The Influence of Musculoskeletal Symptoms, Perceived Health Status, Self-efficacy on Quality of Life (WHOQOL-BREF) in Korean Industrial Workers

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Abstract

Background/Objectives: The purpose of this learning was to administer a structured questionnaire to one hundred industrial workers in G Metropolitan, City, J Province, and G Province to determine the impact of musculoskeletal disorder symptoms, perceived health status, and self-efficacy on quality of life (WHOQOL-BREF) from October 12, 2019, through October 10, 2020.The analysis did not include one responder since their answers needed to be genuine. Methods like the descriptive t-test, one-way evaluation of variance, partial connection coefficients, and variousfailure with steps were used to examinethe data using the SPSS 24.0 Win program.

Findings: As a result of data analysis, musculoskeletal subjective symptoms and self-efficacy (r=-.237, p=.018), emotional musculoskeletal symptoms, and quality of life (r=-.310, p=.002) showed a significant negative correlation. The musculoskeletal disorder symptom and perceived health status (r=-.128, p=.208) were not statistically significant. There was a definite association between one's self-efficacy and one's perception of their health (r=.536, p.001), their perception of their health and their quality of life (r=.498, p.001), and their self-efficacy and their value of life (r=.488, p.001). Perceived health status, life satisfaction, and hobbies all attributed to a 34.8% increase in quality of life for industrial employees (Adj R2=.348, F=18.44, p.001).

Improvements/Applications: To enhance the quality of life of industrial workers, it will be required to develop an intervention program to encourage having hobbies and increase perceived health status and life satisfaction.

Keywords: Musculoskeletal Symptoms, Perceived Health Status, Self-efficacy, Quality of Life, Industrial Workers

1. Introduction

Recent changes in the labor market have been marked by COVID-19. According to the 'Work-net Job Recruitment Status in November 2020' published by the Korea Employment Information Service, manufacturing and production jobs are showing a sharp increase [1]. Therefore, it is time for active intervention to enhance the quality of life of production workers. Therefore, nurses in charge of safety and health in the industry should pay attention to changes in the labor market and manage their health considering the specificity of production workers. In addition, various factors impacting the quality of life of production workers should be identified and adjusted.

Compared to general workers, production workers are more exposed to environments that harm health, and most work through physical labor [2]. Therefore, they can show health behaviors distinct from other occupational groups and require special attention from nurses in charge of health management in the workplace. Production workers must be distinguished from the general public and are affected by the workplace environment, role, and labor intensity. They are of work and the culture formed by the group [2,3].In this regard, to help production workers lead a healthy life and improve their quality of life, it is essential to first pay awareness to the symptoms of musculoskeletal disorders in production workers with high-intensity physical labor. In Korea, one out of three receives treatment for musculoskeletal disorders, and medical expenses for a unit for 10.9% of the total medical exp institutions [4]. As such, it is necessary to examine the symptoms of musculoskeletal disorders in production workers with high-intensity physical labor when national attention and management of musculoskeletal disorders are concentrated.

Musculoskeletal disorders are caused by improper posture and repetitive tasks [5]. In

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many studies, the improper posture appears to be a significant factor in musculoskeletal disorders [6]. Musculoskeletal disorders are an important cause of loss of work time, increased cost, and physical disability of workers [7]. Above all, musculoskeletal disorders affect workers' quality of life as they can cause movement disorders and safety accidents [8]. In addition, psychologically and emotionally, it causes "symptoms such as depression, anxiety, and helplessness, ultimately lowering the quality of life" [9]. "Therefore, toenhance the quality of life of production workers, it is necessary to check the symptoms of musculoskeletal disorders and to understand the relationship with the quality of life.In addition, to improve the quality of life of production workers, subjective health status can be considered" [10] Personalective health status refers to personalize health status perceived by one's health status [11]. "It is an essential factor in determining the quality of life" [12]. "In a study of patients with chronic musculoskeletal pain, the higher the pain intensity and the worse the perceived health status, the lower the quality of life" [13]."Another factor affecting the quality of life is self-efficacy, which certainly affectsthe quality of life" [14-16]. Self-efficacy is an individual's judgment about one's ability to organize and carry out actions to achieve a given task [14]. In previous studies, "the quality of life of workers showed a significant clear correlation with self-efficacy" [15,16]

However, finding a study that studied musculoskeletal disorder symptoms, perceived health status, and self-efficacy as issuesinvolving the quality of life of production workers is challenging. Hence, it is essential to identify the causes affecting the quality of life in these various areas. Active intervention and help are needed to improve workers' quality of life for social productivity improvement and individual satisfaction. Therefore, this research aims to clarify the degree of influence of musculoskeletal disorder symptoms, perceived health status, and self-efficacy on quality of life. Through this, it was implemented to offerprimary data necessary for enhancing the well-being of factory employees via nurse intervention research and program development.

