

**KFOG**  
**JOURNAL**  
**OBESITY AND ITS  
PROBLEMS IN WOMEN**

September - October | 2022 VOL: 16, No: 5



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## JOURNAL

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**Dr.Sareena Gilvaz**  
MD DGO  
President KFOG

This topic on **obesity across the ages** is a hot issue to day. The enormity of“obesity has now reached a pandemic proportion and is of immense concern“to most practicing doctors. It has its impact from adolescence to menopause, from pregnancy to malignancy and is a huge social problem. I am happy that Dr.Suchitra Sudhir has taken it upon herself, to address these various issues under various headings and brought out very valuable suggestions which would be of immense benefit to the readers at large

**Dr.Sareena Gilvaz**  
MD DGO  
President Kerala Federation of  
OBGYN



## Dr. Venugopal M.

Secretary KFOG



### SECRETARY'S MESSAGE

Dear Friends

Greetings to all of you and your families.  
Hope everyone has had a wonderful Onam and spent some quality time with near and dear.

It is heartening to note that this year's first KFOG Bulletin is ready for release.

The topic Obesity is so relevant across the entire span of a woman's life. It has been extensively dealt with by each one of the contributors.

I wish to congratulate Dr Suchitra Sudhir and also each one who has contributed to this compilation.

I am sure it will make an interesting read and look forward to more such interesting editions of the Bulletin

**Dr. Venugopal M.**

Secretary KFOG

# FOREWORD



Dear friends

First and foremost let me appreciate Dr Suchitra and team for selecting the topic of obesity and its problems in women for the KFOG journal.

Obesity is a most relevant topic ,as it is one of the most vexing problems in the current era. Obesity is a major risk factor in the development of the metabolic syndrome. Obesity originates in the intrauterine period itself, and along with environmental factors, genetic factors also play a role in the development of obesity.

Gynecologists can play a very important role in intervening with this epidemic of obesity in women, as we see her in various stages of her life, starting from her intrauterine period, teenage, reproductive years, midlife and beyond.

We as clinicians can guide our women to mould their physique in various stages of their life, thus preventing and treating this disorder with the help of diet, exercise, medications and other interventions.

All the articles ranging from teenage to midlife, along with problems during surgery are well written and I am sure that this volume will be a clinical guide to all practicing gynecologists.

Wishing this endeavour all success  
With warm regards

**Dr P K Syamala**



Dear Teachers and Colleagues,

**Onam greetings!** After two years of cloistered celebrations, people are in a very festive and positive mood. Festivity is always associated with lots of fried, sweet, tasty food and an overdose leads to.... Obesity... Which is the root of all diseases, especially in women! So, this journal traces the obnoxious route of obesity from teenage to mid age (no one is old, these days!) ... its risks in pregnancy, surgery etc. We have a bunch of outstanding authors, from the North Zone of Kerala... Kasaragode, Kannur, Calicut and Wayanad who have written informative articles. These topics will be given extra inputs from the experts from various parts of India. We look forward to hearing from both authors and experts during the fifth journal event in mid September.

Our dynamic Associate Editor, Dr Cynthia Unni has left no stone unturned to make this journal and the opening event memorable.

Thank you all for your support,

Regards,

**Dr Suchitra Sudhir.**

Editor, KFOG Journal 2021-23

Respected Seniors and dearfriends

**Warm Onam greetings to all**

An obese woman is a worry to all..especially being a gynecologist.. you encounter her in teenage, pregnancy and middle age, in your infertility clinic, and as a nightmare on the operating table.

We have tried to encompass the major areas of concern in obesity in our field..do read and enrich yourselves. Our authors are an enviable group of young experts who have made their mark in their respective fields.

My most sincere thanks to my beloved senior, Suchithra Madam, our able and most efficient editor of KFOG, who is the epitome of inspiration and encouragement .Always blooming with brilliant ideas, she made this great dream possible for me. We also thank the magnificent leadership of KFOG, with our most magnetic Sareena madam and very strong secretary Dr Venugopal in the realm.

I also thank my beloved teacher Prof. P.K Syamala for being our patron in this venture. Seeking the blessings of all my teachers who inspire me every moment!

