

Conditions of Health Promoting Behaviors for Clinical Laboratory Scientist in Healthcare Centers

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Abstract: Background/Objectives: This study aims to provide basic information which could be established for programs to improve the health-promoting behaviors for decrease of healthcare worker's stress by convergence analysis of clinical laboratory scientist health-promoting behaviors and investigating its related factors. **Methods/Statistical analysis:** The experimental group contained 193 medical technologists of general hospitals workers in Gyeonggi province. Questionnaire of fifty-two items instruments were measured by six sub-categories scales of health-promoting behaviors. The statistical tools used in this study: independent t-test, Pearson's analysis and Scheffe test were analyzed by a program of SPSS WIN 18.0. **Findings:** Clinical medical technologist's health-promoting behaviors indicated 2.19 of maximal 4. In detail, the scores for each factors were as follows; interpersonal relationship (IR, 2.56 point), spiritual growth (SG, 2.34 point), nutrition (N, 2.18 point), stress management (SM, 2.13 point), health responsibility (HR, 2.04 point) and physical activity (PA, 1.86 point). As a correlation analysis of health promoting behavior factors according by general characteristic. General characteristic mostly was no significant difference in health promoting behaviors. but, the career length ($p < .003$), snack ($p < .017$) and fatigue factors ($p < .001$) were significant difference between items. In career years, there was a statistically significant difference in the career between new workforce below 1year and 5-10years career. Its interpersonal relation, nutrition, physical activities and spiritual growth were not significant. Whereas, there were significantly differences to health responsibility ($p < .007$), stress management ($p < .018$). In health responsibility, the high score groups higher than low score groups. Also, the stress management was high groups higher than middle groups. In correlation health promoting behaviors subcategories, three items were correlated with HR, SM and SG. **Improvements/Applications:** High-psychological status group is required to increase physical activity for health promotion behaviors. This study suggests that it is necessary to develop an innovative and diverse health care convergence program to improve and develop health promoting behaviors.

Keywords: Health promotion behaviors, Health responsibility, Medical technologists, Occupational stress, Physical activity

I. INTRODUCTION

The higher the job stress level of the medical staff, the higher the mental state of depression and anxiety, and the lower the job resilience, the job satisfaction, and the belief in healthy lifestyle. Hence, suggested that developing variety of intervention programs focusing on training and skill building

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in health promotion behaviors (HPB), including emotional control of job stress, anxiety and depression. In the study of the Health-Promoting Lifestyle Profile (HPLSP), measures of tool development have been developed by Walker on the basis of this concept [1]. Nurses and healthcare workers are more stressful jobs than other specialist fields, such as carrying out occupational specificity and quality working needs in day/night shifts. In addition, it is difficult to cope with heavy work and stress from dealing with people of various occupations, and it causes not only the physical and mental health but also the neglect of work, negligence, and absent etc. This can be attributed to a decrease in the quality of nursing and an increase in the turnover rate. Therefore, it is thought that job satisfaction can be improved by lowering stress in autonomous work environment. Because the daily health care and health promoting behaviors can be accepted as important and necessary complementary components in running a healthy life, we proposed a health promotion model as an alternative to the current trend to explain and utilize health promoting behaviors [2]. Health promotion in the work environment needs to reflect various potential factors that take into account the psychological and psychological aspects as well as the factors related to the absence of occupational accidents and physical health of workers. The dynamic balance between needs and satisfaction in worker factors and work flows is known as an absolute prerequisite [3]. In type of workplace, most nurses who work during the day do not cause significant changes because of their active and consistent biorhythms. However, nighttime workers had a significantly lower level of cortisol and NK cell activity and could infer that 3-shift or night shift workers had a higher level of stress, and this could biologically impair biorhythm chaos and brain damage it is known to affect [4]. Burden increases the loss of medical costs and reduces the satisfaction of workers. In particular, obesity is associated with the use of medical care and the expenditure of medical care [5]. In addition, rising health care costs for obese workers are inversely proportional to the health care costs of a healthy workers. Thus, employers are affected by the work efficiency of obese workers and their productivity drops. Therefore, obesity has a significant relationship with work performance, and it affects the decrease in productivity and obstacles in the workplace [6]. Baker et al (2008) reported that A study of health promoting behaviors showed that alcohol intake, lack of appetite, decreased physical activity,



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elevated total cholesterol in the blood, elevated blood glucose, hypertension, obesity, and high stress Factors were statistically significantly reduced. Depression and smoking are not significant. Biometric factors such as excessive weight and obesity (weight, BMI, overweight or obesity) were statistically significantly decreased. Health promotion programs are needed to reduce the expenditure of medical expenses and to maximize work productivity of workers [7]. This study examines the correlation between health promotion behaviors and self -practicing. Lack of job satisfaction was major concerns for healthcare managers and education managers. The purpose of this study was to examine the relation of health promoting behaviors of clinical laboratory scientist.

