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Original Article

Effects of emotional labor on musculoskeletal disorders among physical therapists in Seoul

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ABSTRACT

Introduction: Healthcare workers, including physical therapists, have some of the most important roles in the healthcare system, as observed during the coronavirus disease 2019 pandemic. Physical therapists encounter emotionally and physically vulnerable patients, experience emotional labor, and are exposed to conditions that can lead to job stress and musculoskeletal disorders. We aimed to examine the relationships between physical therapists' emotional labor, its effect on perceived job stress, and the risk of developing musculoskeletal disorders.

Methods: We conducted a 30-day survey among 230 physical therapists working in various settings from October 2 to November 1, 2019. Questionnaires, including questions on musculoskeletal symptoms, perceived job stress, and emotional labor, were administered to the participants.

Results: The emotional labor sub-factors "overload and conflict in customer service" (β=0.201, p>0.001), "emotional inconsistency and impairment" (β=0.199, p>0.001), and "organizational support and protection system" (β=0.298, p>0.001) affected the job stress sub-factors "physical environment" (β=0.105, p>0.020), "insufficient compensation" (β=0.072, p<0.05), and "relational conflict" (β=-0.083, p>0.024). These job stress sub-factors affected musculoskeletal disorders.

Conclusion: To prevent the long-term consequences of work-related strain, physical therapists should receive support for maintaining a healthy lifestyle and developing effective methods of communication with patients. Encouragement of activities for psychological rejuvenation and sharing emotional difficulties with colleagues is also desirable. Moreover, it is necessary to establish a direct line of grievance communication between physical therapists to hospitals.

Keywords: customer service conflict, customer service overload, emotional impairment, emotional inconsistency, job stress

Introduction

Emotions are a response to certain events or situations experienced in daily life and are an essential component of labor behavior.[1] Workers in the service and healthcare industries may experience "emotional labor" caused by interactions with customers and patients.[2] The number of people working in these service sectors in South Korea steadily increased from 7,245,658 in 2006 to 10,485,300 in 2015.[3] In fact, the third Work Environment Survey and the fourth National Health and Nutrition Survey revealed that approximately 38–42% of all wage earners in Korea are emotional laborers.[4]

Morris and Feldman defined "emotional labor" as the labor "exerted to express the emotions that an organization wants," and classified emotional labor based on the frequency of appropriate emotional expression, degree of care required for a good emotional expression, variety of emotions expressed, and emotional inconsistency.[5] Physical

therapists consider the patient's physical condition alongside their emotional state to provide the best treatment. Hence, physical therapists have to withhold their own emotions and cater to the patient's needs, which is a surface behavior. If the surface behavior persists, the therapist may change jobs after experiencing emotional inconsistency and job exhaustion.[6] Physical therapists can become fatigued because of the extensive patient management needs. Repeated occurrences of demanding emotional labor can lead to job exhaustion and affect interpersonal relationships, causing conflicts.[7]

Based on the existing literature, we hypothesized that emotional labor could lead to emotional inconsistency resulting in cognitive inconsistencies and job exhaustion.[8] This may cause various health problems, including cerebral hemorrhage, myocardial infarction, high blood pressure, musculoskeletal disorders, and depression.[9] Thus, job stress may affect the development of musculoskeletal disorders. Therefore, we aimed to examine the relationships between physical therapists' emotional labor, its effect on perceived job stress, and the risk of developing musculoskeletal disorders.

Methods

A total of 230 physical therapists anonymously participated in our study between October 2 and November 1, 2019. Of them, 209 physical therapists working in general hospitals (n=11), private hospitals (n=128), clinics (n=58), welfare centers (n=6), and rehabilitation centers (n=6) in Seoul were included, while 21 were excluded owing to insufficient answers. A proportionate stratified sampling method was used based on the working characteristics of the population. This study was conducted in accordance with the principles of the Helsinki Declaration. Informed consent was obtained from all study participants. The study participants agreed with the purpose and methods of the study and recognized the opportunities and risks of participating in the study.

The sample size was calculated using the following formula, where "N" is the number of physical therapists registered with the Korean Orthopedic Society (OWHI Korea, Osteopathic Health and Wellness Institute) under OCO (Osteopathic College of Ontario), "n" is the sample size, "e" is the margin of error or confidence interval, "Z" is the confidence level, and "P" is the observed percentage.

$$n = \frac{Z_{\frac{\alpha}{2}}^2 \cdot p(1-p)}{e^2}$$

N: 438, n: 205, e: 5%, Z: 95%, P: 0.5

As shown in Figure 1, the conceptual framework for the assessment of the relationship between excessive emotional labor and health suggested by Park was implemented in the study.[10] This is a parameter model that described the process of evaluating the results of emotional labor in three stages: contextual clues → emotional regulatory processes → long-term outcomes.

