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The Effect of Korean Dance Program on Climacteric Symptoms and Blood Lipid in Rural Middle-aged Women

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Abstract

This study is to verify the effects of the Korean Dance Program for rural middle-aged women on their total cholesterol, triglyceride and climacteric symptoms. In this study, 'Harmony', one of the sub-programs of the Korean Dance Program which was developed at Seoul National University Institute Ageing of Woorichum Gymnastics was applied. It was composed of 13 actions and music. Nonequivalent control group pre/post-test method was adopted. Participants of this study lived in rural community, and recruited from two Primary Health Care Posts located in rural community of D city. Total 41 women (experimental group 20, control group 21), from 40s to 60s, were finally selected. Data collection was carried out for 16 weeks. The results were summarized as follows: the total blood cholesterol(F=5.107, p=.029) and climacteric symptoms(F=5.378, p=.025) of the middle-aged in rural community significantly decreased but blood triglyceride did not significantly decrease(F=2.737, p=.106) after the 16 weeks of the Korean dance program. It can be said that the Korean Dance Program, 'Harmony' is a useful implementation for improving rural middle-aged women's blood lipid and climacteric symptoms.

Keywords: *blood lipids, climacteric symptoms, rural women, Korean dance*

1. Introduction

The average life expectancy of Korea's women was 77.77 years old back in 1996. This has since increased to 82.73 years old in 2007 and continues to increase, reaching 84 years old in the year 2010 [1]. A women's entire life cycle, there is a growing portion of the cycle since the middle-ages. The functions of all the organs of the physical in the middle-aged are decreasing. A middle-aged woman undergoes decreased metabolic rates, which is caused by physical and physiological changes. Also, a middle-aged woman can experience rapid increases in blood lipid caused by decreased estrogen stimulations and decreased LDL receptor activity levels. Furthermore, middle-aged women are increasingly prone to cardiovascular diseases due to lacking physical activities. Total cholesterol and triglycerides are both high risk elements related to cardiovascular diseases. 54.4% of middle-aged Korean woman have been reported to have hypercholesterolemia and 21.0% of them have hypertriglyceridemia [2].

In terms of women's health, menopause not only occurs as physical symptom but is frequently accompanied by other emotional problems such as conflicting role as woman and mother, disappointment, isolation, and decrease self-esteem [3]. These symptoms of

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menopause are experienced by 57.1-75% of middle-aged women. And these climacteric symptoms have been reported to hinder daily life [4]. Climacteric symptoms also have the possibility of developing into chronic diseases as well as physical aging. So in order for a healthier old age, it is imperative to properly manage the menopausal stage. There are hormonal replacement therapies available to treat climacteric symptoms. However, these therapies have been discussed in relation to increased risks of breast cancer, uterine cancer and other malfunctions so it has become less favored by many women [5].

Exercise is known to ease tension and also prevent various diseases including climacteric symptoms [6]. Regular aerobic exercises can improve a number of risk factors such as cholesterol, high blood pressure, blood sugar levels, and obesity. Moreover, there are experimental and epidemiologic evidence that indicate how regular exercises can prevent or delay cardiovascular diseases such as coronary artery diseases by improving functions of the heart and vessels. In addition, in the context of rural communities, there are less entertainment facilities and time is limited due to demanding farm works. So, it is even more necessary to provide health improvement opportunities to women within rural communities.

In 1999, Woorichum Gymnastics were developed to promote regular exercises among the elderly. The gymnastics were designed around traditional Korean dance movements. The movements are therefore relatively soft and fluid, which means that they are less straining to the muscles and joints. Also, indigenous music included the gymnastics provides not only for physical effect but also of psychological stability and happiness [7]. Music is known to alleviate depression and anxiety among middle-aged women [8-10]. Therefore, if music is integrated into physical activity, it can be predicted that the Woorichum Gymnastics program can positively influence the psychological, emotional and physical of menopause symptoms.