This study aims to understand the musculoskeletal awareness symptoms, perceived health status, self-efficacy, and quality of life (WHOQOL-BREF) of industrial workers and to examine the relationship between musculoskeletal awareness symptoms, perceived health status, self-efficacy, and quality of life. The purpose of the analysis is as follows to identify significant variables affecting.

● Identify the general characteristics of the subject.

● Determine the subject's musculoskeletal disorder symptom, perceived health status, self-efficacy, and quality of life (WHOQOL-BREF).

● Compare the differences in musculoskeletal disorder symptoms, perceived health status, self-efficacy, and quality of life (WHOQOL-BREF) according to subjects' general traits.

● Examine the relationship between the subject's quality of life (WHOQOL-BREF) and related variables.

● Identify factors that affect the subject's quality of life (WHOQOL-BREF).

2. Materials and Methods
2.1. Study Design

This analysis is aninformativestudythat discovers the subjective musculoskeletal symptoms, perceived health status, self-efficacy, and quality of life (WHOQOL-BREF) of industrial employees in Korea and identifies variables affecting the quality of life.

2.2.Participants

Ninety-nine manufacturing workers from G Metropolitan City and the provinces of J and G served as participants in this study. Five independent variables were utilized in the regression analysis, with an impact size of.15 and animportance level of.05 is used to establish the sample size. The model size determined in G*Power 3.12 for multiple regression analysis resulted in this total. Given the potential for attrition, 100 surveys were sent out.One hundred copies of the questionnaire were circulated, and 100 copies were collected.Ninety-nine copies (99%) were finally used for analysis, excluding one questionnaire with insincere responses.

2.3. Instrument

The questionnaire utilized in this researchcontained closed-endedand structured questions written in Korean, soliciting knowledge about (1) musculoskeletal disorder symptoms, (2) PHS, (3) self-

efficacy, and (4) QOL.

2.3.1. Musculoskeletal disorder symptom

The survey on subjective musculoskeletal system symptoms wasestablished on the questionnaire developed by the Korea Occupational Safety and Health Agency [17]. In this study, the emotional symptom scale for the musculoskeletal system used a VAS 0-to-10-point scale for pain scores in the neck, shoulder, arm/elbow, hand/wrist/finger, back, and leg/foot.

2.3.2.Perceived health status (PHS)

"Perceived Health Status (PHS) was translated using a tool created by Speake, Cowart, and Pellet"[18]. There are three items: the current health status as perceived by the person, the health status associatedwiththree years ago, and the health conditionassociatedwith others of the same age. From one to five, one represents "evil," two "somewhat awful," three "average," four "relatively good," and five "extremely good" The scale for evaluating one's health perceptions begins at three and goes up to 15; the higher the score, the more positive one views one's health. Cronbach's =.85 was used at the time of tool creation, while =.93 was used in this study to measure reliability.

2.3.3. Self-efficacy

Self-efficacy was investigated using a tool created by Shere et al. [19] and modified by Kim [20]. Totaling 13 items, the self-efficacy instrument's response options ranged from 0 ('not at all') to 4 ('very much'). With every "disagree" you cast, you'll lose two points. There are six possible outcomes, with three points awarded for "agree" and four awarded for "strongly agree."The self-efficacy record ranges from a least 13 points to a limit of 52 points. Anabove-average score reflects a more incredible feeling of competence. Cronbach's =.98 throughout tool development, while =.94 was used in this study to measure dependability.