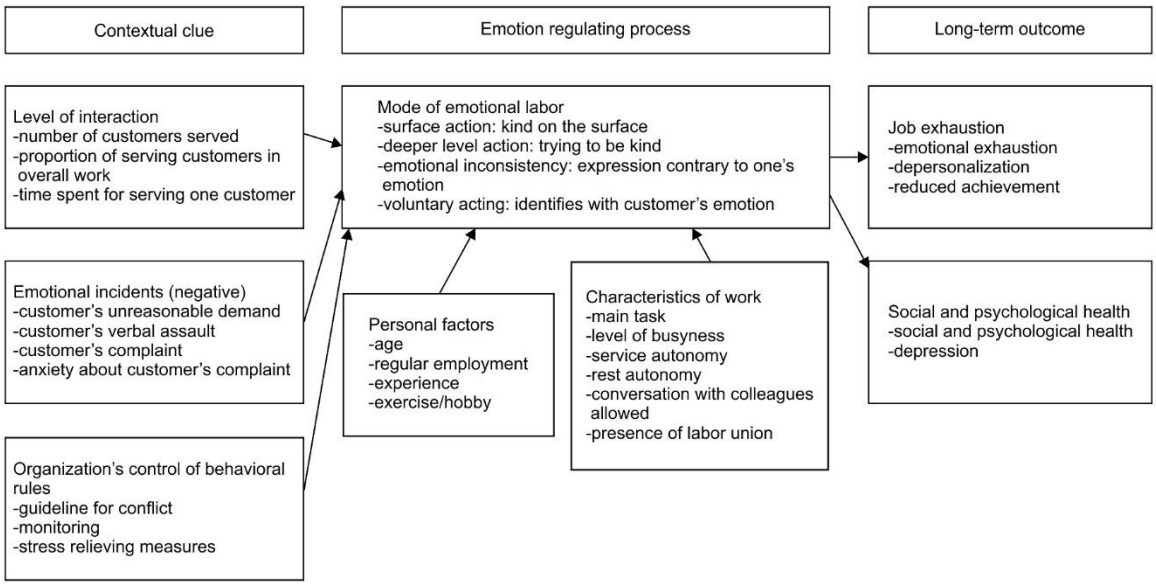

Figure 1. A conceptual framework for emotional labor and health

We used three sets of questionnaires to collect data regarding three variables from the study participants. For musculoskeletal symptoms, we adopted the "guideline for investigating factors for musculoskeletal strain work" from the Korea Occupational Safety and Health Agency (KOSHA) Guide (H-9-2018).[11] The guideline uses a criterion from the National Institute for Occupational Safety and Health in the USA. Questionnaires used for job stress and emotional labor were based on the KOSHA GUIDE-H-67-2012 and KOSHA GUIDE-H-163-2016.[12,13] The job stress survey consisted of a total of 43 questions and contained eight sub-factors of job stress (Appendix 4). The emotional labor survey consisted of a total of 24 questions and contained five sub-factors of emotional labor (Appendix 2).

All statistical analyses were performed using SPSS 25.0 (IBM Corp., Armonk, NY, USA). Frequency analyses were performed for musculoskeletal disorder status, general characteristics, and job characteristics. The effects of job-related psychological factors on the occurrence of musculoskeletal disorders among physical therapists were analyzed by correlation analysis. A linear multivariate regression analysis was used to determine the relationship between the symptoms of musculoskeletal disorders and each type of emotional labor and between the symptoms of musculoskeletal disorders and each type of job stress. The level of significance was set at $p<0.05$. The variables used in the multiple regression analysis were as follows: five sub-factors of emotional labor, eight sub-factors of job stress, and the presence or absence of musculoskeletal disorders. Using these variables, the sub-factors of job stress and emotional labor that could cause musculoskeletal disorders were identified sequentially.

Results

The general characteristics of physical therapists enrolled in the study are summarized below (Table 1). Approximately 73% (n=152) of the participants were women and 42.6% (n=89) were aged 20–30 years. The two most common departments in which the physical therapists worked were the orthopedic (45.45%, n=95) and neurology 21.1%, n=44) departments. A high proportion of participants had <5 years of experience (39.2%, n=82). Regarding the work environment, the average daily working, standing, and sitting times were 8.35±2.131, 4.45±1.365, and 4.35±1.293 h, respectively (Tables 1, 2). Approximately 22 patients were treated daily.

