Health Habits and Health Promotion among Rural Workers in Korea

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창원지역 근로자의 생활습관과 건강증진의 관련성 연구

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= 초　록 =

창원지역 산업장 근로자의 생활습관과 건강증진의 관련성을 분석하고자 창원에 위치하는 중공업 근로자 1,374명을 대상으로 1993년 7월 7일-7월 17일까지 10일간 자기기입식 설문조사를 이용하여 조사한 결과 다음과 같은 결론을 얻었다.

1. 연령이 20세 미만이며 근무년수가 2년 미만인 근로자의 건강상태는 연령이 30세 이상이며 근무년수가 긴 근로자에 비하여 양호하지 못하였으며 이 차이는 통계학적으로 유의하였다(p<0.05).

2. 건강과 관련된 생활습관을 4~5가지 또는 6~7가지 실천하고 있는 근로사의 건강상태는 건강과 관련된 좋은 생활습관을 3가지 이하로 실천하고 있는 근로자에 비하여 양호하였고 이 차이는 통계학적으로 유의하였다(p<0.01).

3. 단계별회귀분석 결과에 의하면 건강상태는 좋은 생활습관을 더 많이 형성할수록, 연령이 높을수록, 근무년수가 길수록 건강상태가 양호하였으며 이들 변수로 근로자의 건강상태를 21.11% 설명할 수 있었다(R^2=21.11).

I. Introduction

Through the successful accomplishment of consecutive five-year economic development plans starting in 1962, many people farming in rural areas changed into industrial workers and today the farming population constitutes only 5.1% of the entire population in Korea (Ministry of Labor, 1994).

The health care of industrial workers, which was neglected due to preoccupation with rapid emphasizing improvement of productivity, has been gradually recognized as an important economical and social problem.

The health care of industrial workers is directly related with the health care of the nation bacause the population of workers reach over the half of entire population.

Although a working place can be dangerous to workers, it should be the ideal place promoting the worker's health and most concerned with maximum industrial health management.

Health promotion is the method which improves health by changing behaviors to form life-style by reducing risk factors which cause the disease. McQueen(1988) defined health promotion as a new science.

According to previous researches, individuals' health status and life-style were main factors in maintaining health and incurring disease (Robert and Lee, 1980; Wiley and Camacho, 1980; Wilson and Elinson, 1981; Fredrick et al. 1988). Metzner et al.(1983) found that coronary heart disease, hypertension, and chronic bronchitis were associated with life-style such as eating habits of breakfast, hours of sleep, cigarette consumption, alcohol consumption, snacks between meals, physical exercise, and obesity status.

A series of studies was begun to explore the relationship between health status and life-style. The most representative research in life-style and subsequent mortality was a research surveying 7,000 adults made in Alameda county of California in U.S.A. in 1965 (Belloc, 1983; Breslow and Enstrom, 1980). This research revealed a strong relationship between seven health habits and the physical health status or mortality. In this study, the seven health habits of life-style were:

1. Never smoking cigarettes 2. Regular physical exercise 3. Moderate or no use of alcohol 4. Seven to eight hours sleep regularly 5. Maintainning proper weight 6. Eating breakfast 7. Not eating between meals. According to the findings of Belloc and Breslows research (1972), people following seven health practices had a mortality rate only 28% that of one following zero to three health practices.

In Korea most previous research have been analyzed the health status of industrial workers or analyzing factors related to it(Moon and etc., 1992); studying working environment and health status; or studying the association between

smoking and drinking alcohol and health status (Ha, 1991). For the future, the importance of systematic research has been newly recognized for health promotion as the policy of Korea on industrial health changes based on modern social diseases related with the worker's life style.

Therefore, accurate fundamental data, on planning the health promotion of workers and a program of health education to build up a good life-style, can be made by studying industrial workers' life-style and health status related with it.

On a broad scale, life-style includes all of one's social, political, and cultural factors. However this study was limited to the association between industrial workers, seven life-style variables and health status in the area of hours of sleep, level of obesity, regularity of breakfast, snacks between meals, smoking, alcohol, and physical exercise which were developed by Belloc and Breslow in 1965 data.

