ANALYSIS ON THE SUBJECTIVE PHYSICAL ACTIVITIES OF AGED PERSONS LIVING IN BUSAN, ULSAN, AND GYEONGNAM PROVINCES

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ABSTRACT

The purpose of this study is to analyze the subjective physical activities of aged persons. This study has been carried out over persons aged 65 years old and above who live in Busan-ci, Ulsan-ci, and Gyeongsangnam-do province for the period from August 14 to September 27, 2012, and total 849 respondents have been selected as final effective samples through the Convenient Sampling Method. For the data processing, we have carried out Frequency Analysis, Cross Tabulation Analysis, and Chi-square Verification by utilizing SPSS WIN Ver. 18.0. The results of this study are as follows: first, the sex of the respondents has a positive influence on their physical activities. Second, the age of the respondents has a positive influence on their physical activities. Third, it has a positive influence on physical activities of the respondents whether they live with their spouses or not. Fourth, the education level of the respondents has a positive influence on their physical activities. Finally, the elderly who have a certain income such as retirement allowance, pension, etc., have a certain amount of allowance in economy, leading to more active participation in physical activity.

Keywords: Activities, aged person, exercise, physical activity.

INTRODUCTION

The United Nations classified a nation as aging societies when the proportion of the elderly population reached 7%, and aged societies when they reached 14%. According to the statistics of the Statistical Korea in 2013, Korea has reached an aging society with 12.2% of the population aged 65 or older and is expected to reach an aging society by 2020, with an ageing population accounting for more than 14% of the total population (KNSO, 2013). The degree of aging of Korea is so rapid that it does not originate in the world, and it is likely to bring about rapid economic, social and cultural changes in a short period of time. If we do not prepare the social policies for the aging of society, our society will lose its growth power and it will be difficult for the society to develop continuously. It may be difficult for individual citizens to maintain the high quality of life they enjoy today. The loneliness, alienation, and psychological stress result from the collapse of the traditional family system among seniors' problems such as health, economy, and leisure will increase more and more. Along with the increase of the elderly population, the suicide rate of the elderly continues to increase and it is becoming a serious social problem (Lee and Lee, 2010). It is reported that the elder peoples tend to increase their stress because they lack the ability to operate themselves to reduce their stress compared to other age groups (Baek and Kwon, 2005; Kim and Park, 2006). This aging phenomenon is estimated to be about 68.6 years when the average life expectancy exceeds 80 years (KIHSA, 2007). All people are faced with the reality that they have to live with pain,

physical discomfort, emotional anxiety and depression for about 10 years due to illness or accident (Bae et al., 2010).

According to the World Health Organization (WHO) data, more than 60% of the world's population does not have a minimum recommended activity amount of 30 minutes a day, or a moderate intensity physical activity. For this reason, the risk of cardiovascular disease is 1.5 times higher (WHO, 2002). Due to the lack of exercise due to the lifestyle of modern society, the decline in physical strength due to normal aging and the onset of degenerative diseases are accelerating. As we get older, the importance of physical activity is being emphasized (UDHHS, 1996). Physical activity does not prevent aging, but it maximizes the function of the body, reducing the risk of diabetes, osteoporosis, and stroke as well as increasing mortality, and improving quality of life (Kim et al., 2011). Compared to physical activity and drug therapy in degenerative diseases, physical activity has no side effects, low cost, and enjoyment (UDHHS, 1996).

In the past, the determinants of these physical activities have been interpreted in terms of individual motives and beliefs. In recent years, it has been reported that various physical environments, along with individual factors, affect the level of physical activity participation (Pikora et al., 2006). Recent epidemiological studies have shown that many illnesses and unhealthy causes are interpreted as physical inactivity and there are various ways of maintaining optimal health and freeing them from disease by lifestyle changes or increased physical activity approaching from an angle.

