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Relation between burnout components and CVD in poor job design

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ABSTRACT
Burnout a multidimensional construct consisting of emotional exhaustion, physical fatigue and depersonalization was shown destructive to personal health. Job design feature of demand and control model cause burnout because of high demands of work (namely production responsibility, problem solving demand and monitoring demand) and lack of control (timing control and method control) over work. There is also evidence concerning The association between burnout and risk of cardiovascular disease. The aim of the current research was to verify these relations. The participants were 128 personnel of Isfahan Gas Company. job design inventory was used to form two groups. In two groups of inappropriate job design (low control and high demand) and appropriate job design group. Instruments were Burnout Questionnaire of Maslach. Lipid serum was measures as dependent (criterion) variables. Relations between burnout and dependent variables in two group was determined and transfer to Z-fisher to compare stronger relationship in poor job design group. It is concluded that burnout is dependent on the quality of social environment especially job design and burnout bring cardiovascular disease more in poor job design group so we advice managers enrich job design characteristics to ensure you have healthy workers.

Introduction

Today, at least one third of human life is spent in work and social relations in many forms during the working hours. Career filled with challenges and obstacles that can be a source of tension and stress (Appelton, 1998). Stress at work is the result of the accumulation of stressors associated with job opportunities and situations. It could be ended in various physical, psychological and behavior consequences (Rod, Ashil & Carruthers, 2007).

The most common symptoms of work stress are fatigue, psychological problems, burnout, reduced performance and sleep problems (Kompier, 2002). In addition, studies have shown that high job stress plays an important role in causing cardio-vascular diseases and its risk factors (Kompier, 2002; Belkic, Landsbergis, Schnall & Baker, 2004). The way job is done, and its design are variables that affect job-related psychological tension. For example, if a lot of work left for one person while he or she couldn't choose the method and schedule of doing them, he or she would feel stress . So we can say that the job design has a practical significance for organizations and has a profound impact on business performance and job design aspects made significant insight for personal consequences. The question is whether job design relates with cardio variables such as cholesterol and triglycerides?

Although numerous studies on the relationship between psychological health and job design is done, but there are just few research on the relationship between job design and physical health, particularly between job design and LYPID SORUM. Karasek and Theorel (1990) proposed the Job Demand- Control Model to examine this relationship (VanDer Doef, Maes, 1999). This model predicts the pattern and prevalence of cardio-vascular diseases (Karasek, Theorel, 1990; Bakerc & Schauffli, 2000).

According to this theory, the two major components are control and job demand (karasek & Theorel, 1990). When high job demands and low job control is in, your job will be a source of stress. In research lecture, demand, method of contact and communication, autonomy, individual's control on the job and the amount of support received, are the factors that have relationship with people's health. Jobs that don't provide enough independency for decision-making, and people don't receive enough peer support at them, would result in stress and burnout. (Jahanbakhsh, Oreizi, Molavi, Nuri & et al, 2009). Individuals divided in four groups based on their job demand and control. Figure 1 has shown these four groups.

Active	Low pressure
High pressure	Passive

Park (2007)

Job overload such as job stress, may originate from improper design and in turn could jeopardize the health of individuals (Nirel, Goldwage, Feigenberg & Abadi, 2008). Job overload considered as predictor of burnout, fatigue and physical and psychological illness, in previous researches (Schaufeli & Bakker, 2004). Chart 2 has presented, the relationship between these three variables.

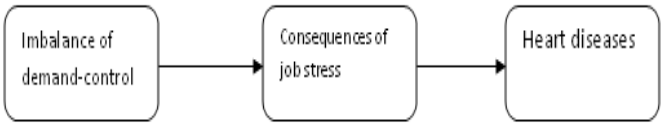

Chart 2. Impact of Poor job design on stress and heart disease

Job characteristics such as work overload, role conflict, role ambiguity, lack of social support and experience of injustice in the workplace can lead to burnout among the staff (Maslach & Leiter, 2008).

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Burnout causes both physical and psychological health problems (Edward, Burnard, Coyle, Fothergirl& Haningan, 2000). Most studies define burnout in light of Maslakh and Jackson (1996) approach (Maslach, Jackson, & Leiter, 1996). Their model consists of three components for psychological burnout syndrome, emotional exhaustion, depersonalization and reduced sense of personal success that occurs among social service employees (Moore, 2000). Emotional exhaustion refers to feelings of finishing emotional and physical resources, depersonalization refers to negative, extremely insensitive or indifferent responses to different aspects of job, and the reduced individual performance is the decline in the productivity or the efficiency at the work Maslach, Schaufeli & Leiter, 2001).

