

방문요양 요양보호사의 근골격계 통증 유발요인에 관한 연구

김덕주*

청주대학교 보건의료대학 작업치료학과

Study on Factors that Induce Musculoskeletal Symptoms in Care Workers Who Offer Visiting Home-Help Services

Deokju Kim*

Department of Occupational Therapy, College of Health Science, Cheongju University

ABSTRACT

Objectives: This study aimed to determine the effects on musculoskeletal symptoms of both social demographic features and detailed characteristics of each task category of care workers who offer visiting home-help services. And to establish the measures that can reduce musculoskeletal symptoms among care workers.

Methods: This study was conducted among 192 care workers from welfare centers C and K located in city P. After participants completed the task burden checklist regarding the scale of musculoskeletal symptoms and the details of their duties, the data collected were analyzed using the SPSS 21.0 program.

Results: According to the degree of observable musculoskeletal symptoms in care workers, the highest figures were observed for back and shoulder pain. Based on the results of assessing the effect of detailed task category characteristics on musculoskeletal symptoms, “helping patients eat, helping patients move, helping patients bath, and changing body positions” were found to have an effect from the physical care category, “providing physical therapy assistance, treating bedsores” from the health care category, and “cleaning and doing laundry” from the facility management category.

Conclusions: Due to the high proportion of patients requiring burdensome physical labor from care workers such as moving patients who have trouble doing so on their own, helping them change positions, and so on, it is highly likely that pain will occur in the low back, which carries most of the physical weight. So, education on human epidemiological positions that can reduce overload on areas prone to pain such as the low back and shoulders is essential. Proper equipment and personnel support must be provided for dangerous tasks. Further, multidimensional social support is required consistently.

Key words: care workers, care worker task category, musculoskeletal symptoms

Objectives: 본 연구의 목적은 방문요양 요양보호사들의 세부업무 영역별 특성이 근골격계통증에 미치는 영향을 알아보고, 요양보호사들의 근골격계통증을 경감시키는 방안을 마련하고자 하는 것이다.

Methods: 본 연구는 P시에 위치한 C, K 재가센터 소속 요양보호사 192명을 대상으로 실시하였다. 대상자들에게 근골격계통증척도와 요양보호사의 세부업무에 대한 작업부담체크리스트를 작성하게 한 후, 수집된 자료를 SPSS 21.0 프로그램을 이용하여 분석하였다.

Results: 요양보호사의 근골격계통증 자각증상 정도를 보면, 허리통증과 어깨통증의 수치가 가장 높았다. 세부업무 영역별 특성이 근골격계통증에 미치는 영향을 알아본 결과, 신체수발영역의 ‘식사수발하기, 이동지원하기, 목욕지원하기, 체위변경하기, 건강관리영역의 ‘물리치료보조하기, 욕창관리하기’, 시설환경 관리영역의 ‘청소 및 세탁물관리’가 영향을 미치는 것으로 나타났다.

Conclusion: 요양보호사들은 거동이 불편한 대상자들을 이동시키거나 체위를 변경하는 동작 등 신체적으로 무리가 가중되는 환자의 비율이 높아 신체 하중을 가장 많이 받는 허리와, 어깨의 통증을 일으킬 우려가 매우 높다. 이에, 요양보호사들에게 통증이 주로 발생할 수 있는 부위의 과부하를 줄여줄 수 있는 인체역학적 자세에 대한 교육이 필요하다. 그리고 위험한 업무에 대해서는 장비 및 인력의 지원이 제공 되어야 할 것이며, 지속적으로 다각적 차원의 사회적 지원이 필요할 것이다.

Key words: 방문요양 요양보호사, 요양보호 업무영역, 근골격계통증

*Corresponding author: Deokju Kim, Tel: 010-9238-7409, E-mail: dj7407@hanmail.net

Department of Occupational Therapy, College of Health Science, Cheongju University, Daesung-ro, 298, Cheongwon-gu, 363-764, Republic of Korea

Received: October 26, 2017, Revised: December 5, 2017, Accepted: December 12, 2017

This is an Open-Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License(<http://creativecommons.org/licenses/by-nc/3.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