2.3.4. Quality of life (WHOQOL-BREF)

"Quality of life was investigated using the Korean World Health Organization Quality of Life Scale-Brief (WHOQOL-BREF)" [21]. The quality-of-life tool has a sum of 26 items, and the sub-factors include two items (1,2) in the general area, seven items in the physical area (3,4,10,15,16,17,18), and six items in the psychological health area (5.6). .7.111.19.26), three items in the social relationship area (20,21,22), and eight items in the environment area (8,9,12,13,14,23,24,25), each composed of a 5-point scale. Negative questions (3,4,26) are inversely converted; the minimum score is 26, and the maximum is 130 points. The quality of one's life improves as the score rises. Cronbach's =.90 was used at the time of tool creation, while =.93 was used in this study to measure reliability.

2.4. Data Collection

Industrial employees in "G Metropolitan City, J Province, and G Province were the focus of this study, which collected data from September 12 to October 10, 2020". As a matter of ethics, the researcher should get their written agreement outlining the study's goals and procedures before gathering data from study participants.The researcher described that they couldtake out the survey at any time to avoid taking the investigation into consideration of the ethical aspects of the problem. The information gathered will be kept confidential. Only academic inquiry will make use of the information collected. The participants completed the questionnaire, which included questions, on their own time and in under 20 minutes. Following the survey's conclusion, the researcher gave the participants a preset token of appreciation.

2.5. Data Analysis

SPSS, in its version 24.0, was used to analyze the gathered data.
● Frequency, percentage, mean, and standard deviation were used to explain the subjects.
● Subjective musculoskeletal symptoms, health perception, self-efficacy, and quality of life (WHOQOL-BREF) scores were reported as means, standard deviations, and ranges.
● Subjects' general characteristics were analyzed using an independent t-test and a one-way analysis of variance (ANOVA) to regulate if there were any essential differences in their reported subjective musculoskeletal symptoms, perceived health status, self-efficacy, and quality of life (WHOQOL-BREF).

● Pearson's Correlation Factor was utilised to analyze the connectionamongsubjective musculoskeletal symptoms, perceived health status, self-efficacy, and quality of life (WHOQOL-BREF).

● After identifying multicollinearity, we used stepwise regression to examine the factors influencing the subject's quality of life (WHOQOL-BREF).

2.6. Study Limitation

This study conducted convenient sampling for only industrial workers in G Metropolitan City, J, and G provinces. There are limits in simplifying the research findings because exogenous social variables that may occur due to differences in the region, living environment, and working environment of the study subjects can be excluded only partially.

3. Results and Discussion

Table 1 displays typical characteristics. The subjects under 40 were 41 people (41.4%), and those over 40 years old were 58 people (58.6%). Their average age was 42.2 (SD=12.43) years.And 41 people subjects were males (41.4%), and 58 people were females (58.6%). Sixty-three people (63.6%) have a spouse, and 36 (36.4%) have thirty-ninepence.Thirty-nine people (39.4%) have a religion, and 60 (60.6%) do not have a spouse. Fifty-six people (56.6%) had a high school diploma or less, and 43 people (43.4%) were above high school graduation. Twenty-eightwere contract workers (28.3%), and 71 were regular workers (71.7%).Workers (67.7%) with fewer than ten years of work knowledge we people, andpeople (32.3with a decade or more of professional experience,32 people had an average work experience of 8.36 (SD=9.09)years, 47 people (47.5%) had shift work, and 52 people (52.5%) had a non-unit job. The number of people who worked 22 days or less in a month was 58 (58.6%), and more than 22 days were41 (41.4%). The average number of working days was 21.96 (SD=3.68) days; 71 people (71.7%) had several days of 8 or fewer in a month, and 28 people (28.3%) had more than eight days. The average number of days off was 7.3 (SD=2.58) days, and the number of people who had daily working hours was 8 hours,50 people (50.5%), 18 people (18.2%) had 9 hours to 10 hours, 31 persons (31.3%) had more than10 hours in the daily working hours. The average working time of 9.52 (SD=1.78) hours. In monthly income, 28 people (28.3%) got less than 2 million won, 45 people (45.5%) gainedmore than 26 persons earned more than 3.5 million won (or 26.3% of the total), while the remaining ones got between 2 and 3.5 million won.And 59 people (59.6%) had musculoskeletal pain. Forty people (40.4%) had no pain.Twenty-eight people (28.3%) did not exercise the number of times per week, 44 people (44.4%) exercised from 1 to 2 times, and 27 people (27.3%) did more than three times. For drinking, 67 people (67.7%) drink alcohol, 32 people (32.3%) do not drink any alcohol, 35 people (35.4%) smoke, and 64 people (64.6%) do not smoSixty-eight.Sixty-eight people (68.7%) have hobbies, and 31 have no hobbies (31.3%). Regarding owning a house, 53 (53.5%) people own it, and 46 (46.5%) people do not.Regarding quarrels for a month, yes responses are 7 (7.1%), and no answers are 92 (92.9%).In life satisfaction, 27 people (27.3%) are satisfied, 64 people (64.6%) are moderate, and eight people (8.1%) are dissatisfied.In job expectations, 16 people (16.2%) are hopeful,13 people (13.1 %) are not promising, 56 people (56.6%) would like to keep the current status, and 14 people (14.1%) do not know.

