

ORIGINAL ARTICLE

Predict of nursing job stress on the Hackman & Oldham's Job Characteristics Model

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Background: Job stress is one of the most important diseases of the century, plays a major role in today's organizations which researchers are trying to control and reduce it. One method for control and reduce of stress is hidden in job and its characteristics. Nursing students are faced continually with one of the stressful job. Hackman & Oldham Job Characteristics Model is famous theory in this field that focus on job and its characters. The purpose of this study is to study the role of job characteristics on job stress in nursing at hospitals Based on the view of nursing student that affiliated with the University of Medical Sciences.

Methods: This study is a descriptive-correlation. The population includes all nursing students who are work in hospitals affiliated with Kurdistan University of Medical Sciences at 2014. The sample consisted of 140 nursing students who were selected by stratified sampling method. Required data was collected by two standard questionnaires, Wagner job characteristics and Elliott job stress. Data by SPSS software using Pearson correlation coefficient and linear regression method was analyzed.

Results: Data analysis showed significant inverse relationship between all characteristics of job with job stress ($p=0.01$). As well as, Except Feedback, four other features include a variety, identity, significance, freedom have significant role in explaining the variance of job stress. The coefficients are orderly (-0.42), (-0.373), (-0.147) and (-0.111).

Conclusion: Job characteristics can reduce stress among nursing students working in hospitals. So that by applying techniques such as career development, job enrichment and training, nursing jobs excitement power increases. This leads to increased motivation and decreased job stress among nursing students.

Keywords: Heckman and Oldham Model, Job Characteristics, Job Stress, Nursing

پیش بینی استرس شغلی دانشجویان پرستاری بر اساس الگوی ویژگی‌های شغلی «هکمن و اولدهم»

زمینه و هدف: استرس شغلی به عنوان یکی از مهم‌ترین بیماری‌های قرن، جلوه پررنگ‌تری را در سازمان‌های امروزه به خود گرفته و کنترل و کاهش آن مورد توجه محققان مختلف است. یکی از روش‌های کنترل، در شغل و ویژگی‌های شغلی نهفته است. هدف این تحقیق بررسی نقش ویژگی‌های شغلی در میزان استرس شغلی دانشجویان پرستاری مشغول به فعالیت در مراکز بیمارستانی است.

روش: این مطالعه از نوع توصیفی-همبستگی است. جامعه آماری تحقیق شامل کلیه دانشجویان پرستاری است که به شکل کارورزی در بخش‌های مختلف بیمارستان‌های وابسته به دانشگاه علوم پزشکی کردستان مشغول به فعالیت هستند. نمونه آماری ۱۴۰ دانشجو می‌باشد که به شیوه طبقاتی از میان جامعه آماری انتخاب شدند. داده‌های مورد نیاز با استفاده از دو پرسشنامه استاندارد ویژگی‌های شغلی واکتر و استرس شغلی الیوت گردآوری شدند. داده‌ها به وسیله نرم افزار SPSS و با اعمال روش آماری ضریب همبستگی پیرسون و رگرسیون خطی مورد تحلیل قرار گرفتند.

یافته‌ها: تحلیل داده‌ها نشان داد که بین همه ابعاد ویژگی‌های شغلی با استرس شغلی رابطه معکوس و معنی داری وجود دارد ($p=0.01$). همچنین، غیر از ویژگی بازخورد، چهار ویژگی دیگر «هویت»، «تنوع»، «آزادی» و «اهمیت» به ترتیب با دارا بودن ضرایب (-0.42)، (-0.373)، (-0.147) و (-0.111) در تبیین واریانس استرس شغلی، نقش معنی داری دارند.

نتیجه گیری: ویژگی‌های شغلی می‌توانند در کاهش استرس شغلی دانشجویان پرستاری شاغل در بیمارستان‌ها نقش مهمی ایفا کنند طوری که با اعمال راهکارهایی مانند توسعه شغلی، غنی سازی شغلی و آموزش، توان برانگیختگی شغل پرستاران افزایش می‌یابد که همین امر موجب انگیزش و کاهش استرس شغلی در میان آنها خواهد شد.