I . Introduction

The average human lifespan continues to increase with development in science and medical technology and environmental improvements. According to the 2014 census from Statistics Korea, Korea will become an “aged society” with the elderly population making up 14.3% of the entire population by 2018. By 2026, Korea will be considered a super aged society with the elderly making up 20.8% of the entire population(Statistics Korea, 2014). The increase in the elderly population due to rapid aging is related to the increase in chronic elderly diseases such as Alzheimer’s and hypertension. As the issue of senior support, which was traditionally perceived as a family burden, became emphasized as a national and social issue rather than a personal one, long-term care insurance was implemented in July of 2008(Kim, 2010). By definition, long-term care insurance is support offered for a consistent period to individuals experiencing difficulties in extensive physical or mental activities due to disabilities(Lee, 2010). Care workers, fostered through the establishment of the long-term care infrastructure, now serve as the core personnel behind senior care services alongside the implementation of the long-term care insurance system. There are currently about 1.14 million individuals certified as care workers. Of these, approximately 250,000 provide various types of care services in the field(Jeong, 2011).

Care workers who offer visiting home-help services typically visit elderly families on their own and have the most frequent contact with elderly individuals. They help elderly individuals live healthy and stable lives in the community by solving issues related to daily life and providing services required for living. Compared to existing caregivers for the sick, these care workers also provide assistance in everyday tasks required by the family in addition to physical support for the elderly individual; thus, their scope of work is much more diverse and broad than that of caregivers for the sick(Hwang et al., 2012). Care workers are the core personnel behind elderly care and, thus, play an important role in assuming

full charge of patient care. However, though they are required to proactively take care of their own health, care workers are known to be at high risk for task-related musculoskeletal diseases(Seo et al., 2012). According to domestic and foreign studies on the cause of musculoskeletal diseases, repetitive tasks, difficult occupation, sedentary or improper posture, task characteristics, amount of work, and other task conditions combined with psychological factors such as mental stress become the cause of musculoskeletal diseases(Kim, 2007). Care workers typically perform tasks such as maintaining patients’ cleanliness; helping them eat, take medicine, use the bathroom, and exercise; providing emotional support; and aiding with other daily activities(Yim, 2012). Because of their task nature, when providing care services to patients who are unable to perform daily activities on their own due to Alzheimer’s or strokes, care workers are prone to having musculoskeletal diseases due to psychological and physical overload. According to recent statistics, musculoskeletal disease rates were found to be extremely high among care workers compared to other occupations (Park et al., 2012).

The prevalence of musculoskeletal diseases is considerably high among care workers who serve at long-term care hospitals, and 90% of participants responded that they felt pain while working(Kim, 2010). The biggest problem with musculoskeletal diseases is that they are accompanied by physical pain. Persistent pain while working will inevitably have a drastic effect on productivity. Although there are many studies on the prevention of musculoskeletal diseases in various fields, studies that focus on musculoskeletal diseases in care workers are only just in the beginning stage; hence, there are very few studies on musculoskeletal diseases according to the detailed task category or work environment characteristics of care workers. While there are some studies on the task environment of care workers who serve at hospitals, few studies have been conducted on care workers who offer visiting home-help services by visiting patients’ homes.

Therefore, this study assessed the observable symptoms of musculoskeletal symptoms in care workers who visit the homes of elderly patients to provide home-help services, then determined how the characteristics of detailed tasks categories influenced musculoskeletal symptoms, and to establish the measures that can reduce musculoskeletal symptoms among care workers.

II. Materials and Methods

1. Participants

This study was conducted among 192 care workers from welfare centers C and K located in city P from June 10 to July 15, 2017. The principal investigator first explained the purpose of the study and the method and procedure for participating in the study, then conducted a survey on care workers who offered their consent to participate. A total of 200 surveys were distributed, and 192 surveys were used after excluding 8 with responses that were not appropriate to the purpose of the study. The study was conducted after receiving approval from the Institutional Review Board of Cheongju University.