The exercise strength of the basic movements is 79.8%VO2max and the strength of the heart rate activity is 80% HRmax [11]. These readings are 40-60% HRmax higher than the American Heart Association's recommended [12] strength to prevent coronary artery disease. Also, seeing that the guide on cholesterol prevention includes slow dancing, it can be predicted that the basic forms of the Korean traditional dance can be classified as fitting these requirements and more importantly as helping to lower blood lipid concentration levels. Previous studies have shown that upon examining the effects of Korean traditional dance on middle-aged women, there was a decrease in the total cholesterol levels as well as triglyceride levels [13, 14]. The same analysis on the elderly showed decreased cases in triglyceride levels [15], as well as lower total cholesterol levels[16, 17].

Regarding the study on the effects of Woorichum Gymnasticss, there are only analyses that target the elderly female [18] and analyses that examine the effects on fitness, quality of life and walking ability [19, 20]. However, there are no studies that explicitly examine middle-aged women and their climacteric symptoms in relation to blood lipid levels and the effects that Woorichum Gymnasticss have on these physiological processes.

This study therefore studied the relationship between Woorichum Gymnasticss and the alleviation of climacteric symptoms and decrease in blood lipid levels within middle-aged women living in rural communities. This study will ultimately allow for an effective nursing strategy to manage health issues for middle-aged women at large.

2. Purpose

The goal of this study is to understand the effects of Woorichum Gymnastics program among middle-aged women of rural communities, with the following more specific purposes:

- Understand the effects of Woorichum Gymnastics program on the blood lipid levels of the middle-aged women of rural communities

- Understand the effects of Woorichum Gymnastics program on the climacteric symptoms of the middle-aged women of rural communities

3. Hypothesis

The 1st hypothesis: The experimental group that has been administered with the Woorichum Gymnastics program will have lower blood lipid levels than the control group.

1-1 The experimental group will have lower total cholesterol than that the control group.

1-2 The experimental group will have lower triglyceride levels than that the control group.

The 2nd hypothesis: The experimental group that have been administered with the Woorichum Gymnastics program will show less climacteric symptoms than the control group

4. Method

4.1. Design

This study adopted Nonequivalent control group pre-test/post-test method.

4.2. Participants

The participants of this study fully understand the components and goals of this study and have agreed to be a member of the study. All participants were women in their 40-60's and managed by D and S primary health care posts located within D metropolitan city. The participants were not undergoing any other hormone replacement therapies and did not exercise regularly. The participants were also not participating in any other regular exercise program other than the one they were signing onto. Each participant was thoroughly briefed on the purposes and methods of this study and was free to leave any time during the study if they felt uncomfortable. They were all assured that the study information will only be shared for study purposes.

The study sample size were standardized using the Cohen's power analysis to $\alpha=0.05$, effect size $f=0.45$, testing power value=0.8. The sample number needed per group was 21 people. The final members of the experimental group were those participants that attended more than 12 classes (80%) out of the 16 classes of the 16 week long program. So the final number of participants in the experimental group was 20. For the control group, 29 people signed up to participate. But for various reasons such as farm work demands and other private reasons, the final control group had 21 participants.

4.3. Woorichum Gymnastics Program

The components of Woorichum Gymnastics program were devised in 1999 by the Seoul National University Institute Ageing. The gymnastics was founded to service the elderly within the Korean society who were suffering from lack of daily physical exercises. The gymnastics program is based on the movement of traditional Korean dance. The particular component selected for this study was 'Harmony'. The program included warming up and cooling down.

The experimental group participants were asked to attend group classes once a week for 60 minutes for 16 weeks. Also, they were asked to participate in the individual sessions three times a week for 30 minutes each. For the individual sessions, they were given a task check table to fill out. The group sessions were led by an instructor who majored in traditional

Korean dance and who has experience teaching middle-aged women. Also, one researcher and the program manager attended these group sessions as assistant instructors. During the group sessions, the detailed parts of the exercise movements were introduced and each participant was corrected for posture. The individual sessions comprised of practicing the postures that were taught during the group sessions and repeating these positions based on a personal goal three times a week for 30 minute sessions. Participants were always handed out a written version of the instructions introduced in group session classes.