WHO (2008) reported that personal characteristics such as self-esteem, pleasure, and expectation of health had a positive effect on physical activity. In the related studies, there have been studies on the subjective health perception of the elderly such as age, gender, demographic characteristics, education level, socioeconomic characteristics such as income, lifestyle such as smoking and alcohol consumption (Stoller, 1984; Johnson and Wolinsky, 1993). Therefore, it is necessary to analyze the actual condition of subjective physical activity for the elderly people in the age - old society. The purpose of this study is to analyze the physical activity of the elderly in Busan-ci, Ulsan-ci, and Kyongsangnam-do province and to provide useful basic data for health promotion of elderly people in Korea.

METHODOLOGY

Subject

In this study, the elderly people (aged 65 years or older) in Busan-ci, Ulsan-ci, and Kyungsangnam-do province were selected as the population, and they were conducted for about two months from August 14 to September 27, 2014. The sampling method was convenient sampling method and self - administration method was used for questionnaire preparation. Subjects with uncomfortable responses were 1: 1 interviewed. In addition, the questionnaire was conducted by 10 researchers and researchers who had experience in the past and had sufficient training methods in advance. A survey was conducted after sampling of 900 persons. A total of 849 questionnaires were selected as valid samples except for the 51 questionnaires which were deemed to be unreliable. The specific demographic characteristics of the study subjects are shown in Table 1.

Survey tools

Questionnaires were used for the research tools. The questionnaires used in this study were collected from the aged between 65 and 100 in Korea. The questionnaires used in the development of the elderly physical fitness standards developed by the Ministry of Culture and Sports.

Data processing method

Out of the questionnaires, 849 questionnaires were used for the analysis of this study. For the analysis of the results, SPSS WIN 18.0 statistical package was used and the significance level was set to $\alpha = 0.05$. Frequency analysis was used to analyze the general characteristics of the subjects, and differences in perceptions of the elderly were examined using crosstabs and chi-square tests.

RESULTS AND DISCUSSION

Physical activity according to sex

Do you have moderate physical activity (swimming, dancing sports, badminton, table tennis, etc.) that is a bit harder or slightly shorter than usual for the past week? The results of the crossover analysis are shown in Table 2 and the χ^2 value is 13.270 (degree of freedom, df = 3, $p = 0.004$). As shown in Table 2, there were 155 respondents (49.2%) who answered that they did not do any physical activity, 88 (27.8%) 5 days or more, 52 (16.2%), and 20 persons (6.3%) in 3-4 days. In contrast, 284 (53.2%) of the respondents said that they do not do physical activities at all, while 1-2 days (22.8%), more than 5 days 97 (18.2%), 3-4 days 51 %). These results indicate that the participation rate of exercise is only about 50% for both men and women, and the rate of physical activity of men over 5 days a week is higher than that of women, suggesting that men participate more actively in physical activities. Regular exercise during physical activity may be beneficial to health and healthy leisure, so it should be recommended for men and women.

Subjective physical activity according to age

How do you like your age? (Question 2) and Are you doing moderate physical activity (swimming, dancing sports, badminton, table tennis, etc.) during the past week? The results of the crossover analysis were as shown in Table 3 and the χ^2 value was 33. There was a significant difference in the subjective physical activity according to age.

As shown in Table 3, 133 respondents (45.3%) answered that they do not do physical activity at all, while 73 respondents (25.1%) responded 1-2 days, followed by 59 (20.3%), and 26 (8.9%) in 3-4 days. For 71-75 years, 136 people (47.7%) responded that they do not do physical activity at all, 71 people (24.9%) over 5 days, 58 persons (20.4) 1-2 days, 3-4 days (20 people, 7.0%). 112 people (58.6%) answered that they do not do physical activity at all. 42 people (22.0) for 5 days or more, 42 people (22.0%) for 1-2 days, and 3 people (1.6%) for 3-4 days. 58 people (70.7%) answered that they do not do any physical activity at 80 years old or older. These results indicate that as the age increases, the percentage of non-participation in exercise increases. This means that the higher the age, the lower the physical activity ability due to the decrease of physical ability and the less the activity amount due to the physical risk burden. The lower the age group, the higher the participation rate of physical

activity. In the relatively lower age group, the positive perception of physical activity seems to have a higher participation rate in physical activity.