2. Measurements

1) Musculoskeletal Symptoms Criterion

The measurement tool used to measure musculoskeletal symptom was the “Guidelines for the Investigation of Harmful Task Factors Regarding Musculoskeletal Burden” from the KOSHA CODE(H-30-2016), which was reconfigured by the Korea Occupational Safety and Health Agency based on the survey used by the National Institute for Occupational Safety and Health (NIOSH) in the United States. There are 6 areas in the human body for measuring pain: the neck, shoulders, arm/elbows, wrists/fingers, back, and legs/feet. The survey includes questions about the frequency and duration of observable symptoms for each of these. The frequency of symptom has the range like ‘once in six months’ for 1point, ‘once in 2-3 months’ for 2point, ‘once in a month’ for 3point, ‘once in a week’ for 4point, and ‘everyday’ for 5point. The duration has the range like ‘less than

a day’ for 1point, ‘1-7 days’ for 2point, ‘1 week-1 month’ for 3point, ‘1-6 months’ for 4point, and ‘6 months or more’ for 5point. The severity of symptom was calculated by multiplying the frequency of symptom by duration of subjects with symptom, and the range of score is 5-25point (Korea Occupational Safety and Health Agency, 2016).

2) Task Burden Checklist Regarding Detailed Tasks of Care Workers

The task burden checklist regarding the detailed tasks performed by care workers was used by reconfiguring the task categories used in the study conducted by (Hwang et al., 2014). Tasks were divided into 5 categories: physical assistance, health care, facility management, emotional services, and restorative training. Each task category included sub-categories, and a total of 22 detailed task categories were determined. The degree of burden on each task was calculated by assigning points indicating the amount of work with 5 points for “very much” and 1 point for “very little” The total score was between 22 and 110, and higher scores indicated a higher task burden.

3. Statistical Analysis

The data collected were analyzed using SPSS 21.0. Descriptive statistics were used to analyze demographic characteristics, actual conditions regarding observable symptoms of musculoskeletal symptoms, and degree of musculoskeletal symptoms induced by each detailed task category. The effect of characteristics of each detailed task category on musculoskeletal symptoms and the effect of general characteristics on musculoskeletal symptoms were analyzed through multiple regression analysis. Statistical significance was accepted for $p < 0.05$.

III. Results

1. Participant Characteristics

The general characteristics of care workers who participated in this study were as follows. In terms of

gender, there were more women (94.8%), and the most common age group was 51 - 60 years old(53.1%) followed by 61 or older(34.4%) and 41 - 50 years old(8.3%). The most common education level was high school graduation(49.5%), and the most common work experience

length was 7 months to less than 1 year(49.5%) followed by 1 year to less than 2 years(17.7%) and 3 years or more(12.0%). The most common monthly wage was less than 500,000 won(47.9%), and, in terms of qualification certificates, those with only qualifications as care workers

Table 1. General participant characteristics(N = 192)

Characteristics	Categories	N	%
Gender	Male	10	5.2
	Female	182	94.8
Age	20 - 30 years	4	2.1
	31 - 40 years	4	2.1
	41 - 50 years	16	8.3
	51 - 60 years	102	53.1
	61 or more	66	34.4
Education level	Elementary school	10	5.2
	Middle school	55	28.6
	High school	95	49.5
	Community college or higher	32	16.7
Experience	6 months or less	18	9.4
	7 months to less than 1 year	95	49.5
	1 year to less than 2 years	34	17.7
	2 years to less than 3 years	22	11.5
	3 years or more	23	12.0
Wages	Less than 500,000 won	92	47.9
	500,000 won to less than 1 million won	51	26.6
	1 million won to less than 1.5 million won	18	9.4
	1.5 million won to less than 2 million won	25	13.0
	2 million won or more	6	3.1
Qualifications	Home helper	14	7.3
	Caregiver for the sick	8	4.2
	Nurse	4	2.1
	Only care worker	166	86.5
Daily work hours	4 hours or less	113	58.9
	5 - 6 hours	25	13.0
	7 - 8 hours	41	21.4
	9 - 10 hours	7	3.6
	11 hours or more	6	3.1
No. of patients	1 person	127	66.1
	1 people	52	27.1
	3 people	9	4.7
	4 people or more	4	2.1
Patient's disability	Brain injury	69	35.2
	Alzheimer's	66	33.7
	Spinal cord injury	9	4.6
	Other	52	26.5
Patient grade	Grade 1	26	13.3
	Grade 2	80	40.8
	Grade 3	21	10.7
	Grade 4	24	12.2
	Grade 5	45	23.0

were most common(86.5%) followed by other qualifications such as being a home helper(7.3%), caregiver for the sick(4.2%), nurse(2.1%), and so on. The most common number of daily work hours was 4 hours or less(58.9%) followed by 7 - 8 hours(21.4%) and 5 - 6 hours(13.0%), and the number of help recipients was most commonly 1 person(66.1%) followed by 2 people(27.1%) and 3 people(4.7%). Regarding the help recipient's disability, those with brain injuries were most common, and the grade of help recipients was most commonly Grade 2(40.8%) following by Grade 1(13.3%) and Grade 5(23.0%) (Table 1).

