Lifestyle Interventions for Adults with Infertility

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With a significant increase in the age-standardized prevalence of infertile men and women, infertility has become a widespread global issue. Furthermore, infertility has led to increased stigma and disease burden. The causes of infertility include lifestyle factors such as obesity, an unbalanced diet, and physical activity. To increase the rate of successful pregnancy, infertile men and women must improve their health and fertility through lifestyle improvements.

Key Words: Lifestyle, Infertility, Health promotion

INTRODUCTION

Infertility is growing rapidly worldwide and has become a pervasive problem with significant consequences for individuals, families, and communities [1,2]. In many cultures, infertility is stigmatized [3]. Globally, from 1990 to 2017, the age-standardized prevalence of infertile women in 195 countries and regions increased by 14.9%, from 1,366.8 per 100,000 to 1,571.3 per 100,000. The age-standardized prevalence of infertile men increased by 8.2%, from 710.1 per 100,000 to 768.5 per 100,000. Thus, the burden of disease due to infertility has increased significantly [4].

Both male and female factors may cause infertility [3]. It may be the result of low sperm quality, ovarian problems, fallopian tube blockage, pelvic infection, advanced age, endometriosis, and difficulty in natural fertilization [3]. In addition, obesity [4], an unbalanced diet [5], a diet high in trans-fat and carbohydrates and sugar [6], lack of physical activity, smoking [7], depression, anxiety, and stress [8] contribute to infertility. Research has indicated that diet and lifestyle are key factors affecting fertility [6]. Furthermore, it has been shown that weight loss, if needed, is the most important means of increasing fertility [7]. It has also been reported that lifestyle changes, such as weight loss and increased physical activity, affected the number of births among infertile women [9]. In addition, research has shown that infertile couples have lower levels of the health-promoting behaviors that play an important role in improving quality of life, maintaining health, and improving fertility [10]; therefore, it is necessary to consider lifestyle interventions to improve the, fertility, and health of infertile men and women.

EFFECT OF LIFESTYLE INTERVENTIONS FOR ADULTS WITH INFERTILITY

Lifestyle factors can affect the likelihood of infertility [2]. Therefore, healthcare professionals should be more proactive in making lifestyle recommendations for infertility patients [11]. Lifestyle changes such as eating healthier, increasing physical activity, quitting smoking, and reducing
alcohol consumption can help patients conceive [12]. In ad-

dition, proper levels of physical activity may help maintain

regular menstrual cycles and ovulation [13], and appropriate

physical activity can have a positive effect on childbirth

among infertility patients [14]. According to a meta-analysis

of studies conducted with infertile patients, an intervention

that included basic information on infertility, as well as life-
style and stress management, was useful for infertility

correction. The lifestyle improvements which resulted from

the intervention increased the participants’ likelihood of

pregnancy and had a positive effect reproductive health [15].

By reducing energy intake (kcal) and body mass index,

long-term (five-year) lifestyle interventions improved the

physical quality of life of obese and infertile women [16]

and demonstrated the potentially sustainable effects of

healthy eating and regular physical activity [12]. Interven-
tions that included dietary and lifestyle recommendations at

three months significantly increased ova count, mature ova

count, embryo count, embryo quality, fertility, and preg-
nancy rate among infertile women [1]. In addition, a

six-month lifestyle intervention improved reproductive en-
docrine and lipid metabolism and reduced the volume of the

left and right ovaries, which increased menstrual recovery,

ovulation, and pregnancy rates in obese and infertile women

[17]. Lifestyle interventions also improved overall sexual

function in infertile women [18].

Several studies regarding lifestyle interventions for in-

erfite men have been recently conducted. A three-week

physical activity intervention markedly improved sperm

quality in infertile men, showing a direct association be-

tween a healthy lifestyle and men’s reproductive health

[19]. In addition, a three-month lifestyle intervention fo-
cused on diet and exercise also showed an improvement in

sperm quality among infertile men [20]. Multidisciplinary

strategies to improve the reproductive health of infertile

men through reduced stress and increased social support

should be considered [21].

Infertility affects 15% of couples of reproductive age

worldwide [22]. One study found that without positive in-
teractions in marriages with infertility, negative emotions

regarding infertility-related stress and guilt were shared

with couples and influence on marital relationships [23].
Lifestyle interventions for infertile couples have reduced

depression and improved quality of life for both parties

[24]. In addition, improving the lifestyle of infertile couples

also improved their quality of life and reduced medical costs

[10]. In the future, it is necessary to develop and apply life-
style interventions that improve reproductive health for in-

fertile couples.

CONCLUSION

There is a significant association between infertility and

lifestyle. Lifestyle changes such as a healthier diet and in-

creased physical activity improve overall and reproductive

health, as well as increase pregnancy rates. Therefore, healt-

care providers should explain the importance of lifestyle

improvements to infertile men, women, and couples alike.

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REFERENCES

1. Alibeigi Z, Jafari-Dehkordi E, Kheiri S, Nemati M,

Mohammadi-Farsani G, Tansaz M. The Impact of Tra-
ditional Medicine-Based Lifestyle and Diet on Infertil-
ity Treatment in Women Undergoing Assisted Repro-
duction: A Randomized Controlled Trial. Complement

Med Res 2020;27(4):230-41.