II. MATERIALS AND METHODS

2.1. Study design

The purpose of this study was to investigate the level of health promoting behaviors of medical technicians performing clinical testing tasks through a large research tool and to explain the correlation between variables.

2.2. Sample and setting

The questionnaires were distributed from May to July 2014 and data collected on the day were collected. This study was approved by the Institutional Review Board of NSU (NSU-140428-2). The ultimate purpose of this study was explained to the subjects through a visit and the questionnaire went on after obtaining consent. The healthcare worker agreed to the study and participated in the questionnaire. A total of 193 subjects participated in the study, except for one subject who showed an inappropriate response. The number of participants was calculated using G-Power 3.1.3, a sample size estimation program. The minimum sample size required was calculated taking into account the 0.05 significance level, an effect size of 0.10 and an output of 0.8 for inclusion of 28 independent variables. The questionnaire consisted of questions assessing general characteristics, HPB.

2.3. Health promoting behaviors

The research tool of HPLP II (English version) is a tool to measure the health promoting behaviors by measuring a total of 52 items including 6 sub-categories: HR (9 items), PA (8 items), N (9 items), SG (9 items), IR (9 items) and SM (8 items) [8,9]. The answers to the questions were rated on a 4-point scale (none, sometimes, occasionally, routinely). The total HPLP II score was calculated as the mean of the responses to the 52 questions. Cronbach's- α value was 0.945.

2.4. Data analysis

In the results analysis, general characteristics and distribution of health promoting behaviors were calculated as frequency, percentage, mean, and standard deviation. The correlation between the variables was analyzed by Spearman's correlation. Statistically significant levels were defined as

0.05 or less than 0.01. Data was analyzed using SPSS Statistics 18.0. Participants' general characteristics and health promotion behaviors were analyzed by technical statistics including frequency, percentage, mean, and standard deviation. A chi-square test was performed to see correlations between variables of the general characteristics of the participants. Health promoting behavior of the subjects was degree of score analyzed by ANOVA and *Schéffe* test. The reliability analysis of the research tool with questionnaire item was analyzed by Cronbach's α of significance level of 0.05

III. RESULTS AND DISCUSSION

The mean age of 193 subjects was 35.3 years old. With regard to position, most were registered general medical technologist (63.2%), with 85% of them working day duty. For type of work institution, most (56.0%) people were day duty healthcare workers in a general hospital. 105 subjects (54.4%) had a sometimes fatigue. The mean score for health promoting behaviors was 2.19 ± 0.38 points (minimum: 1.27 points, maximum: 3.57 points). In mean scores of subcategories factors in health promoting behaviors, the best score was IR (2.56 ± 0.46 points). Respectively, SG (2.34 ± 0.50 points), N (2.18 ± 0.45 point), HR (2.04 ± 0.45 point) and the very low levels were PA (1.86 ± 0.64 point) [Table 1]. The average score of health promotion behavior was divided into three grades. The differences between the three groups were analyzed. These score were 2.11, 2.16, 2.29, respectively. There was a statistically significant difference between the low and high groups ($F=3.574$, $p<0.030$). The low-group was lower than higher groups. There is no statistical significance in IR, N, PA, SG. Whereas, there were significantly differences to HR ($p<0.007$), SM ($p<0.018$). In health responsibility, the high score groups higher than low score groups. Also, the stress management was high groups higher than middle groups [Table 2].

Table 1: Mean score of Job stress and health promoting behaviors (N=193)

Variable	Category	Mean \pm SD
Health promoting behaviors	Total	2.19 \pm 0.38
	Interpersonal relation	2.56 \pm 0.46
	Nutrition	2.18 \pm 0.45
	Health responsibility	2.04 \pm 0.45
	Physical activity	1.86 \pm 0.64
	Stress management	2.13 \pm 0.44
	Spiritual growth	2.34 \pm 0.50

Table 2: Mean score for health promoting behaviors according to third percentile(N=193)

Variable	Low ^a (N=64)	Middle ^b (N=65)	High ^c (N=64)	F	F(p)	Schéffe
	Mean \pm SD	Mean \pm SD	Mean \pm SD			
Total score	2.11 \pm 0.35	2.16 \pm 0.38	2.29 \pm 0.40		3.574(.030)	a<c