2. Observable Musculoskeletal Symptoms in Care Workers

Based on the observable musculoskeletal symptoms in care workers, low back pain level was highest at 8.74 ± 4.12 points followed by shoulder pain at 7.42 ± 3.70.

Table 2. Observable symptoms of musculoskeletal pain in care workers

Musculoskeletal symptoms	Mean ± SD
Neck	5.25 ± 3.30
Shoulders	7.42 ± 3.70
Arms/Elbows	6.09 ± 4.06
Wrists/Fingers	6.45 ± 4.07
Low back	8.74 ± 4.12
Legs/Feet	6.11 ± 4.19

Pain level was around the same for arms/elbows, wrists/fingers, and legs/feet, and neck pain level was the lowest(Table 2).

3. Degree of Musculoskeletal Symptoms Induced by Each Detailed Task Category as Perceived by Care Workers

The study results on the degree of musculoskeletal

Table 3. Degree of how musculoskeletal pain is induced by each detailed task category as perceived by care workers

Task category	Degree of musculoskeletal pain perceived by care workers					
	Very low	Low	Average	High	Very high	
Physical assistance	Maintaining patients' cleanliness	2(1.0)	17(8.8)	83(43.3)	63(32.8)	27(14.1)
	Helping patients eat	4(2.1)	17(8.9)	86(44.8)	59(30.7)	26(13.5)
	Helping patients change clothes	8(4.2)	14(7.3)	94(49.0)	49(25.5)	27(14.1)
	Helping patients move	7(3.6)	38(19.8)	45(23.4)	78(40.6)	24(12.5)
	Helping patients use the bathroom	14(7.3)	16(8.3)	104(54.2)	32(16.7)	26(13.5)
	Helping patients bath	12(6.3)	25(13.0)	59(30.7)	76(39.6)	20(10.4)
	Changing positions	18(9.4)	38(19.8)	31(16.1)	82(42.7)	23(12.0)
	Changing diapers	20(10.4)	40(20.8)	79(41.1)	33(17.2)	20(10.4)
Health care	Checking health status	2(1.0)	10(5.2)	123(17.2)	33(17.2)	24(12.5)
	Managing and taking medication	10(5.2)	57(29.6)	65(33.8)	39(20.3)	20(11.1)
	Providing physical therapy assistance	6(3.1)	42(21.9)	29(15.1)	103(53.6)	12(6.3)
	Providing emergency treatment	26(13.5)	45(23.4)	37(45.3)	19(9.9)	15(7.8)
	Treating bedsores	26(13.5)	30(15.6)	98(51.0)	24(12.5)	14(7.3)
Facility management care	Cleaning and laundry	13(6.8)	16(8.3)	51(26.6)	76(39.6)	36(18.8)
	Changing bedding and linens	11(5.7)	25(13.0)	86(44.8)	41(21.4)	29(15.1)
	Taking care of items	9(4.7)	25(13.0)	86(44.8)	49(25.5)	23(12.0)
Emotional service	Making conversation	2(1.0)	78(40.6)	13(6.8)	53(27.6)	44(22.9)
	Helping with leisure activities	6(3.1)	22(11.5)	90(46.9)	54(28.1)	20(10.4)
	Counseling	13(6.8)	74(38.5)	55(28.6)	27(14.1)	23(12.0)
Restorative training	Training for daily activities	2(1.0)	16(8.3)	50(26.0)	100(52.1)	20(10.4)
	Accompanying patients outside	6(3.1)	21(10.9)	88(45.8)	51(26.6)	26(13.5)

symptoms induced by each detailed task category as perceived by care workers showed that care workers experienced above-average pain(average, high, extremely high) for most task categories. Especially, in case of the item, “helping patients move, helping patients bathe, patients change positions, providing physical therapy assistance, cleaning and doing laundry, and training for daily activities.” ‘average’ was revealed a lot. However, the response for ‘high’ or ‘very high’ was far more than that.