Analyses focus on the purpose of this study were analyzing the life-style affecting health status of industrial workers.

II. Methods

1. The Subjects and Period of Survey

This survey was conducted on 1,374 industrial workers working more than one year in heavy-industry company, one of the most successful heavy industry in Korea, at Changwon. Finally, 1,354 workers were included in the analysis excluding 20 workers who gave insufficient responses. The period of the survey was 10 days from the 7th of July to the 17th of July in 1993. After the questionnaire was pre-tested by the workers in the suburb of Seoul, the contents of questions, structure of phrases, and order of questions were revised.

Final revised questionnaires were used for this study.

2. Scales of Todai Health Index

Todai Health Index (hereinafter, called THI) used in this research for measuring physical and mental health status of workers is a health status screening instrument which was developed by Suzuki at the University of Tokyo research team in Japan. The reliability and validity of the items established (Suzuki et al., 1979; Aoki, 1980). THI is a revision of Cornell Medical Index(CMI) developed by Brodman (1951) to be questions of health status which commonly appealed by oriental population.

The reliability and validity of THI was established by Suzuki et al. in 1979. In addition, this list composes 12 subscales as about 10 similar questions are collected and all questions have three choices like positive or frequently, neutral or sometimes, and negative or frequently. The index scores was cummulative, ranging from 0 to 3, the higher score is, the worse health, and the lower score is the better health.

The items of questions about 12 scales of THI were shown in Table 1.

3. The Characteristics of the Variables

In this study, the dependent variable was health status by THI scores and the independent variables, representing each characteristic well were selected. Table 2 shows the variables including each characteristic.

Workers' personal variables were age, educational level, marital status, and duration of work. The variables of life-style were selected as smoking, exercise, hours of sleep, eating between meals, eating breakfast, alcohol consumption and obesity level which were developed by Belloc and Breslow (1972).

4. Analysis

By using ANOVA and the t-test, the relationship between THI scores as a dependent variable and each independent variable were analyzed.

Because several independent variables which

Table 1. Scales of Todai Health Index

Scales	abbreviation	Frequency
Multiple subjective scale	SUSY(I)	20
Respiratory scale	RESP(A)	10
Eye and skin scale	EYSK(B)	10
Mouth and anus scale	MOUT(D)	10
Digestive scale	DIGE(C)	9
Life scale	LIFE(G)	11
Nervousness scale	NEVR(E)	8
Mental irritability scale	MENT(J)	14
Impulsiveness scale	IMPU(H)	9
Aggressive scale	AGGR(F)	7
Depression scale	DEPR(K)	10
Lie scale	LISC(L)	10
Total		128

Table 2. Description of Variable

Characteristics	Variable
Dependent variable	Health status by THI scores
Independent variables	
Personal characteristics	Age, Marital status, Education,
	Duration of work
Life-style characteristics	Smoking
	Exercise
	Hours of sleep
	Eating between meals
	Eating breakfast
	Alcohol consumption
	BMI(Body Mass Index)

Table 3. The comparison of THI scores by age

Scales	Under 20yrs (N=110)	20-29yrs (N=680)	30-39yrs (N=476)	Over 40yrs (N=78)	F
SUSY(I)	1.74	1.61	1.61	1.66	3.33
RESP(A)	1.74	1.59	1.60	1.68	4.27
EYSK(B)	1.64	1.53	1.54	1.61	2.40
MOUT(D)	1.58	1.50	1.51	1.54	1.65
DIGE(C)	1.67	1.56	1.56	1.59	2.26
LIFE(G)	1.84	1.79	1.78	1.82	1.80
NERV(E)	1.87	1.76	1.75	1.82	1.80
MENT(J)	1.69	1.59	1.58	1.65	2.29
IMPU(H)	1.85	1.69	1.67	1.78	5.37*
AGGR(F)	2.13	2.06	2.08	2.13	3.09*
DEPR(K)	1.75	1.64	1.65	1.70	2.74*
LISC(L)	2.00	1.98	2.00	2.03	1.48

* P<0.05

were statistically significant in the result of the tests simultaneously affected health status, univariate analysis can not fully explain the relationship between a dependent variable and independent variables. In the second stage of analysis, the effect of independent variables on a dependent variable was examined at the same time by using multiple regression analysis.