Interpersonal relation	2.49±0.45	2.56±0.44	2.62±0.48	1.368(.257)	
Nutrition	2.19±0.46	2.15±0.46	2.20±0.44	.257(.774)	
Health responsibility	1.91±0.38	2.06±0.47	2.15±0.47	5.024(.007)	a<c
Physical activity	1.76±0.67	1.80±0.58	2.03±0.64	3.354(.037)	
Stress management	2.07±0.41	2.07±0.47	2.26±0.41	4.111(.018)	b<c
Spiritual growth	2.26±0.49	2.35±0.50	2.46±0.50	2.571(.079)	

Table 3. HPBs according to general characteristics (N=193)

Characteristic	Subcategory	HPB			
		M±SD	t or F	p	Scheffe
Career length	<1a	2.42±0.41	4.104	.003	a>d
	1-3b	2.32±0.44			
	3-5c	2.16±0.33			
	5-10d	2.04±0.37			
	>10e	2.17±0.35			
Snack	None ^a	2.52±0.32	3.489	.017	a>b
	Sometimes ^b	2.13±0.37			
	Frequently ^c	2.25±0.40			
	Very often ^d	2.25±0.16			
Fatigue	None ^a	2.79±0.56	11.318	.000	a<b
	Sometimes ^b	2.25±0.37			a<c
	Oftens ^c	2.11±0.30			a<d
	Always ^d	1.92±0.34			

Table 3 showed the effect of the HPB according to general characteristic. Most of the general characteristic were no significant difference in health promoting behaviors. but, the career length (p<0.003), snack (p<0.017) and fatigue factors (p<0.000) were significant difference between items. In age, the results showed significant differences between below 1

year and 5-10years career. The scores of snack (p<0.017) and fatigue (p<0.001) were statistically significantly[Table 3].

In health promoting behaviors, all factors (health responsibility, nutrition, physical activity, stress management, spiritual growth, interpersonal relation) were correlated[Table4].

Table 4. Correlation of subcategory and health promoting behaviors score (r(p))

Variable	A	B	C	D	E	F	G	H	I
Health promoting behaviors score	1								
Physical environment	.019 (.796)	1							
Job demand	-.199 (.006)	.329* (.000)	1						
Insufficient job control	-.110 (.127)	.069 (.344)	.233* (.001)	1					
Interpersonal conflict	.070 (.332)	.255* (.000)	.104 (.148)	.022 (.760)	1				
Job insecurity	.229* (.001)	-.086 (.235)	-.268* (.000)	.052 (.477)	-.082 (.254)	1			
Organizational system	.436* (.000)	.033 (.648)	-.266* (.000)	-.032 (.663)	-.084 (.248)	.477* (.000)	1		
Lack of reward	.399* (.000)	-.042 (.566)	-.146§ (.042)	-.019 (.793)	-.076 (.295)	.336* (.000)	.601* (.000)	1	
Occupational climate	-.234* (.001)	.138 (.056)	.441* (.000)	.149§ (.039)	.228* (.001)	-.507* (.000)	-.499* (.000)	-.230* (.001)	1

Abbreviation: A, Health promoting behaviors; B, Physical environment; C, Job demand; D, Insufficient job control; E, Interpersonal conflict; F, Job insecurity; G, Organizational system; H, Lack of reward; I, Occupational climate.

*p<0.01; §p<0.05.

The primary purpose of this study was to investigate patterns of health promotion behaviors according to job satisfaction of clinical laboratory scientist in medical institutions. The purpose of this study was to develop a program to improve the quality of life and job satisfaction because the more frequent lifestyle habits in health promoting behaviors can alleviate the stress related symptoms due to the

job. As a result of this research, the correlation between job stress subcategory and health promoting behaviors were analyzed by clinical' medical technologists. The showed difference of health promoting behavior, depression, job stress by totally attribution. Health promoting behavior appeared in forty group