Emotional services such as making conversation and

counseling and activities such as emergency care or helping patients take medicine had a relatively low rate of inducing musculoskeletal symptoms(Table 3).

4. Effect of Detailed Task Category Characteristics on Musculoskeletal Symptoms

A multiple regression analysis was performed to determine the effect of detailed task category characteristics on musculoskeletal symptoms. The dependent variable was suggested by using the ‘total score value of pain’. The analysis results showed that the regression analysis

Table 4. Effect of detailed task category characteristics on musculoskeletal pain

Category		Musculoskeletal pain			<i>p</i>	
		Unstandardized coefficients		Standardized coefficients		
		B	Std. Error	Beta(β)		
Task category	Physical assistance	Maintaining patients' cleanliness	.417	.565	.078	.462
		Helping patients eat	1.125	.319	.393	.001**
		Helping patients change clothes	.732	.459	.173	.113
		Helping patients move	-.874	.339	-.219	.011*
		Helping patients use the bathroom	.141	.443	.036	.750
		Helping patients bath	-2.148	.432	-.534	.000***
		Changing positions	1.124	.342	.309	.001**
		Changing diapers	.186	.433	.051	.667
	Health care	Checking health status	-.470	.499	-.094	.347
		Managing and taking medication	.130	.425	.305	.761
		Providing physical therapy assistance	1.431	.419	.303	.001**
		Providing emergency treatment	.391	.402	.104	.332
		Treating bedsores	1.856	.448	.493	.000***
	Facility management care	Cleaning and laundry	-1.771	.485	-.408	.000***
Changing bedding and linens		-.004	.447	-.001	.993	
Taking care of items		-.739	.431	-.183	.089	
Emotional service	Making conversation	-.519	.385	-.134	.180	
	Helping with leisure activities	.613	.413	1.486	.139	
	Counseling	.078	.318	.021	.808	
Restorative training	Training for daily activities	.416	.475	.096	.382	
	Accompanying patients outside	.537	.356	.126	.133	
Demographic characteristics	Gender	-1.457	1.339	-.081	.278	
	Age	.731	.230	.235	.002**	
	Marital status	.291	.548	.042	.596	
	Education level	.185	.312	.044	.555	
	Experience	.020	.189	.008	.916	
	Qualifications	-1.235	.369	-.262	.001**	
	Wages	.237	.298	.072	.428	
	Daily work hours	-.898	.343	-.264	.010*	
	No. of patients	1.571	.621	.246	.012*	

Dependent variables: Musculoskeletal pain
 $R^2 = .538$, Adjusted $R^2 = .475$, $F(p) = 8.634^{***}$ (.000)

model's explanatory power R^2 had a value of 53.8%(adjusted $R^2 = 47.5\%$), showing that it was statistically significant($F = 8.634, p < .001$). In the physical assistance category, helping patients eat($\beta = .393, p < .001$), helping patients move($\beta = -.219, p < .05$), helping patients bathe($\beta = -.534, p < .001$), and changing positions($\beta = .309, p < .01$) were found to affect musculoskeletal symptoms. In the health care category, providing physical therapy assistance($\beta = .303, p < .01$) and treating bedsores($\beta = .001, p < .001$) had an effect, and, in the facility management category, cleaning and doing laundry($\beta = -.408, p < .001$) was found to affect musculoskeletal symptoms. In terms of demographic characteristics, age($\beta = .235, p < .01$), qualifications($\beta = -.262, p < .01$), daily work hours ($\beta = -.264, p < .05$), and the number of help recipients ($\beta = .246, p < .05$) were found to affect musculoskeletal symptoms(Table 4).

IV. Discussion

This study was conducted to determine the task categories that affect musculoskeletal symptoms in care workers who visit the homes of elderly patients to perform their job and to establish the measures that can reduce musculoskeletal symptoms among care workers.

According to participant characteristics, most were women at an older age. Most took care of 1 or 2 patients, and, although most care workers worked less than 8 hours per day, their wages were also insufficient. The low wages paid to caretakers in other countries are leading to high turnover rates; the turnover rate among caretakers has reached 50% in the United States(Power & Power, 2011). The majority of the care workers' experience was less than 1 year in this study, which implies the issues in the sustainability of this job category. Because this can lead to reduced service quality due to a lack of service continuity from the perspective of help recipients, there is a need to consider measures that can address this problem.