Though it is assumed that in principle multiple regression analysis can be performed in case that dependent variable and independent variable are continuous, independent variable can be handled as a dummy variable when independent variable is nominal variable(Polissarand Diehr, 1982). Thus, multiple regression analysis was done in treating independent variables as dummy variables if independent variable are nominal. The above statistic handling was applied in SPSS PC+.

Table 4. The comparison of THI scores by duration of works   (unit : months)

Scales	Under 24 (N=144)	24-47 (N=198)	48-71 (N=455)	72-95 (N=220)	96+ (N=219)	F
SUSY(I)	1.72	1.62	1.58	1.61	1.64	2.98**
RESP(A)	1.72	1.61	1.57	1.59	1.61	3.38**
EYSK(B)	1.64	1.54	1.50	1.52	1.58	3.43**
MOUT(D)	1.57	1.50	1.48	1.49	1.54	1.68
DIGE(C)	1.63	1.57	1.54	1.54	1.61	2.01
LIFE(G)	1.84	1.76	1.78	1.79	1.83	2.29
NERV(E)	1.89	1.74	1.74	1.73	1.79	3.09*
MENT(J)	1.70	1.58	1.56	1.58	1.62	2.87*
IMPU(H)	1.84	1.68	1.68	1.67	1.69	3.80**
AGGR(F)	2.14	2.15	2.11	2.13	2.14	4.27**
DEPR(K)	1.74	1.66	1.62	1.64	1.65	2.52*
LISC(L)	2.02	1.95	2.00	1.99	1.99	2.28

* $P<0.05$ ** $P<0.01$

III. Results

The mean age of workers was 29.4 years. The group of under age 20 showed higher health status scores than one of over age 20, but it was not statistically significant (Table 3). In duration of works, the group of less than 2 years presented higher THI scores than one of more than 2 years and it was statistically significant (Table 4). Consequently, the scores of unskilled workers even though younger, those who worked less than 2 years was high and this finding agreed with those of similar research (Chassa and Lesour, 1984; Cha and etc., 1989). It showed that the less skilled workers, even though they are younger have a worse health status.

In focusing on marital status, the unmarried group represented relatively higher scores than the married group. In education level, the group of less than 9 years had worse health status and one of more than 9 years, but both of them were not statistically significant.

The seven life-style variables were studied which was develped by Belloc and Breslow (1965). In smoking, current smokers were 54.9% and exsmokers were 13.1%, and non-smokers were 30.2%. In physical exercise, workers exercising regularly were 31.7%, non-exercisers were 67.7%. It revealed that most of workers did not exercise regularly, even though worker who conduct simple works need regular exercise.

In hours of sleep, 74.0% of workers report 7-8 hours of sleep which is considered as the most recommendable hours of sleep.

Only 8.0% of the workers had breakfast everyday. That's because they didn't have breakfast 54.2% of the workers ate between meals almost everyday; in alcohol consumption, 13.2% of workers drank alcohol more than three to four times a week and 26.8% drank once to twice a week, and 59.5% did once to twice a month or rarely or in special occasions. BMI based on height and weight showed that only 4.6% workers were obeses and 93.6% were normal weight (Table 5).

The workers practicing good life-style(6-7) were only 3.7%; workers practicing four to five