Except for ages 65-70, the elderly who are exercising in each age group showed the highest frequency of physical activity more than 5 days. Therefore, when the importance of exercise was recognized, the frequency of exercise increased. In addition, the reason for the highest frequency of physical activity in the elderly people aged 65-70 years is 1-2 days.

Subjective physical activity according to presence or absence of spouse

Do you have a partner (question 3) and a moderate physical activity (swimming, dance sports, badminton, table tennis, etc.) during the past week that is a little bit harder or slightly shorter than usual? The results of the crossover analysis were as shown in Table 4 and the χ^2 value was 11.475, indicating that there was a significant difference in the subjective physical activity status with and without spouse. As shown in Table 4, 200 respondents (46.7%) answered that they did not participate in any physical activity. (23.12%) for 1-2 days, 96 (22.4%) for more than 5 days, and 33 (7.7%) for 3-4 days. On the other hand, 239 (56.8%) answered that they did not do physical activity at all, 89 (21.1%) for 5 days or more, 75 (17.8%) for 1-2 days, 3-4 And 18 (4.3%). These results suggest that the group with spouse has higher physical activity participation rate than the group with no spouse. It is thought that regular physical activity is more active for leisure and health care than the group with no spouse. In addition, these physical activities seem to be able to break away from the feeling of loneliness due to the loss of the social role of old age, and to be free from chronicity and play a role in life in everyday life.

Subjective physical activity according to degree of formal education

Where did you get your formal education? Do you have moderate physical activity (swimming, dancing sports, badminton, table tennis, etc.) during the past week? The results of the crossover analysis are shown in Table 5 and the χ^2 value is 57.463, indicating that there is a significant difference in subjective physical activity according to the degree of formal education. 71 students (71.7%) answered that they did not do physical activities at all, (15.2%) over 5 days, 1 (1.0%) for 3-4 days and 12 persons (12.1%) for 1-2 days. An elementary school graduate 167 (58.2%) answered that they did not do physical activities at all. 56 persons (19.5%) in 1-2 days, 51 persons (17.8%) in 5 days and 13 persons (4.5%) in 3-4 days. A junior high school graduate 88 students (48.4%) answered that they did not do physical activities at all. 39 persons (21.4%) were over 5 days and 1-2 days, and 16 persons (8.8%) were 3-4 days. High school graduates 84 (44.0%) answered that they did not do physical activities at all. 53 people (27.7) for 5 days or more, 47 people (24.7%) for 1-2 days and 7 people (3.7%) for 3-4 days. These results showed that the participation rate of physical activity was higher in the group with higher education level than in the group with lower level. This is one of the biggest problems facing the elderly as a health problem. The higher the level of formal education, the more paths that can receive various information and media, the more awareness and interest it leads to the understanding of the importance of physical activity and it leads to positive physical activity.

Subjective physical activity according to income level

What is your gross income on average per month? 391 people (55.1%) answered that they did not do any physical activity with an income level of 1,000 $ (Table 6). 147 people (20.7%)

for 5 days or more, 141 people (19.9%) for 1-2 days, and 31 people (4.4%) for 3-4 days. 27 people (35.1%) answered that 1,000 – 2,000 $ do not do physical activity at all. 20 persons (26.0%) over 5 days, 18 persons (23.4%) on 1-2 days, and 12 persons (15.6%) on 3-4 days. 21 people (33.9%) more than 2,000 $ answered do not do any physical activity, 15 persons (24.2%) for 1-2 days, 18 persons (29.0%) for more than 5 days, and 8 persons (12.9%) for 3-4. These results show that the higher the income level, the higher the participation rate of physical activity than the lower group. This means that the low income group will have less choice of physical activity considering the absence of income sources and the economic cost. The elderly who have a certain income such as retirement allowance, pension, etc., have a certain amount of allowance in economy, leading to more active participation in physical activity.