According to the degree of observable symptoms of

musculoskeletal symptoms in care workers, the highest figures were observed for low back and shoulder pain. Data from the Korea Occupational Safety & Health Agency reported that there were 167 care worker victims in 2008, 372 in 2009, and 580 in 2010, showing a consistent increase(KOSHA, 2016). The area with the most common musculoskeletal symptom was found to be low back pain at 43%(Lee, 2011). The majority of the help recipients in this study were those with brain injuries or Grade 1 or 2 patients. Due to the high proportion of patients requiring burdensome physical labor from care workers such as moving patients who have trouble doing so on their own, helping them change positions, and so on, it is highly likely that pain will occur in the low back, which carries most of the physical weight. Care workers recognized that musculoskeletal symptom is typically induced by activities such as helping patients move, helping patients bathe, changing positions, providing physical therapy assistance, cleaning and doing laundry, and training for daily activities, and they thus perceived these tasks as burdensome.

From the results of examining the effect of detailed task category characteristics on musculoskeletal symptoms, the activities that care workers perceived as burdensome were found to be extremely similar. From the physical assistance category, helping patients eat, helping patients move, helping patients bathe, and changing positions were found to affect musculoskeletal pain. The physical assistance category was the most frequent, and activities involving the potential for accidents such as helping patients bathe were a major source of stress for care workers(Hwang & Yoon, 2014). If there is a need for special activities that involve risk and frequently induce musculoskeletal symptoms, those tasks should be performed with 2 care workers working as a team when they are dispatched to help a household. In the health care category, providing physical therapy assistance and treating bedsores were found to affect musculoskeletal symptoms. In the facility management category, cleaning and doing laundry had an extremely strong effect on musculoskeletal symptoms. Considering

the work conditions of care workers who are presently employed, they not only perform care services for the patient but also spend a significant amount of time doing housework(Park & Cho, 2011; Kim, 2011). There are often cases in which they are made to do excessive cleaning or other tasks that go beyond their job description at the request of the patients' families, and there are many relevant issues such as a disregarding attitude toward care workers due to a lack of social recognition(Sara & Daniela, 2016). To resolve such issues, education must be provided for the help recipients and their families to change their perception. If care workers can fully dedicate themselves to taking care of patients, this is expected to lead to not only job satisfaction but also a reduction in musculoskeletal symptoms. Regarding the effects of demographic characteristics on musculoskeletal symptoms, age, qualifications, daily work hours, and number of help recipients were found to be influential factors. Most of the care workers in South Korea are higher in age, and their age group alone may be accompanied with other health issues(Lee et al., 2011; Dhaini & Zuniga, 2016). They may experience arthritis and other symptoms due to increased age, and exhausting labor may induce more serious musculoskeletal symptoms. There is higher risk of increased musculoskeletal symptoms as the number of daily work hours increases, and the proportion of care workers complaining of musculoskeletal symptoms is believed to be high due to the extended period spent taking care of sick patients and having to support the patients' weight while helping them move. Holding qualifications were found to affect musculoskeletal symptoms, and this may be because home helpers, caregivers for the sick, nurses, and other qualified individuals know how to avoid positions that are physically burdensome due to their experience with caregiving activities before becoming care workers(Shin & Baek, 2011).

Considering all the above results, the following measures must be taken to prevent musculoskeletal symptoms that may occur while working. First, there is

a need for social support that can alleviate the intensity of demanding labor in the physical assistance category. To achieve this, furnishing various materials and equipment should be made mandatory, and care workers should be actively encouraged to use them. Second, training for preventing musculoskeletal disease should be conducted with a focus on the low back and shoulders, which were found to be the main areas of pain in this study. Education on human epidemiological positions that can reduce overload on areas prone to pain such as the low back and shoulders is essential. Third, training must be conducted for the families of help recipients. The families must have an attitude that acknowledges care workers as professional caregivers, help them fully focus on patient care, and not demand excessive housework. Lastly, a plan that can support the cost of treating musculoskeletal diseases in care workers must be set in place. Musculoskeletal diseases among care workers must be acknowledged as an industrial accident, and plans that will enable care workers to receive affordable treatment from hospitals or acupuncture must be established. Such multilateral efforts will eventually lead to improved work efficiency in care workers.