The program was conducted between February and May, during which time the experimental group participants are not as busy with farm works.

4.4. Instruments

4.4.1. Blood lipids: Blood lipids are the main fats within the bloodstream and include cholesterol, phospholipid, triglyceride, and free fatty acid. This study treated the total cholesterol level and triglyceride levels only when discussing blood lipid levels. These levels were measured using the enzymatic test. The ADVIA 1650 (manufacturer: Simens / country: USA) was used for the measurements. The normal total cholesterol range is <200mg/dL. The normal range of triglyceride is <150mg/dL.

4.4.2. Climacteric symptoms: From the 57 criteria of the WDHD (Women's Daily Health Diary) developed by Woods, Lenz, Mitchell, Lee and Taylor (1986), 33 criteria have been selected and widely used [21]. These criteria have also been adopted and tested in Korea [22, 23]. This tool has 6 lower division fields that include 10 criteria are for physical symptoms, 14 criteria are for psychological symptoms, 4 for sleep-related symptoms, 2 for appetite symptoms, 2 for concentration related symptoms, and finally 2 for sexual activity symptoms. The higher the score, the higher the level of discomfort and in Haewon Kim's study [23], the Cronbach's α=0.99. This study has Cronbach's α=0.91.

4.5. Data Collection

The Woorichum Gymnastics program began on February 02 2009 and ended 16 weeks later on May 28 2009. Over the course of the 16 weeks, participants attended one group session for 60 minutes per week and engaged in 30minute individual session three times a week. The pre-test on the experimental group participants were conducted on February 02 2009 and the post-test were conducted on May 28 2009. And heath education for control group was done at pre and post test times, education components are managing the climacteric symptoms, exercises and healthy behaviors. The control group pre-tests were done on February 06 2009 and the post -tests were conducted on May 29 2009. The data collection consisted of surveys. Those that could read and write by themselves answered the questions by themselves. Those participants who had a hard time filling out the surveys on their own were aided by nursing school students who were trained to assist in such activities.

When participants missed group sessions, the community health nurse practitioner called to encourage future participation or any participation in other physical activity classes. Also, phone calls were used to remind and encourage the individual sessions as well. For those participants who lost track of time due to farm works, the village announcement facility was used to remind and encourage physical activity participation.

5. Data Analysis

The SPSS-K17.0 version was used to analyze the collected data. The general characteristics of both the experimental and control groups were expressed in real numbers and percentage values. The x2-test and the t-test were used to compare the homogeneity of the two groups. In order to evaluate the effects of the Woorichum Gymnastics program, the ANCOVA controlled the pre-measurement values to test the study hypothesis on the dependent variables.

6. Results

6.1. Homogeneity Analysis between the Experimental and Control Group

The homogeneity evaluations of the general characteristics of the two groups are as shown in Table 1. It can be seen that there is no significant differences between the two groups and that they are therefore homogeneous. However, there is a difference in the range of ages between the experimental and control groups. So, the age was set as the covariate value to conduct a ANCOVA when it came to validating the effectiveness of the Woorichum Gymnastics program (Table 2). The average age of the experimental group is 55.80 years old and that of the control group is 58.52 years old. The experimental group had 4(20.0%) women in their 40's, 8 (40.0%) women in their 50's, and 8 (40.0%) in their 60's. The control group had 4 (19.0%) women in their 40's, 7 (33.3%) in their 50's, and 10 (47.6%) women in their 60's. In regards to the BMI values, 11(55.0%) women in the experimental group and 11 (52.2%) in the control group were within normal range. The education levels showed that 8 (40.0%) women in the experimental group graduated until middle school and 9 (42.9%) women in the control group graduated until elementary school. The marital status showed that 2 (9.1%) women from the experimental group and 2(8.7%) women from the control group had lost their husbands. All other participants were still married and residing with their respective husbands. There were 15 (75.0%) women from the experimental group and 17 (81.0%) women in the control group who had already passed menopause.