واژه های کلیدی: استرس شغلی، الگوی هکمن و اولدهم، پرستاری، ویژگی‌های شغلی

التنبؤ بالضغوط الوظيفية لطلاب التمريض على أساس نمط الخصائص الوظيفية ل (هكمن و اولدهم)

الخلفية والهدف: يعد الإجهاد المهني واحداً من أهم أمراض القرن، له دور كبير في المنظمات الحالية، وينظر الباحثون المختلفون على التحكم فيه والحد منه. تكمن إحدى طرق السيطرة على الوظيفة وخصائص الوظيفة. الغرض من هذه الدراسة هو دراسة دور الخصائص المهنية في مستوى الإجهاد المهني لطلاب التمريض العاملين في مراكز المستشفيات.

الطريقة: هذه دراسة وصفية ارتباطية. يتكون مجتمع الدراسة الإحصائي من جميع طلاب التمريض العاملين في أقسام مختلفة من المستشفيات التابعة لجامعة كردستان للعلوم الطبية. تتألف العينة من 140 طالباً تم اختيارهم حسب الفصل من المجتمع الإحصائي. تم جمع البيانات باستخدام اثنين من الاستبيانات القياسية: خصائص الوظيفة (فاغتر) وإجهاد العمل (إليوت). تم تحليل البيانات بواسطة برنامج SPSS وباستخدام معامل ارتباط Pearson والانحدار الخطي.

النتائج: أظهر تحليل البيانات علاقة عكسية كبيرة بين جميع أبعاد خصائص الوظيفة وضغوط العمل ($p = 0.01$). أيضاً غير مميزة ردود الفعل، كان للصفات الأربع التالية دور كبير في تفسير تباين ضغوط العمل "الهوية"، "التنوع"، "الحرية" و "اهمية" من خلال وجود معاملات (-0.42)، (-0.373)، (-0.147) و (-0.111).

الاستنتاج: يمكن لخصائص الوظيفة أن تلعب دوراً في الحد من الإجهاد المهني لدى طلاب التمريض العاملين في المستشفيات، ومن خلال توظيف استراتيجيات مثل تطوير الوظائف وإثراء الوظائف والتدريب، يمكن زيادة الإثارة الوظيفية للمرضين، مما يؤدي إلى زيادة الحافز والحد من الإجهاد الوظيفي.

الكلمات المفتاحية: الإجهاد الوظيفي، نمط هكمن و اولدهم، التمريض، خصائص الوظيفة

هکمن اور اولدهم کے ماڈل کی اساس پر نرسوں میں ملازمت کی وجہ سے ذہنی تناو

بیک گراؤنڈ: ملازمت کے دوران ذہنی تناو میں مبتلا ہونا ایک بیماری اور اسے رواں صدی کی مہلک بیماریوں میں قرار دیا گیا ہے۔ اسی وجہ سے عالمی سطح پر اداروں نے اس بیماری پر کنٹرول پانے کے لئے تحقیقات کی ہیں۔ ذہنی تناو کو کنٹرول کرنے کا ایک طریقہ ملازمت کی خصوصیات پر توجہ دے کر علاج کرنا ہے۔ ہماری اس تحقیق کا ہدف نرسنگ کی طالبات پراسپتالوں میں ملازمت سے ہونے والے ذہنی تناو کا جائزہ لینا ہے۔

روش: اس تحقیق میں کردستان یونیورسٹی آف میڈیکل سائنس میں نرسنگ کی طالبات کو شامل کیا گیا تھا۔ یہ طالبات کردستان کے اسپتالوں میں انٹرن شپ گزار رہی ہیں۔ تحقیق میں ایک سو چالیس طالبات کو شامل کیا گیا۔ ڈیٹا کی جمع آوری واگنراج کیرکراسٹکس اور ایلپوٹ جاب اسٹرس کے مطابق حاصل کی گئی۔ ڈیٹا کا تجزیہ ایس پی ایس ایس سافٹ ویئر اور پیپرسن ٹول نیز لینیر ریگریشن سے کیا گیا۔

نتیجے: اس تحقیق سے پتہ چلتا ہے کہ ملازمت کی خصوصیات اور ملازمت سے ہونے والے ذہنی تناو میں براہ راست تعلق ہے۔ اس کو ذہنی تناو کو مختلف طریقوں سے جیسے تشخیص، مختلف سرگرمیوں اور آزادی عمل نیز طالبات کے کام کو اہمیت دینے کر گھٹایا جاسکتا ہے۔