Table 1. General characteristics of the participants (personal characteristics)

Characteristic	Response item	Frequency (N)	Percentage (%)
Sex	Male	57	27.3
	Female	152	72.7
Age, years	20–29	89	42.6
	30–39	84	40.2
	40–49	30	14.4
	50–59	6	2.9
	>60	0	-
Department (physical therapy unit)	Orthopedic	95	45.5
	Neurological	44	21.1
	Pediatric	11	5.3
	Others*	59	28.2
Service experience, years	<5	82	39.2
	5–10	60	28.7
	11–20	51	24.4

	21–30	13	6.2
	>31	3	1.4

* Other departments include Welfare facilities, manual therapy rooms, and exercise clinics.

Table 2. General characteristics of the participants (working environment)

Survey question	Response item	Frequency (N)	Ratio (%)
Working time per day	Average time	8.35	0.9
Number of patients treated per day	Average time	22.16	20.2
Working Posture	Average standing time	4.45	2.7
	Average sitting time	4.35	1.9
Type of agency	General hospital	11	5.3
	Private hospital	128	61.2
	Clinic	58	27.8
	Welfare center/ rehabilitation center	12	5.7
Participation in education regarding musculoskeletal disease prevention	Yes	47	22.5
	No	162	77.5

N, number

Table 3. Results of the multiple regression analysis on the association between job stress and musculoskeletal disorder-related factors

Model	Unstandardized coefficients		Standardized coefficients	***t***	*p*-value	Coefficient of determination	**F**
	B	**Standard deviation**	**Beta**				
(Constant)	1.615	0.575		2.807	0.005	0.076	4.125**
Physical environment	0.105	0.045	0.136	2.332*	0.020		
Job demand	0.023	0.016	0.079	1.431	0.153		
Job autonomy	-0.030	0.048	-0.033	-0.616	0.538		
Relational conflict	-0.083	0.037	-0.120	-2.268*	0.024		
Job insecurity	-0.017	0.025	-0.035	-0.661	0.509		
Organizational system	-0.031	0.030	-0.071	-1.029	0.304		
Insufficient compensation	0.072	0.029	0.164	2.540*	0.011		
Corporate culture	0.007	0.039	0.011	0.188	0.851		

Multiple regression analysis **p<0.01

t, a statistical indicator of the difference in sample means;

F, a statistical indicator of the difference in several sample groups

The results of the multiple regression analysis on the association between job stress and musculoskeletal disorder-related factors are shown above (Table 3).

Table 4 presents the results of the correlation analysis between emotional labor and job stress factors. The analysis showed the highest positive correlation between the emotional labor sub-factor "organizational support and protection system" and the job stress sub-factor

"organizational system" (r=0.462, p<0.01). Other positive correlations were observed between the following: 1) emotional labor sub-factor "effort to control emotion and its diversity" and job stress sub-factors "physical environment" (r=0.309, p<0.01) and "job demand" (r=0.310 and p<0.01); 2) emotional labor sub-factor "overload and conflict in customer service" and job stress sub-factors "physical environment" (r=0.358, p<0.01) and "job demand" (r=0.326, p<0.01); 3) emotional labor sub-factor "emotional inconsistency and impairment" and job stress sub-factors "physical environment" (r=0.353, p<0.01) and "insufficient compensation" (r=0.383, p<0.01); 4) emotional labor sub-factor "surveillance and monitoring by organization" and job stress sub-factors "job demand" (r=0.307, p<0.01) and "corporate culture" (r=0.343, p<0.01); and 4) emotional labor sub-factor "organizational support and protection system" and job stress sub-factors "organizational system" (r=0.462, p<0.01) and "corporate culture" (r=0.436 and p<0.01).

Table 4. Results of correlation analysis between emotional labor and job stress factors

Correlation		Emotional labor					Job stress							
		V1	**V2**	**V3**	**V4**	**V5**	**V1**	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**	**V8**
Emotional labor	V1	1	0.491*	0.562**	0.312**	0.122	0.309**	0.310**	-0.140*	-0.072	0.104	0.278**	0.287**	0.149*
	V2		1	0.567**	0.382**	0.213**	0.358**	0.326**	-0.131	-0.040	0.098	0.289**	0.295**	0.274**
	V3			1	0.444**	0.191**	0.353**	0.307**	-0.160*	0.009	0.183**	0.313**	0.383**	0.266**
	V4				1	0.245**	0.155*	0.307**	-0.189**	0.153*	0.174*	0.303**	0.243**	0.343**
	V5					1	0.111	0.073	0.252**	0.435**	0.252**	0.462**	0.407**	0.436**
Job stress	V1						1	0.370**	-0.250**	0.059	0.235**	0.419**	0.406**	0.284**
	V2							1	-0.357**	0.015	0.137*	0.285**	0.160*	0.247**
	V3								1	0.017	-0.036	-0.123	0.104	-0.012
	V4									1	0.244*	0.359*	0.201*	.0294*
	V5										1	0.405*	0.272**	0.309*
	V6											1	0.598*	0.453*
	V7												1	0.401*
	V8													1