Despite the fact that this study has been carried out faithfully, there are some limitations to be considered in future studies. First, in order to generalize this result, additional sampling should be carried out nationwide. Second, this study used only items of physical activity participation, but future studies should include various items such as exercise item, exercise frequency and intensity. If these problems are complemented later, it will be provided as a basic data for solving the problem of aging in Korean society as well as qualitative development of research.

Table 1. Demographic characteristics of subjects

Division		Number	Ratio (%)
Gender	Male	315	37.1
	Female	534	62.9
Age	65-70yrs	291	34.3
	71-75yrs	285	33.6
	76-80yrs	191	22.5
	>80yrs	82	9.7
Spouse	Existence	428	50.4
	None	421	49.6
Living together	Spouse and child	121	14.3
	Spouse	305	35.9
	Child	125	14.7
	Alone	298s	35.1
Final education	None	99	11.7
	Elementary school	287	33.8
	Middle school	182	21.4
	High school	191	22.5
	College or University	90	10.6
Income	<1,000 $/Month	710	83.6
	1,000 – 2,000 S	77	9.1
	>2,000 $	63	7.3
Total		849	100.0

Table 2. Physical activity according to gender

Division	None (%)	1-2 days (%)	3-4 days (%)	≥5 days (%)	Total (%)	Ratio (%)
Male	155(49.2)	52(16.5)	20(6.3)	88(27.8)	315(100.0)	31.7
Female	284(53.2)	122(22.8)	31(5.8)	97(18.2)	534(100.0)	62.8
Total (%)	439(51.7)	174(20.5)	51(6.0)	185(21.0)	849(100.0)	100.0
$\chi^2 = 13.270$, df = 3, $p = 0.004$						

Table 3. Physical activity according to age

Division	None (%)	1-2 days (%)	3-4 days (%)	≥5 days (%)	Total (%)	Ratio (%)
65-70 yrs	133(45.3)	73(25.1)	26(8.9)	59(20.3)	291(100.0)	34.3
71-75 yrs	136(47.7)	58(20.4)	20(7.0)	71(24.9)	285(100.0)	33.6
75-80 yrs	112(58.6)	34(17.8)	3(1.6)	42(22.0)	191(100.0)	22.5
≥80 yrs	58(70.7)	9(11.0)	2(2.4)	13(15.9)	82(100.0))	9.7
Total (%)	439(51.7)	174(20.5)	51(6.0)	185(21.8)	849(100.0)	100.0
$\chi^2 = 33.260$, df = 9, $p = 0.000$						

Table 4. Physical activity according to spouse existence

Division	None (%)	1-2 days (%)	3-4 days (%)	≥5 days (%)	Total (%)	Ratio (%)
Existence	200(46.7)	99(23.1)	33(7.7)	96(22.4)	428(100.0)	52.4
None	239(56.8)	75((17.8)	18(4.3)	89(21.1)	421(100.0)	49.6
Total (%)	439(51.7)	174(20.5)	51(6.0)	185(21.8)	849(100.0)	100.0
$\chi^2 = 11.475$, df = 3, $p = 0.010$						

Table 5. Physical activity according to final education

Division	None (%)	1-2 days (%)	3-4 days (%)	≥5 days (%)	Total (%)	Ratio (%)
None	71(71.7)	12(12.1)	1(1.0)	15(15.2)	99(100.0)	11.7
Elementary school	167(58.2)	56(19.5)	13(4.5)	51(17.8)	287(100.0)	33.8
Middle school	88(48.4)	39(21.4)	16(8.8)	39(21.4)	182(100.0)	21.4

High school	84(44.0)	47(24.7)	7(3.7)	53(27.7)	191(100.0)	22.5
≥ College	29(32.2)	20(22.0)	14(15.6)	27(30.0)	90(100.0)	10.6
Total (%)	439(51.7)	174(20.5)	51(6.0)	185(21.8)	849(100.0)	100.0
$\chi^2 = 57.463$, df = 12, $p = 0.000$						