This study was limited in that the participants were from particular institutions in region P; hence, the characteristics of care workers in all regions could not be reflected. Therefore, a future study must expand the scope of participants to more regions and derive results that can be generalized. Programs that can prevent pain in care workers will be developed based on this study.

V. Conclusion

This study aimed to find the task categories that affect musculoskeletal symptoms of both social demographic features and characteristics of each task category of care workers who offer visiting home-help services. And to search out the measures that can reduce musculoskeletal symptoms among care workers. Caregivers most frequently complained of low back and shoulder pain. The results

of the effect of detailed task category characteristics on musculoskeletal symptoms, helping patients eat, helping patients move, helping patients bath, and changing body positions were found to have an effect from the physical care category, providing physical therapy assistance, treating bedsores from the health care category, and cleaning and doing laundry from the facility management category. Therefore, it is necessary to provide continuous support such as human epidemiological position training, especially training for preventing musculoskeletal symptom focus on the low back and shoulders. And the patient's families not demand excessive housework. Finally, support of equipment and social support are required consistently.

VI. Conflicts of interest

The author has no potential conflicts of interest to report relevant to this article.

References

- Dhaini SR, Zuniga D, Ausserhofer. Care workers health in Swiss nursing homes and its association with psychosocial work environment. *Inter J of Nurs Study* 2016;53:105-115
- Hwang BR, Yoon KH. An exploratory study on self-perceived symptoms and pain-inducing factors of musculoskeletal diseases among care workers in residential settings-focused on the scope of care work and care recipients' characteristics. *Social Sci Research Review* 2014; 30(1):69-100
- Hwang EH, Jung DY, Kim MJ, Kim KH, Shin SJ. Comparison of frequency and difficulty of care helper jobs in long term care facilities and client homes. *J Kor Pub Health* 2012;26(1):101-112
- Jeong SS. The job of satisfaction effect factors of care service provider, University of Catholic, Master thesis, 2011
- Korea Occupational Safety and Health Agency: Safety & Health information. Seoul: KOSHA, 2016
- Kim DS. A study on elderly nursing home worker's perception of elderly human rights violations, University of Urban Science of Seoul, Master thesis, 2010
- Kim SY. The development of a structural model on work-related musculoskeletal disorders of women works. *J Kor Acad of Communi Health Nurs* 2007; 18(4):624-633
- Kim MY. Study on problems and improvement of the Long-term Care Insurance. *Kor Soc Legislation and Policy* 2011;5(3):33-67
- Lee EJ. Musculoskeletal symptoms of nursing caregivers in elderly nursing homes, University of Yongnam, Master thesis, 2011
- Lee JM, Lee CH, Kim OY. The effect of lumbar stabilization exercise for caregivers with chronic low back pain. *Physic Ther Kor* 2011;18(2):9-17
- Lee SY. A study on job satisfaction of the care workers, University of Konyang, Master thesis, 2010
- Park SJ, Ham JH, Mi KA. Consideration of care workers job stress and musculoskeletal disorders. *Research J Complementary and Alter Med* 2012;7(4):25-34
- Park EM, Cho SI. A systematic evaluation for better elderly visiting home-help services. *The Kor Assoc for Policy Develop* 2011;11(2):109-141
- Power, TP, Power NJ. Should government subsidize caregiver wages? Some evidence on worker turnover and the cost of long-term care in group homes for persons with developmental disabilities. *J Disability Policy Stu* 2011;21(4):195-209
- Sara V, Daniela C. Buffering effect of job resources in the relationship between job demands and work-to-private-life interference: A study among health-care workers. *Safety and Health at Work* 2016;7(4):354-362
- Seo YJ, Kim BW, Song YE, Kim JY, Kim CH. Difference in musculoskeletal symptoms and health perception and health promotion behavior of caregivers by rehabilitation hospital. *Kor Soc for Wellness* 2012; 7(4):25-34
- Shin JU, Baek JG. A comparative study on job stress and job satisfaction of long-term care staffs for physically disabled seniors with rating 1 and for demented seniors with rating 3. *The Kor Gerontol Soc* 2011;31(4): 1067-1081
- Statistics Korea. Population projection. Seoul: Statistics Korea, 2014
- Yim HY. The factors affecting on recognition of professionalism of caregivers. *J Kor Acad of Welfare Counsel Edu* 2012;1(1): 65-80