سفارشی: ملازمت کی خصوصیات سے ملازم کے ذہنی تناو کو خاصہ کم کیا جاسکتا ہے، نرسوں کے کام میں توسیع لاکر نیز ان کی ذمہ داریوں کو سہرا کر اور ان کے لئے کریش کورس رکھ کر ان کی مدد کی جاسکتی ہے۔

کلیدی الفاظ: ملازمت سے ذہنی تناو، نرس، خصوصیات

INTRODUCTION

One of the stresses that have received much attention in recent years is "job stress". Job stress is the mutual action between work and individual features as the requests of work place are more (as the result of relevant pressures) (1). Job stress is based on the consistent reaction against the job events imposing physical and psychological workload and can lead to many physical and psychological diseases (2). Stress refers to a complex model of emotional states, physiological reactions and relevant thought as occurred in response to the external requests (3-5). Beehr & Newman defines job stress as: "A condition arising from the interaction of people and her job characterized by changes within people and force them to deviate from their normal functioning" (4). Job stress has adverse effects. For example, the researches of Yerkes-Dodson show that with the increase of stress, job performance is reduced and absence and delay are occurred at work place (6). Also, job stress affects the family and marital life cohesion and it has important effect on the quality of life interactions (7). Job changes include organizational changes, transfer, promotion, change of wage, job punishment and social changes affect each individual and this leads to confusion and distress (6,8).

This study evaluates the job stress based on Hekman and Oldahm job characteristic model. Their model showed how job characteristics and individual differences with mutual action affected satisfaction, motivation, productivity and efficiency (2, 9-11). This model is one of the most well-known and comprehensive models in the research about occupational characteristics and used in the study of various occupational activities. So regarding the fact that nursing occupation has many stressful characteristics, studying stress resources with a job-based approach can be helpful. In this model, five features are defined for each job, it means that any job with these features is motivating. If these five features are low in a job, we should consider it and it should be modified based on the various methods and models (12-16). The main job characteristics in Hackman & Oldham model are:

Skill variety: The degree to which a job requires various activities.

Task identity: The degree to which the job requires the jobholders to identify and complete a work.

Task significance: The degree to which the job affects other people's lives either in the organization or in the external environment

Autonomy: The degree to which the job provides the employee with freedom, independence, and decision making for the work and determines the procedures in the job.

Feedback: The degree to which the job provides direct and indirect information about the work, results and performance of job (15).

Various researches have been performed about the job characteristics model supporting the general framework of the theory (17-23). There is a set of job characteristics affecting the behavioral results and outcomes. There is no unified agreement about the five dimensions of the model.

Some researchers including Scott et al. and Loher et al., in a meta-analytic study on job characteristics model achieved interesting results. They stated that in the majority of researchers using Hackman & Oldham job characteristics, two methods are used. They have eliminated the moderator of psychological states and dealt directly with the relationship between the main elements of job (five main dimensions) and their outcomes (job satisfaction, absence and transfer) (19,24). This has caused that these two models of job characteristics are created. The main model presented by Hackman & Oldham presents reliable data and results. The second model is the adjusted model in which the moderators are excluded and directly the job characteristics are associated with its results. Also, the relevant data and results are less reliable. Hunter also found that the second case is suitable and the psychological states should be eliminated in the model. He also considered that this model doesn't pay attention to the autonomy at team work places (25). In this article second model is used. In other word relationship between job characteristic and their outcome (job stress) has been studied.

The mentioned issues can be raised with a general revision in jobs and organizational structure of health system and hospitals (26) and there should be no barrier by the job for the useful performance of people in the jobs. Nurses are the main principles of health system of each country and they need efficient nurses for their development. The true task is doubted in hospitals with the tired nurses with job tension. Thus, considering the issues of nursing students in their job stress is an important issue as job stress has an adverse effect on the system, family and individual and social life. One of the important factors is absence, different somatic complaints, conflict at work place and finally turnover (27). Considering job stress among nursing students has great role in the health, wellbeing and their academic achievement. As it was said regarding the stress among nursing students, Few studies have been done on this topic and the present study attempts to determine the role of nursing job characteristics and its dimensions in the job stress of nursing students.