Table 6. Physical activity according to income

Division (UD $)	None (%)	1-2 days (%)	3-4 days (%)	≥5 days (%)	Total (%)	Ratio (%)
≤1,000	391(55.1)	141(19.9)	31(4.4)	147(20.7)	710(100.0)	83.6
1,000-2,000	27(35.1)	18(23.4)	12(15.6)	20(26.0)	77(100.0)	9.1
>2,000	21(33.9)	15(24.2)	8(12.9)	18(29.0)	62(100.0)	7.3
Total (%)	439(51.7)	174(20.5)	51(6.0)	185(21.8)	849(100.0)	100.0
$\chi^2 = 32.701$, df = 6, $p = 0.000$						

CONCLUSIONS

The purpose of this study is to provide useful basic data for health promotion of elderly people in Korea by analyzing actual condition of subjective physical activity. In order to achieve the purpose of this study, the elderly aged 65 and over in Busan, Ulsan, and Kyungsangnam-do province were selected as the population and the final 849 samples were analyzed and the following conclusions were obtained. First, the subjective activity according to gender showed that the participation rate of male is higher than that of female. Second, the lower the age, the higher participation rate of subjective physical activities according to age. Third, subjective physical activity with or without spouse showed higher participation rate than the group with no spouse. Fourth, the higher the education level, the higher the participation rate than the lower level. Fifth, the higher the income level, the higher the participation rate of subjective physical activity according to the income level.

REFERENCES

Bae, J.J., Lee, J.C., Kim, S.K., You, Y.K. & Sim, H.Y. (2010) Development model of community exercise prescription for the aged. *Journal of Sport and Leisure Studies, 42*, 675-64.

Baek, K.S. & Kwon, Y.S. (2005) Stress coping by the relationship among perceived stress, the ways of copong and psychological well-being in the elderly. *Journal of Welfare for the Aged*, *28*, 379-402.

Johnson, R., & Wolinsky, F.D. (1933) The structure of health status among older adults: disease, disability, functional limitation, and perceived health. *Journal of Health and Behavior*, *34*, 105-21.

Kim, S.O. & Park, M.H. (2006) A study on the relationship between the stress, depression and self- integrity of the rural elderly women. *Journal of Korean Gerontological Nursing, 8(2),* 180-8.

Kim, S.Y., Yun, J.E. & Kim, S.H. (2011) The relation of physical activity by the IPAQ to health-related equality of life- Korea National Health and Nutrition Examination

Survey (KNHANES) IV 2007-2008. *Korean Journal of Health Education and Promotion, 28(2),* 15-25.

Korean Institute for Health and Social Affairs. (2007) Health-related Quality of Life and Expectancy Life in Korea. Seoul: Korean Institute for Health and Social Affairs.

Korean National Statistical Office. (2013) http://kostat.go.kr/portal/korea/kor_nw/2/6/1/index.board?bmode =read&aSeq=308688

Lee, J.K. & Lee, E.J. (2010) The relationship of participation in leisure sports' on stress and the decrease of suicidal thought of elderly. *Journal of Leisure and Recreation Studies, 34(3),* 17-26.

Pikora, T.J., Giles-Cort,i B., Knuiman, M.W., Bull, F.C., Jamrozik, K. & Donovan, R.J. (2006) Neighborhood environmental factors correlated with walking near home: Using SPACES. *Medicine and Science in Sports and Exercise*, *38*, 708-74.

Stoller, E.P. (1984) Self-assessment of health by the elderly: the impact of informal assistance. *Journal of Health and Social Behavior*, *25*, 260-70.

US Department of Health and Human Services. (1996) Physical activity and health. A report of the Surgeon General, Atlanta : US Department of Health and Human Services, Center for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.

World Health Organization (2002) The World Health Report 2002; reducing risks, promoting healthy life. Geneva, Switzerland: World Health Organization.

World Health Organization (2008). Available from : http://www.who.int/dietphysicalactivity/publications/facts/en/