Table 1: General characteristics(N=99)

Characteristics	Category	n	%	M± SD
Age (yr)	<40	41	41.4	42.20±12.43(yr)
	≥40	58	58.6	
Gender	Male	41	41.4	
	Female	58	58.6	
Spouse	Yes	63	63.6	
	No	36	36.4	
Religion	Yes	39	39.4	
	No	60	60.6	
Education	≤High school graduate	56	56.6	
	>High school graduate	43	43.4	

Employment type	Temporary employment	28	28.3	
	Permanent employment	71	71.7	
Duration of working (yr)	<10	67	67.7	8.36±9.09(yr)
	≥10	32	32.3	
Work type	Shift work	47	47.5	
	Non-shift work	52	52.5	
Working day /month	≤22	58	58.6	21.96±3.68(day)
	>22	41	41.4	
Non-working day /month	≤8	71	71.7	7.3±2.58(day)
	>8	28	28.3	
Working hours /day	8	50	50.5	9.52±1.78(hr)
	9 ~ 10	18	18.2	
	>10	31	31.3	
Income(Month, 10,000won)	<200	28	28.3	
	≥200, <350	45	45.5	
	≥350	26	26.3	
Musculoskeletal pain	Yes	59	59.6	
	No	40	40.4	
Exercise(times/week)	0	28	28.3	
	1-2	44	44.4	
	≥3	27	27.3	
Drinking	Yes	67	67.7	
	No	32	32.3	
Smoking	Yes	35	35.4	
	No	64	64.6	
Hobby	Yes	68	68.7	
	No	31	31.3	
Own house	Yes	53	53.5	
	No	46	46.5	
Quarrel experience	Yes	7	7.1	
	No	92	92.9	
Life satisfaction	Satisfaction	27	27.3	
	Moderate	64	64.6	
	Dissatisfaction	8	8.1	
Job expectation	Hopeful	16	16.2	
	Non-Hopeful	13	13.1	
	Keep only the current state	56	56.6	
	Don't know	14	14.1	

The degree of musculoskeletal disorder symptoms, apparent health status, self-efficacy, and quality of life are shown in table 2. Subjects' subjective symptoms of the musculoskeletal system were aleast of 0 points(0) and alimit of 8 (48) out of 10 (60), with an average score of 2.67±2.00 (16.04±11.99). Perceived health status was a minimum of 1.67 points (5.0 points) and a maximum of 4.33 points (13.0 points) out of 5 points (15 points), with an average of 2.79 ± 0.53 (8.37 ± 1 issues and self-efficacy was 4 points (52 points). The average score was 3.02±0.40 (39.24±5.15), with

a least of 1.92 points (25 points) and a highest of 4.08 points (53 points) on a perfect score. The quality of life is a least of 1.85 points (48 points) and a thoroughgoing of 4.81 points (125 points) out of 5 points (130 points), with an average score of 3.23 ± 0.46 (83.90 ± 12.8) issues, and the overall A minimum of 2 points (4 points) out of 5 points (10 points) with 2 items in the domain, and a maximum of 5 points (10 points) with an average score of 3.38 ± 0.61 (6.76 ± 1.21) points, 7 items in the physical area, 5 points (35 points) The average score is 3.36±0.52 (23.53±3.65), with a least of 1.71 points (12 points) and a thoroughgoing of 5 points (35 points) out of a sum of 6. (10 points), a maximum of 4.67 points (28 points), with an average score of 3.15±0.53 (18.93±3.21), and a least of 1.67 points (5 points), a thoroughgoing of 5 out of 5 points (15 points) for 3 questions in the social relationship area The average score of points (15 points) is 3.33±0.50 (9.99±1.50), and the average score is at least 1.88 points (15 points) out of 5 points (40 points) out of 8 items in the environment area, and the maximum score is 4.75 points (38 points). The score was 3.09±0.52 (24.70±4.14) (Table 2).

