristics of miners, including number of children, work experience, income, type of work, type of employment (Table 2)

Table 3 : Correlation Coefficient between three aspects of burnout and three aspects of social support and job satisfaction

dimensions of Burnout, Social Support, job satisfaction	1	2	3	4	5	6	7
1 Emotional Exhaustion	1						
2 Depersonalization	r=0.677**	1					
3 Personal Accomplishment	r= -0.332**	r=-0.206**	1				
4 Friend support	r =-0.196*	r= -.249**	r= 0.194*	1			
5 Family support	*r =-0.199	r= -0.199*	r= 0.196**	r=0.455**	1		
6 Other support	r =-0.347**	r= -.308**	r= 0.224**	r=0.700**	r=0.446**	1	
7 Job satisfaction	**r = -0.531	r= -.341**	r= 0.438**	r=0.232*	r =0.136*	r=0.377	1

\*P<0.05 \*\*p<0.001

The burnout level significantly and negatively correlates with three dimensions of social support and job satisfaction. This correlation was negative that is, the more social support and job satisfaction levels, the less was burnout level.

The relationship between depersonalization and social support and job satisfaction was significantly negative. However reduced sense of personal accomplishment correlate with job satisfaction and social support, significantly and positively.

Table 4 : Linear regression analysis between three aspects of burnout and job satisfaction and predictor variables

(Constant)	Emotional exhaustion	Depersonalization	Personal accomplishment	Job satisfaction
Friend Support	-0.056	-.188	.152	<b>-.013</b>
Family Support	-.179	-.065	.230*	<b>-.008</b>
Others Support	-.688	-.147	.080	<b>.255**</b>
Job Satisfaction	-3.912**	-1.070**	2.213**	

\*P<0.05 \*\*p<0.001

Based on results of regression analysis, job satisfaction was the best predictors of emotional exhaustion and depersonalization levels. The Reduced sense of personal accomplishment were predicted better by job satisfaction and family support. (Table 4)

#### IV. DISCUSSION

Based on the findings, mild emotional exhaustion and depersonalization and severe reduced-sense of personal accomplishment were shown among miners which was different from some studies (5, 24, 25)and in accordance with some other(6, 12, 21, 26, 27). Although working in offices and organizations in big cities leads to sever burnout(24, 25), it seemed that the low level of burnout among 70% of miners is due to cultural, economic, and social characteristics of the majority of workers which caused low burnout in terms of emotional exhaustion and depersonalization , since similarity in economic and social basis of native workers

leads to less conflict and tensions and consequently less emotional exhaustion and depersonalization. Experts believe that average and severe emotional exhaustion relates to the role conflict and interpersonal conflicts(6). However, in accordance with other studies, in this study reduced sense of personal accomplishment were severe(6, 12, 27).these feelings are revealed by lower efficiency and job dissatisfaction, feelings of failure, losing recognition and understanding ability. Success and domination are achieved when the individual can affect the policies of the respective organization, and therefore, show his/her capabilities and will take positive attitudes toward himself/herself and clients(25). it seemed that in this paper, based on the results, lack of positive attitude and feelings of effectiveness in the policy making process of the organization led to lower sense of personal accomplishment. Contrary to some studies in which the higher level of education resulted in lower burnout level (24, 25, 28).

In accordance with another study(29), in the present study, there was no significant difference between miners' educational levels and burnout levels. However, the mean score of depersonalization was significantly different from their educational level. Depersonalization refers to the mental detachment from one's occupation(30) .it can be said that this detachment and negative reaction lessened as the educational level increased. However, since 75% of the workers had associated degree or less. Maybe because of the relative similarity in the educational levels of most of the miners, mean scores of emotional exhaustion and reduced sense of personal accomplishment were not significantly different from educational levels.

Mean scores of emotional exhaustion and the miners' work experience were not significantly different. However, greater percentage of workers with less than 10 years of experience, had lower burnout. This finding was different from some other studies'(5, 16, 31, 32) but showed that there was no significant difference between work experience and total burnout scale. Probably, factors other than work experience affected the burnout level of the workers studied(30).

In accordance with other studies, the difference between income level and mean score of burnout was not significant(5, 26, 33). It seemed that income level did not caused higher levels of burnout among the miners, since the income of most of them were similar to each other. While the minimum wage of workers in Iran, determined by the Supreme Labor Council, was 4,300,000 Rials, more than 80% of the workers received between 8,000,000 to 12,000,000Rilas.

Probably, native workers, considering the living environment in Bafq and relative income satisfaction, were far from severing burnout. Those who had great expectations and got a job full of motivation, hopes and ideals are more likely to suffer burnout(33).

As the results showed, 64% of the workers under study worked in shifts and 67% of them were contract employees. Although in some studies the working condition affected burnout (34) in the present study, no significant relationship was seen between the mean score of burnout and type of employment (permanent, contract) and type of working (shift working, regular working hour). It may be said that other factors, different from type of employment and work, influenced the workers' burnout.

House ownership at the native residents' point of view is very important, which includes 90% of the workers in Bafq. The effect of house ownership in burnout was shown in this study and those who had a private house experienced lower burnout. Probably, workers in the small traditional town of Bafq, by adherence to their traditions, had less dissatisfaction and burnout. Burnout can be correlated with type of job, job satisfaction and also social life and personal relationship (35, 36)

Around 75% of the miners had average to high job satisfaction and there was negatively significant correlation between job satisfaction and burnout. The negative correlation of job satisfaction and burnout was also reported by other researchers(4, 11). Concerning different factors which make working in mines susceptible to burnout, job satisfaction leads to less burnout among the workers under study.

Although some studies did not find any relationships between social support and burnout(13, 37), the present study showed the significantly negative correlation of social support with emotional exhaustion and depersonalization. This result showed in other studies (29, 38-40)and significantly positive correlation of social support with lack of sense of personal accomplishments, that is, the more the social support in the family, the more was the sense of personal accomplishments(11, 28, 41). Bataineh said that designing support systems are one of the most important factors which increase individuals' resistance against burnout. In fact, Bataineh believed that strong support systems were the bases of professional and occupational promotion in the workplace, and these systems reduce the sensitivity of individuals to burnout, quitting and changing the job(35).One of the best methods to confront psychological pressure is looking for support from reliable members of belonging colleagues, family or social group(9, 42). The present study revealed that job satisfaction was the best predictors of burnout; however the determining role of job satisfaction in three aspects of burnout was noticeable.

Limitations of the study: one of the shortcomings of the study refers to the similarity of the samples. Most of them were native residents and their demographic characteristics were relatively similar. This may reduce the generalizability of the results. Besides, since job satisfaction is an important factor in determining the burnout level, other studies can be done on it using more valid and standard questionnaires to investigate that.

## V. CONCLUSION

In general, it can be said that relatively lower levels of emotional exhaustion and depersonalization among the workers depends on the environment and social conditions, as well as working conditions. Accordingly, Miners in Bafq had appropriate condition in terms of social support and job satisfaction and consequently lower burnout. However, the low level of the sense of personal accomplishment should be studied further.

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