METHODS

Sample, sample size and sampling method: This study is applied in term of purpose. Also, research method is descriptive-correlation. The study population is nursing students that spend Clinical Nursing education in the hospitals affiliated to Medical Science University of Kurdistan as 220 in 2014. By Krejcie and Morgan Table, the study sample is 140. That is one of the most widely used methods for calculating the statistical sample size and actually have estimated the sample for a variety of sizes of society using the Cochran formula.

By cluster sampling method and based on the sample size, of the 15 hospitals affiliated with the Kurdistan University of Medical Sciences, one in three (5 hospitals) was selected and the questionnaires are distributed among the study sample. The questionnaire procedure is presented as individually or collective to the available people. The criteria for entering the study include: 1- Currently a nursing student at Kurdistan University of Medical Sciences. 2. At least two units of

internship have passed.

Questionnaire of job characteristics: This questionnaire evaluates the job characteristics. This questionnaire is designed based on the job characteristics model of Hackman & Oldham as presented by "Vagner". The questionnaire consists of 5 sections, each section includes three questions and each section is dedicated to a job characteristic and totally there are 15 questions. This questionnaire is a five-item Likert scale. For each question, there are five choices (strongly false 1, rather false 2, indefinite 3, rather true 4 and strongly true 5) and by marking each item, the attitude of each question is expressed. The validity of questionnaire is evaluated by the experts, nurses and nursing students. The reliability of each questionnaire is analyzed using Cronbach's alpha and its result for five characteristics is as, the Cronbach's alpha of skill variety is 0.88, task identity 0.60, task significance 0.89, autonomy 0.78 and feedback 0.80.

Questionnaire of job stress: To evaluate job stress, the Elliot job stress questionnaire (1994) is applied. This questionnaire consists of 20 items with a four-item Likert scale (strongly agree 4, agree 3, disagree 2, strongly disagree 1). The validity of this questionnaire is defined by Elliot and its reliability is reported in other study by Cronbach's alpha (0.72) (28). In this study validity of this questionnaire is reviewed by some experts and some partial corrections are made on its items and Cronbach's alpha was used to examine the reliability of the tool. The internal consistency of the questionnaire (0.77) was calculated which indicates the acceptable level of reliability of the questionnaire.

After coding the items as it was said, the data entered statistical software version 21 and finally by performing descriptive statistical methods (mean and standard deviation), correlation coefficient and regression of study findings were analyzed. It is worth to mention that based on the results of Kolmogorov-Smirnov test, normal distribution of data in two variables is supported. Thus, in the data analysis, parametric tests are applied and the results are shown in the next section.

In relation to ethical considerations it should be noted that all participants were given information on the subject. Each person was confident in keeping their information confidential and was reassured about the collapse analysis of their information. Then, with the satisfaction of students, questionnaires were provided to them. Meanwhile, the

participants were informed that if they wished, the results of the research would be provided to them.

RESULTS

The results of descriptive analysis of data showed that among 140 nursing students of medical Science University of Kurdistan, the mean and standard deviation of age are 22.2 ± 3.59 . In terms of gender 110 women (79%) and mostly 128 in BA (91%). Also, 91(65%) in Kurdistan province and 102(73%) live in the dormitory. Of total statistical sample, 134(96%) are single and we can observe homogeneity in demographical features of statistical sample.

To evaluate the relationship between two variables (responding the first question of study), Pearson correlation coefficient is applied and the following results are achieved. The correlation matrix is shown in Table 1 and they are discussed separately.

The results of Pearson correlation coefficient on the data are shown in Table 1. Job stress of nursing students has inverse and significant relationship with all of their job characteristics and here variety (-0.68) and significance of task (-0.25) have the highest and lowest correlation with job stress, respectively. Also, Table 1 shows that except the relationship between identity and significance of task, the rest of characteristics have positive and significant relationship. The column of the mean of variables shows that the component "feedback" has the highest mean among the nursing students.