Table 5. Distribution of Health habit

Variables	Value	N	%
Smoking	Currently	744	54.9
	Formerly	178	13.1
	Never	409	30.2
	No response	23	1.7
Exercise	Never	917	67.7
	Regularly	429	31.7
	No response	8	0.6
Hours of sleep	6hr or less	314	23.2
	7~8hr	1002	74.0
	9hr or more	20	1.5
	No response	18	1.3
Eating between meals	Almost every day	735	54.3
	Rarely or occasionally	615	45.4
	No response	4	0.3
Eating breakfast	Almost every day	108	8.0
	Rarely or never	1246	92.0
Alcohol consumption	3~4 drinks or more	179	13.2
(times/wk)	1~2 drinks	364	26.8
	Moderate or no use	810	59.8
	No response	1	0.1
BMI †	Obesity	63	4.6
	Normal	1268	93.6
	No response	23	1.7
Total		1354	100.0

$$\dagger \ BMI = \frac{Weight(kg)}{Height^2(m^2)}$$

life-style were 41.7%; and workers in the zero to three, poor life-style, were more than half of respondents. For analyzing the association between life-style and health status by THI, the THI score of workers who has poor life-style(0-3) was higher in all twelve THI items than those following four to five life-style or those following six to seven life-style. It presented that workers following only the zero to three, poor life-style, maintained unhealthy status and the difference was statistically significant.

The above findings conformed with the results of Belloc and Breslow research (1972). They found that men following seven life-style were physically healthy thirty years younger than those in a few or zero life-style. 5½ years of their study revealed a strong relationship between the seven health habits and longevity. As the expectation of life (average number of years of life remaining) at age 45 for men in the zero to three health practice group was 21.6 years compared with 33.1 years for those in the six to seven health practice

group (Belloc and Breslow, 1972). The workers without having good life-style showed high THI scores in health status. Based on that fact, having good life-style is deeply related with in the health status (Table 6).

According to Table 7 showing the association between each independent variable on THI scores, three variables among four were statistically significant. Among them, the relationship between life-style and health status of workers was the highest association and next was age and duration of works. In other words, the poorer life-style was followed; the younger workers were; and the shorter the duration of work was, the worse health status was. These three variables were chosen as significant variables explaining THI scores which represents health status. And they could explain the health status of workers by 21.11% (R^2=21.11) (Table 7).

In summary, workers daily life-style was closely related with workers health status thus, the long-term and all dimensional researches should be continued in the future.

IV. Conclusion

In order to analyze the influence of industrial worker's life-style on the physical and mental health status of workers, a self-administered

Table 6. The comparison of THI scores by life-style

Scales	never good practice(0-3) (N=702)	somewhat good practice(4-5) (N=598)	always good practice(6-7) (N=50)	F
SUSY(I)	1.95	1.68	1.51	42.05*
RESP(A)	1.80	1.66	1.52	38.76*
EYSK(B)	1.72	1.53	1.40	32.25*
MOUT(D)	1.70	1.55	1.46	32.75*
DIGE(C)	1.85	1.54	1.54	40.24*
LIFE(G)	2.02	1.68	1.43	28.69*
NERV(E)	1.99	1.74	1.65	32.01*
MENT(J)	1.83	1.65	1.52	51.25*
IMPU(H)	1.95	1.74	1.66	58.88*
AGGR(F)	2.02	1.77	1.54	26.72*
DEPR(K)	1.88	1.70	1.58	44.65*
LISC(L)	1.96	1.94	1.95	11.72*

* P<0.001

Table 7. The effect of multiple regression analysis

Variables	Regression Coefficient	Standardized Estimate(β)	F-value
Health practice score	-0.4042**	-0.4222	
Age	-0.1291**	-0.1305	27.68*
Duration of work	-0.0988*	-0.1008	
Marital status	-0.1121	0.0872	

** P<0.01   * P<0.05

health status screening questionnaire, Todai Health Index(THI), was performed by 1,354 workers at Changwon of Kyungsangnam-do county in Korea. Through this study, the following results were found.

1. The young age group, especially the group who had short work duration less than two years, had high THI scores which were statistically significant.

2. A worker who followed six to seven life-style, good health practice, were found to be associated with better health status than those who followed the zero to three life-style, poor health practice, in most of all dimensions of physical and mental health scales of THI.

3. According to the multiple regression analysis, the variable of life-style had the greatest influence on physical and mental health status of rural industrial workers. The less life-style was followed, the younger workers were and the shorter the duration of work was the worse health status was. These three variables were chosen as significant variables explaining THI scores which represents health status. And they could explain the health status of workers by 21.11%(R^2=21.11).

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