Shufeli and Buunk (2003) categorized burnout symptoms in five groups: emotional (e.g. crying, low mood or anger), cognitive (e.g., feeling miserable, impaired attention, and memory loss), physical (such as fatigue, illness), behavioral (e.g. absenteeism, impaired performance), and motivational (e.g., lack of desire).

The most burnout researches had done among teachers and nurses (Skaalvik & Skaalvik, 2009; Kovacs, 2010; Malinauskas , Malinauskiene & Dumciene, 2010). These researches had explored burnout relationship with psychological variables, generally. This study has been new in two different ways: first it has explored burnout relationships with LIPID variables, and second, participations are from a gas company.

With burnout sprout, the person's psychological and physical health decreased (Taylor & Barling, 2004). Ahola and partners have reported the relationship between burnout and absenteeism caused by illness. (Ahola, Kivimäki, Honkonen, Virtanen & et al, 2008). In recent years, stress and burnout are associated with symptoms of various physical ailments such as high blood pressure, cholesterol and coronary heart disease by researchers (Honkonen, Ahola, Pertovaara, Isometsä & et al, 2006).

Pelfrene and colleagues (2002) found that the job demand stressor is effective in men blood pressure, total cholesterol (TC) and these two factors also play an important role in cardiovascular reactivity. The research results show that high levels of total cholesterol and triglyceride (TG) are independent predictors of heart disease (Barret-Connor, Grundy & Holdbrook, 1982). Leynin et al (2003) has found that not only the demand - control imbalance could be involved in diabetes prevalence, but only, the lack of control is hazardous in the prevalence of diabetes. Several factors, including the states of anxiety and depression, social stress and conflict have known as risk factors in abnormal coronary contraction, malignant disorders of the heart rate and thus heart failure (Ballanyne, Osslon, Thomas, Michele & et al, 2001). Tohidi et al (2009, 1388 A.H) found that lipids play an important role in the cardiovascular events higher risk factors in diabetic patients and Hadaegh and colleagues (2005,1384 A.H) has named total cholesterol Serum level as a reasonable measure to predict cardiovascular events in developing countries, in the short term.
According to researches' findings in this area, and in light of recent attention that is given to the roles of psychological and social factors in health and diseases, this study has tried to explore the relationships between psychological wellbeing factors, including job burnout, and increased cholesterol and triglycerides. In addition, moderation role of not seeking for demand-control has studied. The research hypotheses are:

1 - There are differences in psychological variables among good job design group and poor design.
2 - The levels of blood lipids (blood fats) is different in the group with good job design and bad design
3 - psychological variable relationship with blood lipid levels is different between appropriate and inappropriate job design groups.

Methods:

This study is a correlation type and the population is all 2011's employees of a gas company, Isfahn, Iran. For sampling, 32 people for each cell were selected based on subgroup analysis and 8 variables that were going to measure, totally 128 people(8 cells). All employees have to participate in annual physical tests. This study was done during this annual test in 2011, and employees there have filled out the questionnaires. The sample was selected in a systematic randomized discipline. Randomly selected days during a week were chosen for the test. For the comparison regression and Fisher's z were used. An inclusion criterion was having at least 3 years experience. People with less than three years experience were excluded. Exclusion criteria was suffering from heart disease, and cholesterol higher than 220 mg / dl and triglicid more than 200 mg / dl before the study was began. For meeting these criteria their medical records were reviewed. The participants were informed about the study. The tests were done between 7 to 9 am in the company's health center. The participants were fast for 12 to 14 hours. Systolic and diastolic blood pressure was measured. A venous blood sample also was taken for measuring serum cholesterol and triglycerides. These blood samples were analyzed using an automatic analyzer. Then questionnaires were used for collecting psychological and job design variables. Used questionnaires were:

Burnout Questionnaire: Maslach burnout questionnaire that is made of three dimensions: personal performance, emotional exhaustion and de-personalization, was used in this study. Its sub scales reliability were reported, higher than 0.7 by numerous studies. The validity coefficient was measured by correlation with an overall concept question.

Job design Questionnaire: for the components of job demand and control, the Wall, Jackson and Mullarkey (1995) questionnaire was used. The questionnaire contains 24 questions, which 10 questions related to job control and 14 questions are about job demands.

Results:

According to Table 2 findings, the differences between appropriate and inappropriate job design groups in emotional exhaustion, reduced personal performance were significant, but there was no significance in de-personalization . The situations, in all these groups, were in favor of good job design. Though the good job design group had a better condition in cholesterol and triglycerides variables, the differences between two groups were not significant.

In Table 3 The relationship between cholesterol and psychological variables in the appropriate and inappropriate job design groups were compared.

Z_{r1} and Z_{r2} were obtained from Converting the correlation coefficients to Fisher's Z,. The small values mean small difference and with growing the values of r, Z_r would also increase consequently.