To respond the second question of study, linear regression is used. The results show that the squared correlation coefficient is significant. (Adjusted squared R= 0.686). This shows that in 68% of the dispersion in job stress are explained by the job characteristics. Also, based on standardized squared correlation coefficient (0.682), the selected model explains 68% of variance of criterion variable (job stress). The result of ANOVA show that the achieved F ratio (154.99) is significant at the 1% error level. Thus, we can say there is a significant relationship between the variables of job characteristics and job stress and at least of the regression coefficients is significant.

Based on the significant correlation coefficients between job characteristics and job characteristic dimensions as shown in Table 1, all characters are entered into the model and the results of regression show that except the feedback that is not

Table 1. Correlation matrix, mean and standard deviation of variables

| 1 | variables | Mean± SD | 1 | 2 | 3 | 4 | 5 | 6 |
|---|----------------------|------------|--------|--------|--------|--------|--------|---|
| 1 | Stress | 58.97±7.84 | 1 | | | | | |
| 2 | Variety | 11±3.05 | **-.68 | 1 | | | | |
| 3 | Significance of task | 9.6±2.05 | **-.25 | ** .21 | 1 | | | |
| 4 | Identity of task | 10.57±2.35 | **-.68 | ** .42 | .02 | 1 | | |
| 5 | Autonomy | 10.89±2.33 | **-.59 | ** .56 | ** .30 | ** .42 | 1 | |
| 6 | Feedback | 11.12±2.65 | **-.52 | ** .53 | ** .13 | ** .41 | ** .46 | 1 |

*p<0.05, **p <0.01

Table 2. The coefficients of each of the variables in regression analysis prediction of job stress

| Variables | Non-standard coefficients | | standardized Beta (β) | T-test statistic | probability value (p) |
|--------------|---------------------------|--------------------|-----------------------|------------------|-----------------------|
| | unstandardized beta(B) | Standard error(SE) | | | |
| Constant | 22.07 | 1.60 | | 13.78 | 0.001 |
| Variety | -.975 | .101 | -.373 | -9.48 | 0.001 |
| Significance | -.423 | .120 | -.111 | -3.51 | 0.001 |
| Identity | -1.40 | .117 | -.420 | -12.01 | 0.001 |
| Autonomy | -.495 | .131 | -.147 | -3.78 | 0.001 |
| Feedback | -.189 | .109 | -.064 | -1.73 | .084 |

significant, other characteristics can be important in job stress and are strong predictors. Table 4 shows that in interaction with other characteristics, four characteristics of “identity”, variety, autonomy and significance with the coefficients -0.42, -0.373, -0.147 and -0.111 play important role in prediction of job stress.

DISCUSSION

The result of this study is consistent with the result of various studies (29-31). For example, Faraji et al. found that job variety, identity of task and autonomy had significant relationship with job stress (32). Based on the studies of Asadi and Iraj Rad, it was shown that there was a significant relationship between five dimensions of job (variety, significance, identity, autonomy, feedback) with the job satisfaction of employees (33,34). In the study done by Habibi, it was shown that there was a significant relationship between job characteristics and job motivation (23). Although the topics of these three studies are not similar directly with this study, based on the inverse relationship between job satisfaction, job motivation and job stress can be considered. The results of each of features are discussed separately.

Job variety is one of the job characteristics with inverse relationship with stress. Although the initial attitudes about management to job planning considered the simplification of job, this led into the high efficiency and production (9). These attitudes are efficient but they are problematic. Gradually, with the trained employees, their requests were increased and this led into job enrichment models. For example, Turner & Lawrence (1965) proposed that enriched job (A job in which there are variety, autonomy, responsibility and the like) and this leads to the high job satisfaction. In high and low performance, activity or motivation is affected. The monotonous jobs can lead to low performance as such jobs cannot lead to brain arousal (9). It seems that specialized jobs can lead to the fatigue of job holders and their motivation is reduced and stress is also increased.

Identity of task is another feature in this study and it has effective role in prediction of job stress of nurses. Maurier & Northcott believe that indefinite professional responsibilities in which special beginning or end is not imagined, this can lead to the stress of nurses (26). The identity of task refers

to what is performed to complete the entire task or a definite section of task (with special identity)(12). Identity of task enables the employees to be responsible for all components of a task or an important part of task individually. The majority of efforts regarding job enrichment focus on this dimension as the scientific management motivation “special task” focused on the extreme task and repetitive tasks. Each of the employees only worked on a small part of a complete product and couldn’t define any product as the result of their work. They didn’t feel the responsibility of finishing a task. If the works are extended to include a complete product, then the identity of task is created. Such condition creates a good sense of meaningfulness to reduce stress.