Table 2: Degree of musculoskeletal disorder symptom, perceived health status, self-efficacy,and quality of life(N=99)

Variables	M±SD	Minimum	Maximum	Range
Musculoskeletal symptoms (pain score, VAS)	16.04±11.99	.00	48.00	0~60
	2.67±2.00	.00	8.00	0~10
Neck	2.63±2.43	.00	8.00	0~10
Shoulder	2.87±2.50	.00	9.00	0~10
Arm/elbow	2.10±2.27	.00	9.00	0~10
Hand/wrist/finger	2.24±2.33	.00	9.00	0~10
Waist	3.25±2.64	.00	9.00	0~10
Leg/toe	2.95±2.65	.00	9.00	0~10
Perceived health status	8.37±1.58	5.0	13.0	3~15
	2.79±.53	1.67	4.33	1~5
Self-efficacy	39.24±5.15	25.00	53.00	1~4
	3.02±.40	1.92	4.08	13~52
Quality of life	83.90±12.08	48.00	125.00	26~130
	3.23±.46	1.85	4.81	1~5
The overall quality of life	6.76±1.21	4.00	10.00	2~10
	3.38±.61	2.00	5.00	1~5
Physical health	23.53±3.65	12.00	35.00	7~35
	3.36±.52	1.71	5.00	1~5
Psychological health	18.93±3.21	10.00	28.00	6~30
	3.15±.53	1.67	4.67	1~5
Social relationships	9.99±1.50	5.00	15.00	3~15
	3.33±.50	1.67	5.00	1~5
Environment	24.70±4.14	15.00	38.00	8~40
	3.09±.52	1.88	4.75	1~5

Variations in the quality of life by general attributes are shown in table 3. The subjective symptoms of a musculoskeletal system,allowing to the commontraits of the subjects, were a statistically important difference in pain (t=4.273, p<.001), hobbies (t=-2.130, p=.036), owning a home (t=-2.915, p=.004) and life satisfaction (F=3.811, p=.026). Therefore the post-test on the significant variables, Subjective musculoskeletal symptoms were observed to be lower in the happy than in the unhappy participants.

Musculoskeletal pain patients' health reports varied significantly by seserigraphicactors. (t=-2.689, p=.008) and hobbies (t=2.185, p=.031).

There were statistically essential differences in self-efficacy according to the presence or absence of a husband (t=-2.03, p=.045) and life fulfillment (F=6.260, p=.003). Hence, the post-test on the important variables, the satisfaction group showed higher self-efficacy than the average group and the dissatisfied group in life satisfaction.

There was a statistically meaningfulchange in the quality of life according to education (t=-2.089, p=.039), the number of exercises per week (F=7.820, p=.001), hobbies (t=3.610, p<.001), and life satisfaction (F=3.234, p=.044). Due to a post hoc analysis of criticalfacto-critical, the group that exercised three or more times per weekwe a more excellent quality of life than the group that did not exercise and the group that exercised 1-2 times per week (Table 3). The results of different quality of life depending on the level of education are the same as those of previous studies [16]. In other words, if the education level is low, it can make a difference in the perceived health state because it is engaged in manual labor, and thus the quality of life can be lowered. Therefore, there is a need for regular education to enhance the health and quality of life of production workers.

The correlation among musculoskeletal disorder symptoms, perceived health status, self-efficacy, and Quality of life is shown in table 4. The correlations between subjective symptoms of the musculoskeletal system, perceived health status, self-efficacy, and quality of life (WHOQOL-BREF) of subjects are as follows. There was a considerable negative correlation between subjective symptoms of the musculoskeletal system and self-efficacy (r=-.237, p=.018), emotional symptoms of the musculoskeletal system, and quality of life (r=-.310, p=.002). In other words, the higher the musculoskeletal symptoms, the decreased the self-efficacy and quality of life. The subjective symptoms of the musculoskeletal system and perceived health status (r=-.128, p=.208) were not statistically significant. Perceived health status and self-efficacy (r=.536, p<.001), perceived health status, and quality of life (r=.498, p<.001) showed significant positive correlations. As the rate increased, self-efficacy and quality of life (WHOQOL-BREF) increased, and self-efficacy and quality of life (r=.488, p<.001) showed a significant positive correlation(Table 4).

