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THE RELATIONSHIP BETWEEN SLEEP BEHAVIOR AND QUALITY OF LIFE IN OLDER ADULTS

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***Abstract*— The objective of this study was to provide basic data to improve the quality of sleep and improve the health of the older adults by identifying the relationship between sleep behavior and quality of life of the older adults. The study was conducted from June 2018 to August 2018 with 106 elderly men and women living in D City, and the data processing was analyzed using the SPSS 22.0 program. The general characteristics, sleep behavior, and quality of life were analyzed as frequency and percentage, mean and standard deviation, while the general characteristics of sleep were used with t-test and ANOVA. The relationship between quality of sleep and quality of life was analyzed by Pearson's correction. According to the general characteristics of the older adults, differences in sleep and quality of life were confirmed. As a result of the study, sleep behavior was found to have a negative correlation with the psychological domain and a positive correlation with the biological environment. Therefore, it is necessary to develop and provide a continuous and specific sleep behavior management program to improve the sleep quality of the older adults.**

***Keywords*— Sleep Behavior, Quality of Life, Older Adults**

1. INTRODUCTION

Recently, Korea has the second largest elderly population after Europe and expects to become the world's largest elderly population in the future. As the aging population continues at a rapid pace around the world, interest in healthy aging and quality of life is increasing[1].

The World Health Organization is responsible for the healthy aging of the elderly population.

Inherent abilities such as the process of life and physical and mental functions. It said that consideration is needed[2].

In the case of the elderly, as a change of the biorhythm, because the amplitude of the circadian rhythm gets decreased, they cannot have a deep sleep at night. And they wake up frequently or they show the phenomenon of the daytime sleepiness. And, as a change of the sleep aspect, the sleep latency continues. And the sleep efficiency gets decreased. According to a recent investigation into the health and nutrition of the citizens, it appeared that the domestic elderly whose average sleep time was less than 6 hours was 27%. And it was understood that they had been in the condition of the sleep being insufficient by over two times compared to the adults[3].

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Regarding the sleep cycle of the elderly, the sleep in the 1st phase of the NREM (Non-Rapid Eye Movement), which is the transitional time of entering into sleep, becomes long. And the sleep in the phase 3 and the phase 4, which proceeds into a deep sleep, gets reduced. And, although the REM (Rapid Eye Movement) sleep time is the same, the REM sleep cycle takes place early. Regarding the physical change that is related to the age, the sleep activity of the elderly makes it easier to wake up from sleep. And it frequently interferes with the sleep. And such a change generally interferes with the quality of the sleep. The sleep disorder of the elderly is the health problem that takes place the most frequently in relation to the physical changes at the old age. And this can be deepened more by the physical problems, the mental problems, the environmental problems[4].

In order to live the healthy aged life, the quality, too, of the sleep of the elderly is important. The quality of the sleep is diverse for every individual. And the aspect of the sleep becomes different according to the age. Looking at the characteristic of the sleep of the elderly, although there is no change to the entire sleep time, the low quality of the sleep can be seen. And it takes a long time until falling asleep. And they wake up frequently while sleeping. And, after waking up one time, they find it difficult to fall asleep again. Sleep is a health problem that is experienced a lot by the elderly[5]. It can be said that the quality of life is a multi-dimensional concept that means the subjective sense of satisfaction that each and every individual feels under the objective conditions and that means the condition of the well-being physically and mentally[6].

Quality of life is defined as a multidimensional concept, which is defined by terms such as life satisfaction and psychological welfare due to the diversity of the dimensions that make it up. This is because the term itself is interpreted in a multi-dimensional manner, along with its comprehensive and implicit characteristics, depending on the factors that make up the quality of life[7].

2. METHOD

2.1. RESEARCH SUBJECTS

The study collected data from June 2018 to August 2018 using structured questionnaires. This study targeted male and female elderly people who were 65 years or older and living in D city.

2.2. MEASUREMENT VARIABLES

2.2.1. QUALITY OF SLEEP: In order to measure the quality of sleep, a tool that was developed by [14] had been used. At the time of the development, the reliability was Cronbach's α=.89. In this study, the reliability was Cronbach's α=.97.

2.2.2. QUALITY OF LIFE: In order to measure the quality of life, the Korean version WHOQOL-BREF, which [15] had revised based on the WHOQOL-100, which was developed by the WHO, had been used. At the time of the development, the reliability was Cronbach's α=.89. In this study, the reliability was Cronbach's α=.96.