** p<0.01, * p<0.05

Emotional labor: V1, effort to control emotion and its diversity; V2, overload and conflict in customer service; V3, emotional inconsistency and impairment; V4, surveillance and monitoring by organization; V5, organizational support and protection system

Job stress: V1, physical environment; V2, job demand; V3, job autonomy; V4, relational conflict; V5, job insecurity; V6, organizational system; V7, insufficient compensation; V8, corporate culture

The results of multiple regression analysis on the association between job stress sub-factors and musculoskeletal disorders are presented below (Table 5).

Physical environment (β=105, p>0.020) and insufficient compensation (β=0.072, p>0.011) were significantly associated with musculoskeletal disorders.

Table 5. Reference values for job stress factor conversion scores by area stratified by sex

Area	Median value of Korean workers		The meaning of a score
	Male	Female	
Physical environment	44.5	44.5	A higher reference value indicates a worse physical environment
Job demand	50.1	54.2	A higher reference value indicates a higher job demand
Job autonomy	53.4	60.1	A higher reference value indicates a lower job autonomy
Relational conflict	33.4	33.4	A higher reference value indicates a higher conflict in relations
Job insecurity	50.1	50.1	A higher reference value indicates a higher relative instability of the job
Organizational system	52.4	52.4	A higher reference value indicates a less organized organization
Insufficient compensation	66.7	66.7	A higher reference value indicates a higher relative insufficiency of the compensation system
Corporate culture	41.7	41.7	A higher reference value indicates a more problematic corporate culture

※ The median value in Korean workers in each area may change depending on the results of future studies.

The emotional labor sub-factors "effort to emotional control and its diversity" (β = 0.074, p = 0.045), "overload and conflict in customer service" (β = 0.201, p <0.001), and "emotional inconsistency and impairment" (β = 0.087, p = 0.03) affected the job stress sub-factor "physical environment"; while the job stress sub-factor "physical environment" (β = 0.105, p = 0.020) affected the incidence of musculoskeletal disorders.

The emotional labor sub-factors "overload and conflict in customer service" (β = -0.144, p = 0.017), "surveillance and monitoring by organization" (β = 0.134, p = 0.012), and "organizational support and protection system" (β = 0.248, p <0.001) affected the job stress sub-factor "relational conflict", while the job stress sub-factor "relational conflict" (β = -0.083, p = 0.024) affected the incidence of musculoskeletal disorders.

The emotional labor sub-factors "emotional inconsistency and impairment" (β = 0.199, p <0.001) and "organizational support and protection system" (β = 0.298, p <0.001) affected the job stress sub-factor "insufficient compensation", and the job stress sub-factor "insufficient compensation" (β = 0.072, p <0.05)affected the incidence of musculoskeletal disorder (Figure 2).