Table 1. Homogeneity Test of General Characteristics between the Two Groups (N=41)

Characteristics		Exp(n=20)	Cont(n=21)	t or x^2	p
		n(%), M±SD	n(%), M±SD		
Age					
	41~50	4(20.0)	4(19.0)		
	51~60	8(40.0)	7(33.3)	.265	.876
	61~	8(40.0)	10(47.6)		
	M±SD	55.80 ± 8.53	58.52 ± 8.65	-1.014	.317
BMI					
	Normal	11(55.0)	11(52.2)	.309	.857
	Overweight	9(45.0)	10(47.6)		
Education level					
	None	2(10.0)	2(9.5)	.712	.950
	Elementary school	7(35.0)	9(42.9)		

Middle school	8(40.0)	6(28.6)		
Above high school	3(15.0)	4(19.1)		
Marital status				
Married	18(90.0)	19(90.5)	.003†	.959
Widowed	2(10.0)	2(9.5)		
Menopause				
Yes	15(75.0)	17(81.0)	.301	.860
No	5(25.0)	4(19.0)		
Presence of illness				
Yes	6(30.0)	8(38.1)		
hypertension	4	7	.299	.585
DM	4	6		
No	14(70.0)	13(61.9)		

*Fisher's exact test

6.2. The Effects of the Woorichum Gymnastics Program

6.2.1. Blood lipid

As a result of conducting the homogeneity test on the variables that relate to blood lipid levels in order to evaluate the effects of Woorichum Gymnastics program, it can be seen that the two groups show no significant differences and therefore the two groups are homogeneous. The average value of the total cholesterol level for the experimental group was 154.59 points compared to 177.14 points for the control group. This difference is statistically significant and therefore the total cholesterol level of the control group was higher (F=5.107, p=0.029). Therefore, the first hypothesis "1-1 The experimental group will have lower total cholesterol than that the control group" has been supported. The triglyceride level of the experimental group was 99.95 points and that of the control group was 133.0 points. This difference is no statistically insignificant (F=2.737, p=0.106). The first hypothesis "1-2 The experimental group will have lower triglyceride levels than that the control group has not been supported(Table 2).

Table 2. Effect of a Dependent Variable on Woorichum Gymnastics Program (N=41)

Variables		exp. (n=20)	con. (n=21)	F	p
		M±SD	M±SD		
Total cholesterol	pretest	167.90±37.45	179.85±36.18	-1.063	.294
	posttest	154.59±26.78	177.14±34.22	5.107	.029
Triglyceride	pretest	167.86±82.79	186.09±119.41	-.584	.562

	posttest	99.95±38.02	133.00±83.26	2.737	.106
Climacteric symptoms	pretest	50.41±18.90	52.83±22.29	-.391	.697
	posttest	16.57±8.37	24.77±13.98	5.378	.025

6.2.2. Climacteric Symptoms

As a result of conducting the homogeneity test on the variables that relate to climacteric symptoms in order to evaluate the effects of Woorichum Gymnastics program, it can be seen that the two groups show no significant differences and therefore the two groups are homogeneous. The average value of the climacteric symptoms of the experimental group was 16.57 points and that of the control group was 24.77 points. So, there was a statistically significant difference between the two groups (F=5.378, p=0.025). Thus, the experimental group who underwent the Woorichum Gymnastics program has decreased climacteric symptoms as compared to the control group. And the second hypothesis "The experimental group that have been administered with the Woorichum Gymnastics program will show less climacteric symptoms than the control group" has been supported (Table 2).

7. Discussion

The following discussion can be presented in examining the results of this study that studied the potential for alleviating climacteric symptoms and reducing blood lipid levels through the practice of Woorichum Gymnastics program among middle-aged women in rural communities.