Another characteristic in the prediction of job stress of nursing students is autonomy. Autonomy is referred to the power, independence in schedule and determining the stages and actions (12). The higher the autonomy, the higher the dependence of results on effort, innovation and decision making rather than the orders received by the supervisors. This autonomy plays an important role in responsibility of workers. Although the workers are prepared to work in an organization, they insist on freedom of action. The popular method of “purpose-based management is a method to create much freedom at work as much freedom is given to the employees to determine the goals and following the plans associated with the goals (11). The people with high job autonomy can regulate their job duties better and they can control the stress of job duties conflict.

Finally, significance of task is another characteristic important in job stress of nursing students. It was shown that the significance of task depends upon the size of effect on others and this effect is perceived of one’s vision. The significance of task is observed based on the effect on others as when a person is responsible for a key phase of work process or it is seen regarding those outside of the organization as an employee who helps to make a vital medical device or the nurse saving a patient. These items can reduce the fatigue of task and one’s job satisfaction is increased. If a person perceives that the results of his task have important impact on the welfare of others, the empirical meaningfulness of task is increased. Despite some researches (29), in this study, feedback plays no important role in job stress of nursing students. This dimension of task refers to the information saying the workers regarding the task.

This feedback of the task itself is arising from the management and other employees. As nursing has high feedback of the job and the performance of the nurse is manifested in the satisfaction of the patient and his family, despite the significance association with job stress, it is rejected in the initial model. Heckman and Oldham (15) have stated that the association between some of characteristics and outcomes is not strong but other reasons are mentioned for it. This is due to the applied model in regression as in regression, we can present different results with different models as the position of variables and their role are investigated. Also, we cannot ignore the cultural differences in this regard. Also, we cannot ignore the role of data collection method and it is a type of limitation. As the data are collected by self-report, there is extreme views regarding feedback and this affects the results. In such studies, regarding data generalization to different communities, we should be careful.

Any model or theory is not without problem and one example is Heckman and Oldham model (23,33). All the problems of job characteristics show that special predictions of model are not true regarding empirical tests. In other words, job characteristics can define the outcomes but these outcomes depend upon the study population and even it is possible that at an extensive scale, the job characteristics are efficient or they are no valid at small scale (20). Where job activity can lead to distress or not is a challenging issue. The job activities in simple and easy or complex jobs lead to psychological disorder but this relationship and its amount are affected by many moderating variables including people and type of job (34). In nursing job, many other variables including work place, interpersonal relations, special work unit, personal morale and other demographic features can play a moderating role and they should be considered in the further studies. Based on the results of study, some recommendations are mentioned:

At first, we can refer to the job analysis, arousal capacity of job, using psychological and personality tests, scientific, specialized and employment interviews and the jobs that we cannot make great changes, we can select a suitable person

that two sides, the organization and individual can take benefits. For job development and enrichment of current jobs and design of enriched jobs, we can plan in future. Thus, the monotonicity of jobs is reduced and a person escapes from the psychological pressures of daily work. Holding pre-service and at-service classes, holding educational workshops and seminars in different job fields can increase efficiency. Training is an important technique to improve job characteristics of people. Education makes a person familiar with different methods of task, recognition and skills and this education leads to the autonomy and reliability of the learners on their abilities and this increases the job arousal capacity. Also, the hospitals provide an environment for the free activity for nursing students and some inhibiting factors of independent activity as regulations can be eliminated and people feel high autonomy and responsibility. In such environment, people achieve the opportunity of growth, progress and actualization of talents and this disturbs order in organization but its long-term benefits are more than its short-term disadvantages.

In general, job characteristics are a very important factor in predicting occupational stress in nurses. Hospital settings inherently have stressful features, which neglects them in designing nursing careers, exacerbating occupational stress and, consequently, reducing stress. However, due to the role of various factors in creating job stress, several researches in this field should be carried out to determine the role of each of these factors. On the other hand, Hackman's model is just one of the models that points to some of the important features of the job, but this does not mean that this theory is perfect in explaining the effective characteristics of the job.

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