

IMPACT OF OBESITY ON THE TREATMENT OF INFERTILITY**Dr. Pranali P. Dounde*¹ and Dr. Prasad P. Dounde²**

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ABSTRACT

Infertility is the failure to achieve conception by an apparently healthy couple of reproductive age with normal marital relation continuously for one year or more is considered as *vandhyatva* or infertility. Many factors affect the fertility of women one of which is considered as obesity. Fertility can be negatively affected by obesity in women. In ancient text obesity is considered as *ashtoninditiya*. *Acharya Kashyapa* has mentioned *pushpaghni* having obesity, hirsutism and menstrual abnormality. Obesity favors the menstrual irregularity, chronic oligo-anovulation and infertility in women of reproductive age. The adverse

effect of obesity is evident in polycystic ovarian syndrome. Elevated body mass index can decrease fertility in women. It increases the risk of ovulatory dysfunction and insulin resistance and also decreases the chance of conception with regular cycles.

KEYWORDS: Obesity, Infertility, *Vandhyatva*, Polycystic ovarian disease.

INTRODUCTION

Every human being has an inherent and intense desire to continue his own race. Becoming a mother is the most cherished desires of every women and failure to conceive is a stigma in society. The female suffer a lot of unfair and inhuman behavior if she is not able to conceive.

Infertility is a failure to conceive within one or more years of regularly unprotected coitus.^[1] Today this problem increased due to change in lifestyle, poor nourishment, and unhealthy food habits. In this new era, with the advance and improved lifestyle physical workload has been reduced leading to accumulation of fat in the body, called obesity. This is a multifactorial disease.^[3]

According to the World Health Organization increase in BMI (body mass index) of ≥ 25 is termed as overweight and $\geq 30 \text{ kg/m}^2$ is termed as obesity.^[2] Obesity is worldwide emerging as an epidemic leading to many fertility problems in females. Obesity in women increases the time of conception. The risk of un-ovulatory infertility is 2.7% in women with BMI $\geq 32 \text{ kg/m}^2$ at the age of 18, while the chance of spontaneous conception decrease by 5% with each unit increase in BMI.^[2]

Obesity is associated with PCOS (polycystic ovarian syndrome) which is a heterogeneous condition characterized by oligo or anovulation, hyperandrogenism, menstrual irregularities, and subfertility. Obesity occurs in 30-75 % of women with PCOS.^[3]

In Ayurveda, obesity / *sthoulya* are considered as a *yapya vyadhi* and included it in *ashtoninditiya purusha*^[4] due to its fatal consequences on the health of the person. *Sthoulya* occurs due to *dhatwagnimandya*, leading to *kapha* and *vata vriddhi* further adding *medodusti* causing all other datus transformed into *medadhatu*. This condition is *Santarpanjanya vikara*, causing *Artavakshaya*.^[5]

EPIDEMIOLOGY

Before the 20th century, obesity was rare. In 1997, the WHO recognized obesity as a global epidemic. As of 2008, WHO estimated that at least 500 million adults are obese (about 15%) with a higher rate among women than in men. The rate of obesity increases with age at least up to 50 to 60 years old.

WHO classification of obesity^[6]

Sr. No.	Classification	BMI
1	Underweight	< 18.5
2	Normal weight	18.5 - 24.9
3	Overweight	25.0 – 29.9
4	Obesity class 1	30.0 – 34.9
5	Obesity class 2	35.0 – 39.9
6	Obesity class 3	40 +

NEED FOR STUDY

Obesity directly affects the fertility of women and increase in weight leads to the poor outcome of infertility treatment. Obesity is emerging as an epidemic in the modern era and thus, leading to arise many questions on the health of the community. Early onset of obesity favors the development of menstrual irregularities, chronic oligo-anovulation, and infertility

in adult age. Obesity intensifies the characteristic of PCOS including disturbed menstrual cycles.^[7]

ETIOLOGICAL FACTORS

According to Ayurveda following are the main etiological factors with correlation to modern medicine.^[8]

<i>Avyayamad</i>	Lack of exercise
<i>Divaswap</i>	Daytime sleeping
<i>Sleshmal ahara</i>	Fattening diet and food
<i>Avyavay</i>	difficulty in sexual intercourse
<i>Achinta</i>	NO anxiety
<i>Bijadosha</i>	Genetic Factors
<i>Prameh purvarupam</i>	Features of hyperinsulinemia
<i>Agnimandya</i>	Loss of appetite
<i>Medovrutta vayu</i>	Lipotoxicity
<i>Ahara asamyama</i>	Lack of restraint
<i>Dhatvagnimandya</i>	tissue indigestion (hormonal imbalance)

All the above factors lead to *medovruddhi*. The increased *medadhatu* obstruct the further nourishment of *Asthi*, *Majja*, and *Shukradhatu* leading to *Alasya*, fatigue, and *krushravayavaya*.