2.3. ANALYSIS METHOD

The data processing was analyzed using the SPSS 22.0 program. The general characteristics, sleep behavior, and quality of life were analyzed as frequency and percentage, mean and standard deviation, while the general characteristics of sleep were used with t-test and ANOVA. The relationship between quality of sleep and quality of life was analyzed by Pearson's correction.

3. RESULT

3.1. GENERAL CHARACTERISTICS OF SUBJECTS

The sociodemographic characteristics of respondents are presented[Table I].

Table I. General Characteristics

Variable	Classification	n	%
Gender	Male	19	17.9
	Female	87	82.1
Age (year)	65 – 69	30	28.3
	70 – 79	52	49.1
	≥80	24	22.6
Religion	Buddhism	48	45.3
	Christianity	12	11.3
	Catholic	15	14.2
	No Religion	31	29.2
Education	Junior high school graduate	54	50.9
	High school graduate	19	17.9
	University graduate or higher	6	5.7
Marital Status	married	59	55.7
	Bereavement, separation, divorce	46	43.4
	single	1	0.9
Living together	Couple	27	25.5
	Married children	19	9.4
	Unmarried children	6	38.7
	alone	27	42.5
Number of children	0 – 1	10	9.4
	2	41	38.7
	3 – 4	45	42.5
	≥5	10	9.4
Dependent child	Has	96	90.6
	None	10	9.4
A person who usually cares and helps	Marriage partner	37	34.9
	children	53	50.0
	Neighbors and others	16	15.1
Meeting	Senior citizen's center	42	39.6
	Senior College	13	12.3
	Senior Volunteer Group	3	2.8
	None	48	45.3
Number of meetings	Once a week	42	39.6
	Once in two week	6	5.7
	Once a month	12	11.3
	Once in two month	46	43.4
Occupation status	Has	13	12.3
	None	93	87.7
Economic level	Low	18	17.0

	Medium	72	67.9
	High	16	15.1
Monthly allowance	≥ 100,000won	19	17.9
	≥ 200,000won	11	10.4
	≥ 300,000won	34	32.1
	≥ 400,000won	16	15.1
	≥ 500,000won	26	24.5
Subjective Health Status	Very healthy	4	3.8
	Healthy	23	21.7
	Average	50	47.2
	Unhealthy	25	23.6
	Very Unhealthy	4	3.8
Disease status	Has	72	67.9
	None	34	32.1

3.2. QUALITY OF SLEEP

Regarding the quality of sleep, the average of the total score appeared as 3.93 points. By the question, 'If I wake up while sleeping at night, it is difficult for me to fall asleep again' appeared to be the highest at 2.51 points. And it appeared in the order of 'I cannot sleep deeply at night' at 2.45 points, 'I cannot fall asleep well even when I am lying down in order to sleep at night' at 2.44 points, and 'Although the time of lying down on the bed is long, the time of actually sleeping is short' at 2.38 points. 'There are the cases in which I wake up because my legs suddenly tremble or flinch while sleeping' appeared as being the lowest at 1.52 points [Table II].

Table II. Quality of Sleep

Domain	Classification	Mean(SD)
Quality of sleep	1. I can't sleep well even when I lay down to sleep at night.	2.44(1.25)
	2. It is difficult to fall asleep again after waking up after sleeping at night.	2.51(1.26)
	3. I can't sleep deeply at night.	2.45(1.26)
	4. When I wake up at dawn, I can't sleep until morning even if I want to sleep more.	2.37(1.23)
	5. Even after sleeping, I wake up frequently because of aches or pains.	1.76(1.17)
	6. When I lie down to sleep, I can't sleep because of a tingling, aching, or tingling feeling in my legs.	1.74(1.10)
	7. I sometimes wake up because my legs tremble or flutter while I'm sleeping.	1.52(1.01)
	8. I barely wake up in the morning.	1.65(0.97)
	9. It takes a lot of time to get out of bed.	1.73(1.06)
	10. I am constantly tired during the day because I can't sleep well.	2.18(1.28)
	11. I keep getting sleepy even after I wake up in the morning.	1.86(1.17)
	12. My body is heavy because I can't sleep well.	1.99(1.18)
	13. I think I can't sleep well.	2.13(1.32)
	14. I feel lack of sleep.	2.06(1.21)
	15. The time to lie in bed is long, but the time to actually sleep is short.	2.38(1.32)
	Total score average	3.93(0.78)

3.3. QUALITY OF SLEEP ACCORDING TO GENERAL CHARACTERISTICS

Regarding the verification of the difference of the extent of the sleep resulting from the general characteristic, in relation to whether or not there are the children who can be relied on, it appeared that 'There are' was 3.98 points and 'There are not' was 3.46 points. And there was a statistically significant difference(p=.037). Regarding the economic level, 'On the side of living well' was the highest at 4.09 points. And it appeared in the order of 'Ordinary' being 4.03 points and 'On the side of being difficult' being 3.41 points. And there were the statistically significant differences(p=.005). Regarding the subjective condition of the health, 'On the side of being very good' was the highest at 4.58 points. And it appeared in the order of 'On the side of being good' at 4.27 points, 'Ordinary' at 3.94 points, 'On the side of being very bad' being 3.78 points, and 'On the side of being bad' at 3.50 points. And there were the statistically significant differences(p=.000) Table III.