Yours

**Dr Cynthia Unni**

Associate editor  
DGO.DNB



## Dr Sruthi

Consultant Baby Memorial  
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# Obesity in the Delicate Teenager

**“Doctor , my daughter is 16 years old and she has PCOD. What do I do ?”**

“Doctor , my daughter is gaining weight. She also has no menses since 4 months”

This is a common malady among mothers these days in our OPD.

Obesity is a complex condition that interweaves biological, developmental, environmental, behavioural, and genetic factors; it is a significant public health problem. The most common cause of obesity throughout childhood and adolescence is an inequity in energy balance; that is, excess caloric intake without appropriate caloric expenditure.

The definition of obesity based on BMI is known to all. Fat percentage has more significance as compared to BMI; a factor to be aware about.

Prevalence rate of childhood obesity In India is 15% (5 – 15 years ).India has second highest number of obese children in the world. Kerala statistics is equally terrifying. Comparing the genders ,males has more prevalence of 7.3% as compared to females 6.8%.

This is a trend not expected in a developing country where malnourishment is the expected norm.

A slight difference is seen in rural and urban areas; rural areas still has malnourishment in prevalence.



The role of epigenetics and the gut microbiome, as well as intrauterine and intergenerational effects, have recently emerged as contributing factors to the obesity epidemic.

Monogenic obesity is seen since before 2 years of age as compared to polygenic which manifests later. The epigenetic phenomenon is explained as alteration in gene expression without changing the underlying DNA sequence. Various factors mentioned below can cause addition of methyl groups behind a DNA sequence which can turn on and off the DNA expression.

Parental obesity correlates with a higher risk for obesity in their children. Prenatal factors including weight gain during pregnancy, high birth weight, and gestational diabetes are associated with increased risk for later obesity. Paradoxically, intrauterine growth restriction with early infant catch-up growth is associated with the development of central adiposity and cardiovascular risk. Formula feeding and early protein intake is also associated with later life obesity.

Developmental origins of health and disease (DOHaD) shows that early life environment can impact the risk of chronic diseases later in life due to fetal programming secondary to epigenetic changes. Maternal nutrition during the prenatal or early postnatal period may trigger these epigenetic changes and increase the risk for chronic conditions such as obesity, metabolic and cardiovascular disease due to epigenetic modifications that may persist and cause intergenerational effect on the health of children and adults. Similarly, adverse childhood experiences have been linked to a broad range of negative outcomes through epigenetic mechanisms and promote unhealthy eating behaviours. Other factors such as diet, physical activity, environmental and psychosocial stressors can cause

epigenetic changes and place an individual at risk for weight gain.

Parents' excessive restriction of food choices may result in poor self-regulation of energy intake by their child or adolescent. This action may inadvertently promote overconsumption of highly palatable restricted foods when available to the child or adolescent outside of parental control with resultant excessive weight gain. In the past 3 years, COVID 19 has caused sedentary lifestyle among our children with no school and restricted movement resulting in boredom and binge eating.

Obesity increases the risk of developing early puberty (premature adrenarche, thelarche, or precocious puberty in children), menstrual irregularities in adolescent girls, sleep disorders such as obstructive sleep apnea (OSA), cardiovascular risk factors that include Prediabetes, Type 2 Diabetes, High Cholesterol levels, Hypertension, NAFLD, and Metabolic syndrome. Additionally, obese children and adolescents can suffer from psychological issues such as depression, anxiety, poor self-esteem, body image and peer relationships, and eating disorder. In children, abnormal behaviors and neurocognitive dysfunction are the most critical and frequent end-organ morbidities associated with OSA.