In previous studies, the superior the self-efficacy, the greater the quality of life, which is the same as the results of this survey [16]. In other words, this means that production workers can improve their quality of life if they have the confidence to overcome their environment with a positive mindset despite the poor working environment. Therefore, workplace health managers should help production workers lead healthy lives through self-efficacy enhancement programs to enhance their quality of life.

Table 3: Difference inquality of life by general characteristics (N=99)

Characteristics	Category	Quality of life		
		M±SD	t or F	p
Age (yr)	<40	3.30±.47	1.342	.183
	≥40	3.17±.46		
Gender	Male	3.29±.46	2.234	.028
	Female	3.07±.44		
Spouse	Yes	3.21±.48	-.338	.736
	No	3.25±.45		
Religion	Yes	3.18±.39	-.749	.456
	No	3.26±.51		
Education	≤High school graduate	3.14±.47	-2.089	.039
	>High school graduate	3.34±.44		
Employment type	Temporary employment	3.10±.52	-1.739	.085
	Permanent employment	3.28±.43		
Duration of working (yr)	<10	3.21±.48	-.554	.581
	≥10	3.26±.44		
Work type	Shift work	3.25±.43	.377	.707

	Non-shift work	3.21±.50		
Working day /month	≤22	3.25±.41	.705	.482
	>22	3.19±.54		
Non-working day /month	≤8	3.24±.50	.389	.698
	>8	3.20±.38		
Working hours/day	8	3.31±.55	1.763	.177
	9 ∼ 10	3.21±.41		
	>10	3.11±.31		
Income(Month, 10,000won)	<200	3.11±.56	1.369	.259
	≥200, <350	3.29±.41		
	≥350	3.24±.44		
Musculoskeletal pain	Yes	3.19±.43	-1.070	.287
	No	3.29±.51		
Exercise(times/week)*	0[a]	3.10±.44	7.820	.001
	1-2[b]	3.13±.34	[a]<[c], [b]<[c]	
	≥3[c]	3.51±.56		
Drinking	Yes	3.20±.45	-.982	.328
	No	3.29±.49		
Smoking	Yes	3.26±.43	.460	.647
	No	3.21±.48		
Hobby	Yes	3.33±.46	3.610	<.001
	No	2.99±.38		
Own house	Yes	3.31±.46	1.882	.063
	No	3.13±.46		
Quarrel experience	Yes	3.14±.44	-.527	.599
	No	3.23±.47		
Life satisfaction	Satisfaction	3.41±.46	3.234	.044
	Moderate	3.16±.42		
	Dissatisfaction	3.10±.67		
Job expectation	Hopeful	3.37±.46	2.054	.112
	Non-Hopeful	2.96±.46		
	Keep only the current state	3.25±.44		
	Don't know	3.25±.52		

* Scheffe's test

Table 4: Correlation among musculoskeletal disorder symptoms, perceived health status, self-efficacy,and Quality of life (N=99)

Variables	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
	r (p)								
Musculoskeletal symptoms	1	-.128 (.208)	-.237 (.018)	-.310 (.002)	-.314 (.002)	-.395 (<.001)	-.227 (.024)	-.170 (.092)	-.166 (.100)
Perceived health status		1	.536 (<.001)	.498 (<.001)	.507 (<.001)	.441 (<.001)	.409 (<.001)	.299 (.003)	.490 (<.001)

Self-efficacy	1	.488 (<.001)	.568 (<.001)	.387 (<.001)	.525 (<.001)	.395 (<.001)	.462 (<.001)
Quality of life		1	.709 (<.001)	.845 (<.001)	.856 (<.001)	.717 (<.001)	.882 (<.001)
The overall quality of life			1	.615 (<.001)	.593 (<.001)	.553 (<.001)	.575 (<.001)
Physical health				1	.633 (<.001)	.576 (<.001)	.692 (<.001)
Psychological health					1	.633 (<.001)	.777 (<.001)
Social relationships						1	.568 (<.001)
Environment							1

X_1: Musculoskeletal disorder symptom, X_2: Perceived health status, X_3: Self-efficacy, X_4: Quality of life
X_5:Overall quality of life, X_6:Physical health, X_7:Psychological health, X_8:Social relationships, X_9:Environment

Factors affecting the quality of life are shown in table 5. Musculoskeletal subjective symptoms, perceived health status, self-efficacy, an education level (dummy), exercise frequency per week (dummy), hobbies (figure), and life satisfaction (form) was input as an independent variable, and a step-by-step regression analysis was performed with quality of life as a dependent variable.