2. Boedt T, Vanhove AC, Vercroe MA, Matthys C, Dance

E, Lie Fong S. Preconception lifestyle advice for people

with infertility. Cochrane Database Syst Rev 2021;4(4):

CD008189.

3. Mustafa M, Sharifa AM, Hadi J, IIIzam E, Aliya S.

Male and female infertility: causes, and management.

J Dental Medical Sci 2019;18:27-32.

4. Sun H, Gong TT, Jiang YT, Zhang S, Zhao YH, Wu

QJ. Global, regional, and national prevalence and dis-
ability-adjusted life-years for infertility in 195 countries

and territories, 1990-2017: results from a global burden

disease study, 2017. Aging 2019;11(23):10952-91.

5. Hayden RP, Flannigan R, Schlegel PN. The Role of

Lifestyle in Male Infertility: Diet, Physical Activity,

and Body Habitus. Curr Urol Rep 2018;19:56.

6. Skoracka K, Ratajczak AE, Rychter AM, Dobrowolska

A, Krela-Kazmierzczak I. Female Fertility and the

Nutritional Approach: The Most Essential Aspects. Adv
7. Collée J, Mawet M, Tebache L, Nisolle M, Brichant G. Polycystic ovarian syndrome and infertility: overview and insights of the putative treatments. *Gynecol Endocrinol* 2021;37(10):869-74.

8. Lee YS, Choi SM, Kwon JH. Psychosocial predictors of infertile women's distress. *J Korean Soc Matern Child Health* 2019;23(2):136-46.

9. Kim MY, Han K. The Effect of Infertile Women's Lifestyle on the Number of Their Childbirth in 2 Years. *J Health Info Stat* 2021;46(3):309-14.

10. Mirghafourvand M, Sehhati F, Rahimi M. Health-promoting Lifestyle and its Demographic Predictors in Infertile Couples Referred to Infertility Clinic of Tabriz Al-Zahra Hospital, 2013. *J Caring Sci* 2014;3(3):175-84.

11. Rooney KL, Domar AD. The impact of lifestyle behaviors on infertility treatment outcome. *Curr Opin Obstet Gynecol* 2014;26(3):181-5.

12. van Elten TM, Karsten MDA, Geelen A, Gemke RBJ, Groen H, Hoek A, van Poppel NM, Roseboom TJ. Preconception lifestyle intervention reduces long term energy intake in women with obesity and infertility: a randomised controlled trial. *Int J Behav Nutr Phys Act* 2019;16(1):3.

13. Orio F, Muscogiuri G, Ascione A, Marciano F, Volpe A, La Sala G, Savastano S, Colso A, Palomba S. Effects of physical exercise on the female reproductive system. *Minerva Endocrinol* 2013;38(3):305-19.

14. Han K, Kim MY. Factors Predicting afterward Childbirth for Infertile Women: The Intensity of Physical Activity. *J Korean Soc Matern Child Health* 2021;25(3):197-203.

15. Kim CH, Lee SH. Characteristics and effectiveness of online-based intervention for infertile women: a systematic review. *J Muscle Jt Health* 2018;25(3):205-17.

16. van Dammen L, Wekker V, de Rooij SR, Mol BWJ, Groen H, Hoek A, Roseboom TJ. The effects of a pre-conception lifestyle intervention in women with obesity and infertility on perceived stress, mood symptoms, sleep and quality of life. *PLoS One* 2019;14(2):e0212914.

17. Zhang J, Si Q, Li J. Therapeutic effects of metformin and clomiphene in combination with lifestyle intervention on infertility in women with obese polycystic ovary syndrome. *Pak J Med Sci* 2017;33(1):8-12.

18. Wekker V, Karsten MDA, Painter RC, van de Beek C, Groen H, Mol BWJ, Hoek A, Laan E, Roseboom TJ. A lifestyle intervention improves sexual function of women with obesity and infertility: A 5-year follow-up of a RCT. *PLoS One* 2018;13(10):e0205934.

19. Bisht S, Banu S, Srivastava S, Pathak RU, Kumar R, Dada R, Mishra RK. Sperm methylomealterations following yoga-based lifestyle intervention in patients of primary male infertility: A pilot study. *Andrologia* 2020;52(4):e13551.

20. Humaidan P, Haahr T, Povlsen BB, Kofod L, Laursen RJ, Alshjberg B, Elhaek HO, Esteves SC. The combined effect of lifestyle intervention and antioxidant therapy on sperm DNA fragmentation and seminal oxidative stress in IVF patients: a pilot study. *Int Braz J Urol* 2022;48(1):131-56.

21. Park JM. The relationship between social support and infertility stress in infertile men. *J Korea Convergence Soci* 2020;11(8):107-13.

22. Gerrits T, Van Rooij F, Esho T, Ndegwa W, Goossens J, Bilajbegovic A, Jansen A, Kioko B, Koppen L, Kemunto Migiro S, Mwenda S, Bos H. Infertility in the Global South: Raising awareness and generating insights for policy and practice. *Facts Views Vis Obgyn* 2017;9(1):39-44.

23. Tolahunase MR, Sagar R, Chaurasia P, Dada R. Impact of yoga-and meditation-based lifestyle intervention on depression, quality of life, and cellular aging in infertile couples. *Fertil Steril* 2018;110(4):e67.

24. Kim MO, Hong JE, Lee EY. The relationship between fatigue, health-promoting behavior, and depression among infertile women. *Korean J Women Health Nurs* 2019;25(3):273-84.