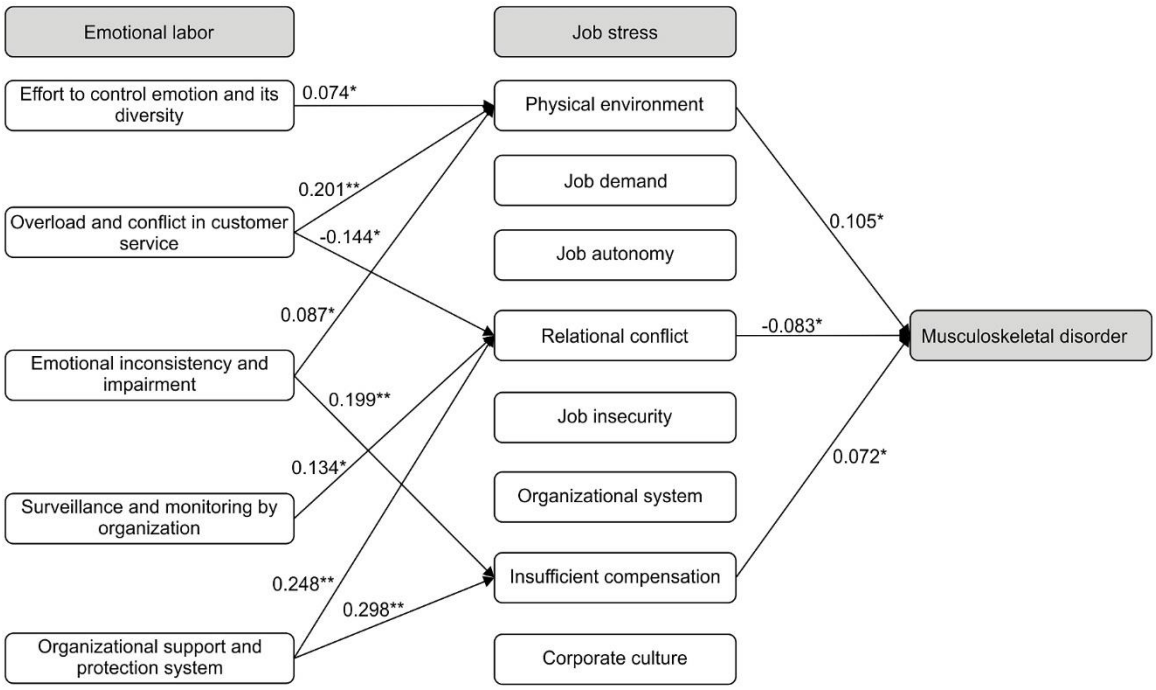

Figure 2. Model depicting the sequential influence of emotional labor and job stress on musculoskeletal disorders

Discussion

In this study, three main findings were presented regarding the effect of physical therapists' emotional labor on the incidence of musculoskeletal disorders. Especially, it was found that physical therapists' surface behavior, job exhaustion, and emotional management affected the physical burden, interpersonal relationships, and level of compensation, respectively, and eventually caused musculoskeletal disorders. As confirmed during the coronavirus disease 2019 pandemic, medical personnel are a key factor in healthcare systems. Owing to the growing aging population, the role of physical therapists is becoming increasingly important. To provide good quality medical services, the emotional and physical health of physical therapists must be managed.

To manage the emotional labor of physical therapists, it is necessary to develop and disseminate workers' self-protection manuals, including appropriate service standards and details of patient treatment procedures. Appropriate job cycles and service standards, adequate numbers of treated patients, comfortable spaces for relaxation, and adequate rest time are necessary for creating a suitable corporate culture. Future research should focus on document-based operational procedures, such as in-hospital treatment daily logs and customer complaint records, to identify relevant factors affecting the size and intensity of physical therapists' emotional labor. It is desirable to evaluate these factors using the Korean emotional labor evaluation tool used in this study (Appendix 2).[13]

Globally, musculoskeletal disorders are the second most common group of disorders, with low back pain being the most common.[14] This could be attributed to a decline in physical activity because of the development of mobile devices. Recent data suggest that one in two adults from the USA complains of musculoskeletal disorders, which is comparable to the frequency of cardiovascular and respiratory diseases.[15] Approximately, 57.5%, 58%, and 55.5% of physical therapists in the USA, the UK, and Australia, respectively, have musculoskeletal disorders.[16,17] Workload and excessive work-related activities are the most common causes of musculoskeletal disorders in this professional group (Appendix 3).[18]

Healthcare workers are more likely to experience job stress than non-health workers (Appendix 4). Stress triggered by emotional labor has a negative impact on organizational commitment and job satisfaction.[19] This adverse effect might result in poor quality of care, which may affect patient outcomes. Excessive workload increases the

frequency of medical disputes and increases competition among medical institutions, making clinicians, including physical therapists, more likely to experience high levels of emotional labor and job stress. [20]

Physical therapists need a lot of physical strength for activities such as lifting, moving, pushing, pulling, bending, and twisting movements while in contact with patients, putting excessive pressure on the musculoskeletal system (Appendix 1).[21] Stretching to relax the tensed body may be an appropriate form of intervention. Additionally, body relaxation through stretching has been reported to affect emotions.[22] Future studies should also examine the effects of interventions, such as self-developed stretching methods, that reduce musculoskeletal disorder symptoms related to emotional labor and job stress.[23]

This study has several strengths. To our knowledge, this is the first study to investigate the process, by which the emotional labor of Korean physical therapists causes job stress and musculoskeletal diseases. Therefore, our findings can be used to correct the misperception that telephone operators and service workers are the only emotional workers.

However, our study has an important limitation. Especially, the participants were all physical therapists who provided treatment based on osteopathy. As this study was inspired by and furthers the scope of the current published literature, it is expected that there will be follow-up studies targeting the examination of a wider range of occupational groups to expand our findings.

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