The participants of this study had an average total cholesterol level of 173mg/dL and an average triglyceride level of 177mg/dL. In the study by Kim, Park, Kim & Lee that also participants middle-aged women, the average total cholesterol level was 184mg/dL and the average triglyceride level was 138.5mg/dL[24]. Similarly, in Kim's study, the average total cholesterol level was 225mg/dL and the average triglyceride level was 169.5mg/dL[25]. So, the average total cholesterol level and triglyceride levels measured in this study were within a similar range as those recorded in previous studies.

After conducting the procedures of this study, the total cholesterol average point was 154.59mg/dL within the experimental group and 177.14mg/dL within the control group and there was a statistically significant difference between the two groups. On the other hand, the triglyceride level showed an average point of 99.95 mg/dL for the experimental group and 133.00mg/dL for the control group, which meant that there was no significant difference between the two groups. In similar previous studies, those of Kim's research as middle-aged female participants underwent 8 weeks of dynamic yoga [24], and Kim's (2002) research, middle-aged female participants underwent 12 weeks of dance sports classes that included cha-cha-cha and rumba [26], In both of these previous studies, they showed statistically significant reductions in total cholesterol levels but no changes in the triglyceride levels. Thus, this study is aligned with the findings of previous studies. On the other hand, Choi had middle-aged female participants attend 12 weeks of rhythmical movement classes, which showed no significant changes in both the total cholesterol and triglyceride levels [27]. Also, there is the case of Lee's study that had participants grouped into fast walkers and slow walkers in which case both the total cholesterol and triglyceride levels were reduced [28]. Similarly, Choi asked participants to attend a walking program over 12 weeks and found that there were reductions in both the total cholesterol and triglyceride levels [27]. As such, in previous studies that incorporated walking into the physical activity program showed

reductions in both the total cholesterol and triglyceride levels. However, in the case of intervention just the rhythmic movements as physical activity, there were no differences in both the total cholesterol and triglyceride levels. Compared to other previous studies, this study incorporated an exercise program that includes learning periods of the new postures and the program itself is devised to minimize physical strain and is relatively short in period. And these may be the reasons why there were no significant decreases in the triglyceride levels as a result of the experiment. Therefore, in order to reduce the triglyceride levels, it is necessary to continue physical activities such as the Woorichum Gymnastics program and the program itself could be successfully incorporated into master programs that aim to manage the healthy lifestyle of middle-aged women.

As a result of this study's arbitration the average point for the climacteric symptoms came out to be 16.57 points for the experimental group and 24.77 points for the control group. And this difference was indeed statistically significant. In previous studies, Kim intervened a 12 week dance sports program, which in a similar manner reduced climacteric symptoms [26]. Similarly, Kim's study that intervention 8 weeks of yoga program also alleviated climacteric symptoms [3]. Kim introduced 12 weeks of Kuksundo and as a result reported the alleviation of climacteric symptoms as well [29]. From these past studies, it can be seen that the climacteric symptoms were always reduced upon administering some sort of physical exercise program and this is in alignment with the result of this study. Regular physical exercise is widely accepted as an imperative factor in improving middle-aged women's quality of life and health management. In regards to this specific study, it can also be added that the indigenous music used within the Woorichum Gymnastics program must have also acted in a positive manner to reduce the physical strains that middle-aged women are prone to.

Thus, it can be said that the Woorichum Gymnastics Program is a useful implementation for improving rural women's blood lipid and climacteric symptoms.

8. Conclusion

With the increase in average life expectancy, the portion of the life period after the middle-ages is increasing. It is therefore important for the middle-aged woman to become aware of the importance of health problems and actively engaging in improving self care abilities.

Based on the results of this study, it has been confirmed that the Woorichum Gymnastics program is indeed effective in alleviating climacteric symptoms and that it is also effective in reducing the total cholesterol and triglyceride levels. Thus, Woorichum Gymnastics program can be said effective nursing intervention program of health promotion for middle-aged women. Because the 16weeks of participation in the Woorichum Gymnastics program did not show statistically significant changes in the triglyceride levels, it is need to continue the program and extend the duration. Further studies are needed to develop more effective health promotion programs with easy and enjoyed by large population of middle-aged women.

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