The calculated regression model of the quality of life of industrial workers was significant (F=18.44, p<.001), and normal distribution, the equal variance of residuals, and multicollinearity were diagnosed to verify the assumption of regression analysis for independent variables. As a result, the study's tolerance range was 0.906, which was more than 0.1, and the variance inflation factor (VIF) was 1.067 to 1.104, under the cutoff of 10. Therefore multicollinearity was not an issue. Asa result of Dubin Watson's test, 1.606 was close to 2, demonstrating that the residuals, variances, and normality assumptions hold true and that there is no autocorrelation between the model's error elements.As influences affecting the quality of life of industrial workers perceived health status, life satisfaction, and hobbies explained the quality of life (Adj R2= .348, F=18.44, p<.001) by 34.8% (Adj R2= .348, F=18.44, p<.001) (Table 5).

"This is consistent with the results of previous studies that subjective health status affects the quality of life" [10-12].This studyfound no statistically substantial variation in the quality of life between shift and non-shift work. This is a different result from previous studies that shift work lowered the quality of life [23]. Repeated studies are required for this. In addition, since the previous study used a tool different from this study for quality of life [23], it is necessary to consider the difference in the device in the following survey.Previous research [24] showed better quality of life among workers who performed risky drinking. Gender is an important variable, and in previous studies,"men had a higher quality of life and occupied more job positions than women" [24]. These results are different from this study. This difference is because the previous study investigated only young workers. Therefore, it is essential to explore the variation in the value of life according to the age of industrial workers in the future.

These findings are related to"a study on the correlation between musculoskeletal symptoms and quality of life for ICU workers" [25-28]. As such, musculoskeletal symptoms affect workers' quality of life, social life, and work performance. Therefore, the health manager of the workplace should provide continuing education so that workers can manage the symptoms of musculoskeletal disease on their own, and the workplace should actively support this at the organizational level.

Table 5: Factors affecting the quality of life(N=99)

Variables	B	SE	β	R^2	$AdjR^2$	t	p
Perceived health status	.431	.075	.487	.248	.240	5.75	<.001
Life satisfaction(dummy)	-.210	.069	-.256	.335	.322	-3.04	.003
Hobby(dummy)	-.189	.085	-.190	.368	.348	-2.21	.029
F=18.44,p<.001							

4. Conclusion

In this study, the musculoskeletal disorder symptom, apparent health status, self-efficacy, and quality of life of Korean production employees were identified, the relationship between them was analyzed, and significant variables affecting the quality of life were identified. Centered on the results of this research, an attempt was made to provide essential data for developinghealthcare programs considering aspectsinvolving the quality of life of production workers. This analysis data obtained by surveying from September 12 to October 10, 2020, targeting 99 production workers in G Metropolitan City, J Provinces, and G Provinces. SPSS 24.0 was used to analyze the data gathered.As a result of the study shows that the perceived health status, life satisfaction, and the quality of life of hobbies (Adj R2= .348, F=18.44, p<.001) explain 34.8% of the quality of life of direct production workers. There was.

Based on this, measures should be devised to increase production workers' perceived health status and life satisfaction and encourage their hobbies. In addition, as perceived health status is recognized as a key variable affecting the quality of life, a strategy is needed to develop and manage a health management program for production workers considering industrial characteristics. This study has limitations in generalization because it only targeted production workers in some regions of Korea. The following recommendations are made based on the findings above.In addition, toenhance the quality of life of individuals, a social policy that can pursue work-life balance is necessary.Individual workers need to prevent and promote the health of workers by diligently performing regular health checkups conducted in the workplace. Therefore, industrial policy and individual workers' efforts are required to improve workers' quality of life. Industrial policy factors include improving the working environment, guaranteeing rest time, stable employment, and providing welfare facilities.

First, it is suggested to develop a health management program considering the working environment of production workers. Second, it is recommended to create a program to intervene by identifying factors affecting the life satisfaction of production workers. Third, research is suggested to create a working environment that can encourage industry hobbies and understand organizational culture's influence on the quality of life.

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