According to the modern view, an increase in BMI leads to increase in insulin level and insulin resistance. Increased insulin causes hyperandrogenemia by increasing ovarian androgens.^[9] Hyperandrogenemia result in granulosa cell apoptosis while peripheral conversion of androgen to estrogen in adipose tissue inhibits gonadotropin secretion which affects the development of ovarian follicles.^[10]

The insulin resistance, on the other hand, contributes to anovulatory infertility. A BMI greater than 30 is associated with an abnormality in estrogen metabolism. For the synthesis of androgens to oestrone and oestradiol; fat act as a steroid reservoir and precursor. The oestrone is not a potent steroid thus on exposure leads to shedding of endometrium early leading to anovulatory cycles.

Increase in insulin level act on ovarian tissue leading to disturbed endocrine activity and menstrual profile and hence, infertility in obese women.^[11]

IMPACT OF OBESITY ON TREATMENT OF INFERTILITY

Obese women tend to respond poorly to treatment as ovulation and pregnancy rates are lower. Obesity and insulin resistance are predictors of suboptimal outcome in infertility treatment. Women with a high BMI need higher doses of FSH to achieve ovulation.^[12] These women also face a higher risk of cycle cancellation and are less likely to ovulate. A study showed that in comparison with women of normal weight, overweight women (BMI >25<30kg/m²) have significantly fewer oocytes and there is increased risk of miscarriage in overweight and obese women after spontaneous conception.^[13]

TREATMENT FOR STHOULYA

Acharya Charaka

1. *Guru apatarpan ahara*
2. *Vataghna annapan*
3. *Ruksh, ushna, Tikshna basti*
4. *Langhan and Rukshan.*

Acharya Sushruta

1. *Virukshana Chedana*
2. *Lekhan basti*

Acharya Vagbhat

1. *Guru apatarpan*
2. *Medo anil Shleshma haran*

All Acharya has emphasized on *langhan* and *rukshan*.

Langhan

Diet: A diet which is *guru, ruksh, katu, tikta*. Diet alleviates *vata* and *kapha* are found suitable to reduce fat. Ex. Basmati rice, barley, green gram, red gram, horse gram are suitable for obese women. Honey is the only sweetener that is allowed for treating obesity. Drink warm water instead of regular water. Eat vegetables of astringent, bitter and pungent taste. Fasting for one or two days in a week or partial fasting and drinking fruit juice, warm water, and honey will be helpful.

Exercise: walking, swimming, dancing are the few exercises which can be helpful for reducing weight. Asanas like paschimottanasan, bhujangasan, pavanmuktasan are also helpful.

Sleep: Day time sleeping is avoided.

Shodhana chikitsa

Abhyanga, Udvartana, parishek, swedan, vaman, virechana basti, raktamokshana all the *shodhana karmas* are used according to the patient's *prakruti*.

Shamana chikitsa

Acharya Charaka has mentioned *Lekhaniya dashemani dravyas*- a group of 10 drugs, these drugs exclusively do Lekhan karma (reduce excessive fat). They are *Musta, Kushata, Haridra, Vacha, Ativisha, Katurohini, Chitraka, Chirbilwa, Daruharidra, Hemvati, Karanja*.

CONCLUSION

In obese women, diet and lifestyle changes are considered first-line treatment. A study shows that diet with low glucose level provides better control on hyperinsulinemia and the metabolic consequences as well as menstrual cycles. In a majority of women, a period of 3-6 months is required for losing 5-10% in body weight. Taking into account that obesity can adversely affect human reproduction by increasing prenatal and maternal risks it is advisable to reduce their weight before attempting for conception. Thus, it is evident from the above information that weight reduction prior to any intervention in obese women for infertility would be advisable for the improvement of treatment.

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