

Lifestyle Intervention for Obese Women

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Obesity produces various physical and psychological health risks in women, including effects on reproductive health. In particular, the possibility of infertility in obese women is high. Lifestyle interventions involving nutrition education, physical activity, and stress management have been shown to be effective in improving the health of obese subjects. Therefore, it is necessary to develop and apply a lifestyle intervention program to promote reproductive health in obese women.

Key Words: Lifestyle, Obesity, Women, Reproductive health

INTRODUCTION

According to World Health Organization (WHO) statistics, in 2014, 39% of adult males and 40% of adult females were overweight (i.e., had a body mass index (BMI) above 25 kg/m²), and 11% and 15% of adult males and females, respectively, were obese (with BMIs over 30 kg/m²) [1]. Obesity is emerging as a new health problem, with more than 200 million adults worldwide meeting the criteria for obesity. Many studies have demonstrated that obesity is not only closely related to various lifestyle diseases, but also affects quality of life. Furthermore, obesity leads to imbalances in lifestyle and dietary habits, which have increasingly negative social consequences over time [2].

In South Korea, 39.7% of adult males and 26.0% of adult females were obese in 2015 [3]. While these rates are not

yet as high as the global ones, there is a high risk of these rates growing in the future, which suggests that preparations for health promotion among obese women are necessary.

Female obesity is associated with endometrial and breast cancers, in addition to lifestyle diseases. Furthermore, as obesity is associated with anovulation, irregular menstruation, polycystic ovary syndrome, and altered uterine receptivity and implantation [3], the probability of becoming infertile is three times higher for obese women of childbearing age than for women of normal weight [4]. Obese women can also develop insulin resistance and hyperinsulinemia and experience changes in the secretion of gonadotropin-releasing hormone by the hypothalamus, which can increase the secretion of luteinizing hormone by the pituitary gland and reduce the level of follicle-stimulating hormone (FSH) [5]. In addition, the levels of androgens (testosterone, dehydroepiandrosterone (DHEA), and androstenedione) and estrogen increase in obese women because the concentration of sex hormone binding globulin (SHBG) decreases [5]. The increase in these sex hormones ultimately increases the free androgen index (FAI) [5]. As a result, the fertilization ability decreases, and even when pregnancy is achieved, there is a much higher abortion rate and a lower birth rate of normal newborns among obese women [5-7].

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EFFECTS OF LIFESTYLE INTERVENTIONS FOR OBESE WOMEN

One suggested method of preventing infertility in obese women of childbearing age is weight control through lifestyle interventions [6]. Many studies have demonstrated the effects of combining physical activity with weight control, and the British Fertility Society has recommended that obese women defer medical treatment until their BMI drops below 35 kg/m²; ideally, treatment should only begin after the BMI is below 30 kg/m² [8]. Obese women of childbearing age have been shown to recover spontaneous ovulation through weight reduction and to achieve pregnancy after a weight reduction of only 5% from the initial weight [9]. Research with various subject groups has demonstrated that lifestyle interventions are effective for improving body composition (i.e., BMI, waist-hip ratio), blood lipid levels, gonadal hormone balance, and psychosocial factors [7].

Lifestyle medicine has been defined as the use of the environment, behavior, medicine, and motivation to promote health maintenance in the context of lifestyle-related health issues [2]. Specifically, it involves the application of various non-pharmacological methods such as physical activity, nutritional changes, stress management, and smoking cessation [2]. Lifestyle interventions are considered as part of a futuristic healthcare model for disease prevention and health promotion, which acknowledges that lifestyle patterns—physical activity, healthy diet, normal weight maintenance, and smoking cessation—are necessary to maintain healthy living [10]. The Australian government has begun implementing the “smoking, nutrition, alcohol, and physical activity program” (SNAP) at various medical facilities to ensure that medical staff can perform effective lifestyle interventions [11]. Among these interventions, those pertaining to physical activity and diet are arguably the most fundamental; indeed, physical activity interventions combined with nutritional intervention and behavioral modification therapy are known to be more effective than physical activity interventions alone [2]. Since excessive dietary adjustment can result in nutritional intake deficiencies and cause various health problems, dietary adjustment is most effective when combined with exercise therapy [12]. Exercise therapy has been reported to reduce the risks of cardiovascular and en-

docrine diseases and to improve psychological status (e.g., reduce depression and anxiety) and musculoskeletal function [13].

Weight control must be conducted in a rigorously scientific way to ensure that individuals consume nutritionally balanced meals, limit their caloric intake, and exercise regularly [14]. Obese people, however, can experience malnutrition or related illnesses if they excessively restrict their diet or increase the amount of exercise without accurately determining the needed balance between the two [15]. The risks are particularly high in women, who are known to be more self-conscious than men about their obesity because of their externalized body image [16]. In addition, women can develop unhealthy mental activities by having a negative body image due to obesity [16]. Therefore, the basis for a healthy life should be established through appropriate lifestyle interventions, which in turn can help women build a more positive body image and greater self-esteem [12]. As women of childbearing age might be present or future parents, obesity should be corrected through lifestyle interventions, because their health-related attitudes and practices are important determinants of their children’s health.

Lifestyle interventions for obese women of childbearing age conducted overseas have differed in both duration and content [17-18]. Many of them have used 6000-10,000 steps of walking per day as a physical activity intervention, 30-45 minutes of aerobic exercise (e.g., cycling) 3-5 times per week, caloric restriction by 400-1,000 kcal per day, and dietary intake of 50% carbohydrates, 25-30% fat, and 20-25% protein [7,17]. Guidelines for lifestyle interventions for obese adults in South Korea recommend five 30-50-minute aerobic exercise sessions per week or 20-30 minutes of vigorous-intensity exercise twice per week, along with a reduction of 500 kcal or more (with a total intake of 1200-1500 kcal per day) [14].

In a meta-analysis of lifestyle interventions, the average weight loss (among the different body composition factors) associated with participation was 3.47 kg (95% CI, -4.94, -2.00, $p < 0.001$), while the average reduction in the waist-hip ratio was 0.04 (95% CI, -0.07, -0.00, $p = 0.02$) [19]. As for serum lipid levels, high-density lipoprotein (HDL) cholesterol level increased significantly, while low-density lipoprotein (LDL) cholesterol level decreased by

an average of -0.407 (95% CI, -0.607 , -0.207 , $p < .001$) [20]. As a result of changes in reproductive hormone levels, the levels of follicle-stimulating hormone (FSH) and SHBG increased by 0.39 (95% CI, 0.09 , 0.70 , $p = 0.01$) and 2.37 (95% CI, 1.27 - 3.47 , $p < .001$), respectively [7]. Furthermore, testosterone level decreased by 0.13 (95% CI, -0.22 , -0.03 , $p = 0.008$) and the FAI by 1.64 (95% CI, -2.94 , -0.35 , $p = 0.01$) [7]. A study involving a 20-week lifestyle intervention also demonstrated that participation significantly reduced depression levels and increased the quality of life in obese women [21].

CONCLUSION

Since lifestyle interventions appear to be beneficial for weight loss, blood lipid level management, cancer prevention, and reproductive health promotion among obese women, it would be useful to include them in efforts to promote health (including reproductive health) for obese women of childbearing age.

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