Table III. Quality of Sleep According to General Characteristics

Variable	Classification	Mean(SD)	t	*p*
Gender	Male	3.83(0.84)	.442	.507
	Female	3.95(0.77)		
Age (year)	65 – 69	4.15(0.11)	1.912	.940
	70 – 79	3.81(0.10)		
	≥80	4.24(0.29)		
Religion	Buddhism	3.93(0.79)	1.712	.312
	Christianity	3.57(0.74)		
	Catholic	3.86(0.74)		
	No Religion	4.11(0.77)		
Education	Junior high school graduate	3.93(0.79)	.006	.931
	High school graduate	3.93(0.80)		
	University graduate or higher	3.96(0.76)		
Marital Status	married	3.98(0.76)	.833	.630
	Bereavement, separation, divorce	3.86(0.81)		
	single	4.73(0.00)		
Living together	Couple	3.99(0.73)	.533	.768
	Married children	3.79(0.86)		
	Unmarried children	3.71(1.08)		
	alone	3.96(0.77)		
Number of children	0 – 1	3.54(0.90)	1.707	.324
	2	4.04(0.71)		
	3 – 4	3.94(0.70)		
	≥5	4.05(0.81)		
Dependent child	Has	3.98(0.75)	4.473	.037
	None	3.46(0.96)		
A person who usually cares and	Marriage partner	3.93(0.77)	1.082	.422

helps	children	3.98(0.78)		
	Neighbors and others	3.81(0.79)		
Meeting	Senior citizen's center	3.95(0.78)	.432	.813
	Senior College	3.88(0.86)		
	Senior Volunteer Group	4.42(0.30)		
	None	3.90(0.78)		
Number of meetings	Once a week	4.13(0.83)	2.424	.114
	Once in two week	3.47(0.40)		
	Once a month	3.70(0.61)		
	Once in two month	3.87(0.78)		
Occupation status	Has	4.05(0.64)	.373	.543
	None	3.92(0.80)		
Economic level	Low	4.09(0.75)	5.899	.005
	Medium	4.03(0.73)		
	High	3.41(0.84)		
Monthly allowance	≥ 100,000won	3.88(0.76)	.446	.560
	≥ 200,000won	3.93(0.94)		
	≥ 300,000won	3.85(0.82)		
	≥ 400,000won	4.14(0.59)		
	≥ 500,000won	3.95(0.80)		
Subjective Health Status	Very healthy	3.78(0.67)	4.742	.000
	Healthy	3.50(0.87)		
	Average	3.94(0.73)		
	Unhealthy	4.27(0.64)		
	Very Unhealthy	4.58(0.33)		
Disease status	Has	3.93(0.78)	.021	.886
	None	3.95(0.80)		

3.4. CORRELATION BETWEEN QUALITY OF SLEEP, AND QUALITY OF LIFE

Sleep quality has a negative correlation with the psychological domain(r=-.460, p=.000). Sleep quality has a positive correlation with the biological environment(r=.423, p=.000) [Table IV].

Table IV. Correlation between Depression Level, Quality of Sleep, and Quality of Life

Domain	Physical domain	Psychological domain	Social domain	Living environment domain
Quality of sleep	-.093(.313)	-.460(.000)	-.083(.370)	.423(.000)

4. CONCLUSIONS

Regarding this research was to provide to provide basic data to improve the quality of sleep and improve the health of the older adults by identifying the relationship between sleep behavior and quality of life of the older adults.

If I were to summarize the conclusions of this research, they are as the following. The extent of the depression of the subjects appeared to be low at the average of the total score being 3.67 points. As for the difference of the quality of sleep resulting from the general characteristic, it appeared that, the more there are the children who can be relied on, the better the economic level, and the better the health condition, the quality of sleep had been higher.

As a result of the study, sleep behavior was found to have a negative correlation with the psychological domain and a positive correlation with the biological environment. Therefore, it is necessary to develop and provide a continuous and specific sleep behavior management program to improve the sleep quality of the older adults.

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