Discussion:

This study investigated the relationship between psychological variables with cholesterol and triglyceride levels

in both good and bad job design job. The study results showed that, there are significant differences among all the psychological variables (except for de-personalization) in appropriate and inappropriate job design groups. And also, there is a difference between two groups' medical variables. These findings could be explained based on Theorel and Karasek (1990) theory. According to this model when demand is high but the person has little control over his work, he or she would suffer from stress. The stress would reduce the person's performance and he or she would experience burnout. Burnout experiencing would result in physical systems disfunctioning. Actually high demand causes emotional exhaustion, but job control is a buffer that could save the person from burnout Xanthopulou, D., Bakker, A., Dollard, MF., Taris, TW., Schreurs, P. (2007 [44, 45]. This finding can be explained by the Hobbfal's conservation of resources theory (1989) Hobfoll, S.E. (1989). [46]. According to this theory, people are looking to achieve and maintain resources that are valuable to them. These resources are vary, such as material and social resources, and etc. Based on conservation of resources theory, when people lose their resources and cannot find new sources, they would feel stress. Thus, burnout, and consequently the negative physical reactions associated with it, would occur when people experience a kind of resources loss cycle during a period of time at work [47]. So, we can consider that job demands, make tension, but in the other hand, job control which is a result of appropriate job design- acts as a resource and prevent the worker from trauma. Thus we can say that the increase in job control can reduce stress and its negative effects, including fatigue, depression and exhaustion, and also to bring satisfaction to the people. In this situation the person has a better feeling about his or her job. In the other words, job-control and demand-control balance act as psychological resource that can reduce the effects of depression on people's health, so people's psychological and physical heath would increase.

According to numerous studies concerning the imbalance of demand-control, this imbalance could result in job overload and also is an important source of job stress and burnout. As stress is a global phenomenon and has a great influence on physical and psychological health, therefore improving work place psychological hygiene is necessary for reducing financial costs of job pressure, and developing workers' wellbeing.

In the last, we have a suggestion to human resources workers: Determining the jobs with poor design and improve the situation. Do we need medication to control the disease or change the patients' conditions and situations substantially?

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Research variables' descriptive and psychometrics indicators, were shown in Table 1.

The variable	Variable name	The average	Cronbach's alpha reliability	Validity coefficient	Coefficient describing the	And test-retest reliability	Coefficient Gvtmn
Demand	Production responsibility	15.8	0.72	0.61	0.71	0.84	0.69
	Problem solving	16.45	0.74	0.53	0.73	0.82	0.72
	Care	13.26	0.71	0.59	0.74	0.81	0.72
	General	44.79	0.79	0.63	0.75	0.82	0.73
Control	Method	18.8	0.69	0.67	0.72	0.79	0.74
	Time	13.39	0.82	0.56	0.84	0.81	0.79
	General	31.47	0.84	0.59	0.81	0.83	0.79
Medical	Cholesterol	175.25	-	0.61	-	-	-
	TG	86.66	-	0.57	-	-	-
Psychological	Emotional exhaustion	13.31	0.76	0.69	0.73	0.80	0.74
	De-personalization	5.25	0.72	0.58	0.75	0.79	0.76
	Reduced personal performance	12.65	0.74	0.54	0.77	0.77	0.78

Table 2. Comparison of poor job design group with good job design group for psychological variables, cholesterol and trichlosterol

	Variable	good job Design Group			Poor job design group			Variance Integration	t
		Average	Standard deviation	Total	Average	Standard deviation	Total		
Psychological variables	Emotional exhaustion	12.28	8.56	96	16.42	9.07	32	3.10	*2.35
	De-personalization	4.92	4.21	96	6.24	4.38	32	0.74	1.53
	Reduced personal performance	12.43	7.26	96	16.33	9.64	32	2.57	* 2.44
Medical variables	Cholesterol	178.11	11.72	96	191.09	13.1	32	5.96	** 5.32
	Triglycerides	84.82	5.69	96	92.21	7.28	32	1.54	** 5.96

Table 3. Psychological variables relationships with cholesterol and triglycerides in two groups with good and poor job design

The variables		Good job design group		poor job design group			
		R	Z_r	R	Z_r	S_{r1-r2}	Z_{r1-r2}
Cholesterol	Emotional exhaustion	-0.210	-0.213	0.334	0.347	4.701	*2.632
	De-personalization	0.136	0.137	-0.085	-0.085	4.701	1.043
	Reduced personal performance	-0.052	-0.052	0.117	0.117	4.701	0.794
Triglycerides	Emotional exhaustion	0.093	0.930	0.146	0.147	4.701	0.254
	De-personalization	0.072	0.072	0.097	-0.097	4.701	0.794
	Reduced personal performance	-0.169	0.171	0.295	0.304	4.701	*2.181