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higher than different age group as average is 3.58. In working years, workers more than ten years appeared 3.64 with higher significantly [10]. In personal healthcare problems of nurses, which account for hospital staff and provide direct services to the patients. It also affects the productivity aspect of the hospital. Nurses need to manage their own health condition and practice health promotion activities, but health promotion activities are not high. Among them, physical activity, nutrition and stress management were reported to be low, especially physical activity. Immune factor was psychological affected to cellular immune function through the health status [11]. These factors were related to reduction of natural killer cell (NK CD57) and interleukin (IL-6) [12]. The physiological workflows were HPA (hypothalamus-pituitary-adrenal) axis [13]. Also, IL-8 was stress assessment used [14]. In job stress of clinical laboratory scientists, People in high occupational stress groups need to increase their physical activity to improve their health, and those who are unstable in their jobs and whose job satisfaction is low should also promote health promotion behavior and increase their satisfaction. Therefore, it is necessary to develop and understand an improvement program to reduce job stress. In particular, this study can provide objective information that understands the immunity and stress index by using health promotion activities and biological indicators of healthcare workers [15]. In nurse workers case, health risk factors suggested that It is known that nurses are exposed to occupational dangers such as infectious diseases, biological threats, exposure to carcinogens, psychological anxiety, interpersonal relationships [16]. In office female workers case, the obesity factors were related to job stress. Also, the researchers showed significant differences in the variables (fasting blood sugar level) of the results of blood analysis related to obesity according to age in the results of evaluating obesity related variables and natural killer cell activity (NKCA) in female workers. In addition, there was a significant difference in the activity of NK cells in the obese group compared to the normal group, and in the correlation analysis, NKCA showed a close correlation [17]. Emotional labor, quality of life, and job satisfaction are highly correlated with higher health promotion behaviors. In addition, the higher the health promoting behavior, the more appropriate emotional labor raises the patient satisfaction and raises his job satisfaction. Repeated physical and emotional duties of medical institutions increase psychological stress and therefore health promotion behaviors should be performed as coping methods. The factors affecting health promoting behaviors, so health promotion behaviors are high when quality of life is high. Improve the quality of life through health promoting activities. The personnel who are in charge of medical services in medical institutions are very important because the activities to promote health improve job satisfaction and quality of life. Strengthen health promotion activities and create environment and education for employees in medical institutions. A systematic approach is needed to improve the health of workers in medical institutions. In previous reports, the sub-concepts of stress management and physical activity were the lowest among the HPB, and similarly, the nurse's physical activity and stress management showed the lowest scores in many other studies

[18]. The higher job satisfaction of those participants with a healthy pattern is not a result of this healthy pattern but is in fact the cause of this healthy pattern. The limitations of the study are limited because they are self-contained. It is a disadvantage in that it could not report correctly and objectively about the individual's true lifestyle and behavior pattern in the self-report method. This study suggests that a program for mental health needs to be developed. In particular, it shows that various programs are needed to support medical technologists within 5 years who are vulnerable to job stress and health management. Correlations between occupational stress factors and mental health status are positively correlated. Previous studies have shown a significant positive correlation between nurses, childcare teachers, and married employees [19]. This study is found that mental health levels are lower as job stress is higher. In order to improve mental health and work efficiency of nurses, we should pay attention to job stress management. In future studies, it is suggested that the number of occupational fields of medical care workers should be increased to perform research. Further research is needed both to expand available effective interventions and to understand challenges to implementation from a workforce perspective. work-related behavior and experience patterns, accompanied by additional general measures of work organization and stress management (e.g., problem-solving training, time- and self-management, training of communication and social competence, goal setting), Regional based nurses should develop low cost for oral hygiene and physical activity through development of community based health promotion and management program, and develop and utilize health promotion program that maximizes effectiveness. In particular, health promotion programs for social and economic minorities should be conducted for people in rural areas who lack health care. We should strive for health promotion activities with high demand, and considerably lower control and social support should further study whether realistic reduction of job related stress symptoms can be achieved. Future research will assess the effectiveness of the program It is supposed to be done. [20]. These findings should be used to assess what needs to be done to support employees in healthcare, improve health promotion skills through the resolution of disputes over work and support organizations and associates, there are can be helpful in reducing the risk of death. Develop an intervention education program for the problems identified and make arrangements to help them in their actions, and the degree of improvement should be evaluated. Further efforts to improve health status are urgently needed to raise awareness of the importance of health education and health promotion. In order to do this, we should introduce and develop indicator development and training program to grasp the current situation and actively provide facilities and programs for healthcare workers to encourage healthy behavior.

IV. CONCLUSION

Job stress in the healthcare field is correlated with health promoting

behaviors, so it is imperative to develop a program for health promotion.

This is consistent with the finding that higher levels of stress in the previous studies lead to lower health promotion behaviors. As the job stress of the healthcare workers increased, the selection, optimization and reward coping strategies were less used. It is found that medical workers can cope with job stress more flexibly as the coping strategy is required and the demand level is higher as the mediating factor in the relation between healthcare job stress and HPBs. This study is limited to medical employees working in general hospitals located in Seoul and Gyeonggi, so it may be difficult to generalize them as whole medical workers. The Relationship between stress occurrence and HPB patterns of clinical laboratory scientists cross- examined and there is a limit to infer causal relationship. Therefore, we propose a comprehensive and specific study and a longitudinal study for clinical laboratory scientists working in various regions and various types of hospitals in the future. Based on the results, to improve the lifestyle that overcomes the health condition through the efforts of health promoting activities, solving health condition and the effort of health promoting behaviors, the plans of administrative supports, and the development and application study of the arbitrating program are anticipated. Program would especially require to decrease job instability which was a high grade in job stress, and to increase physical activity which was a low grade in health promotion behaviors.

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