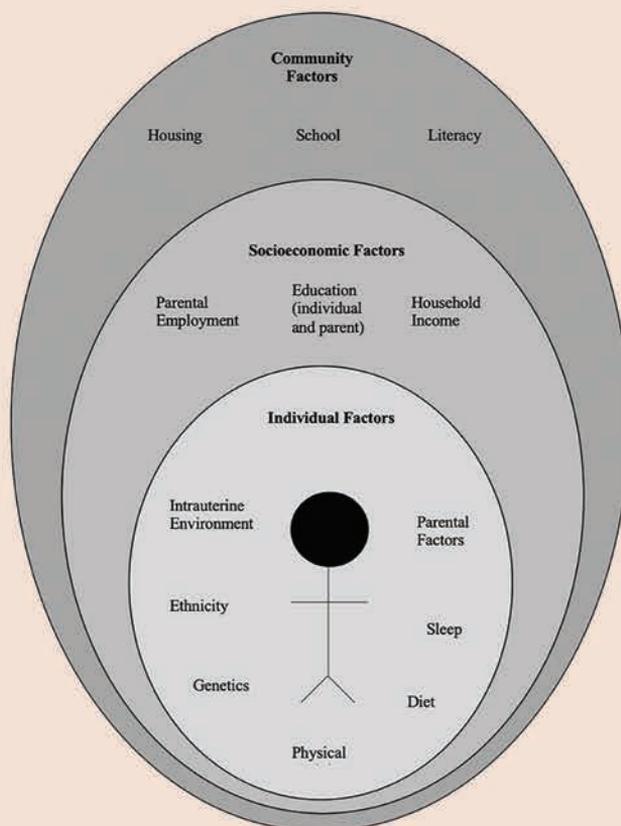
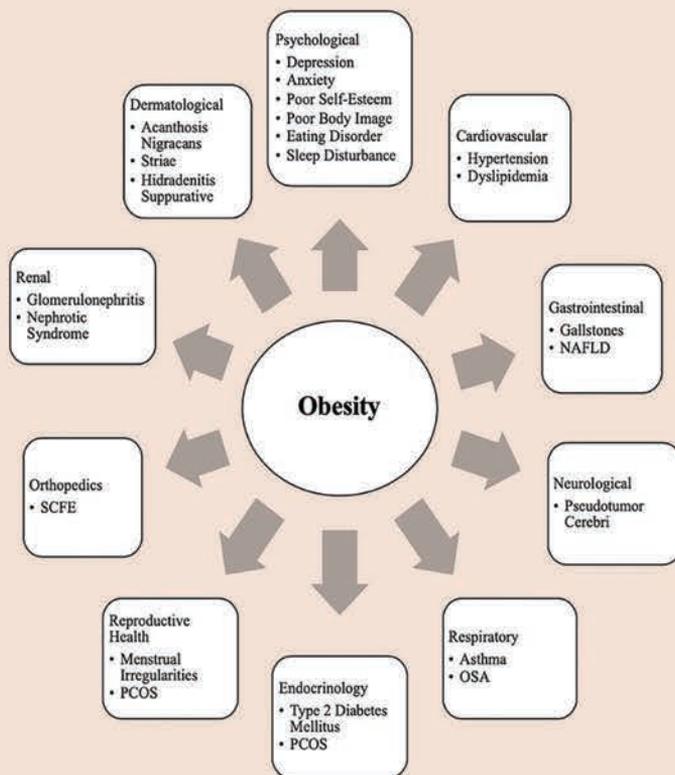
PCOD is the most common disease associated with obesity as far as a gynaecologist is concerned. The obesity and hormonal changes and the symptoms associated form a vicious cycle from which it is difficult for the child to get out. The best and the only way is to lose the weight and change the lifestyle.

So far, interventions for overweight/obesity prevention have mainly focused on behavioural changes in an individual such as increasing daily physical exercise or

improving quality of diet with restricting excess calorie intake. However, these efforts have had limited results. Family-based multi-component weight loss behavioural treatment is the gold standard for treating childhood obesity, and it is having been found useful in those between 2 and 6 years. In addition to behavioural and dietary recommendations, changes in the community-based environment such as promotion of healthy food choices by taxing unhealthy foods, improving lunch food quality and increasing daily physical activity at school and childcare centres, are extra measures that are needed. These interventions may include a ban on unhealthy food advertisements aimed at children as well as access to playgrounds and green spaces where families can feel their children can safely recreate. Also, this will limit screen time for adolescents as well as younger children.

The role of pharmacological therapy in the treatment of obesity in children and adolescents is limited. Orlistat is the only FDA approved medication for weight loss in 12-18-year-olds but has unpleasant side effects.

So the weight of this epidemic among our children has to be borne by the governing bodies and a mass effort has to be taken by people starting from teachers and parents to community centres and organizations or this epidemic is going to turn into a pandemic which will insert its talons into the heart of the world.





**Dr Jayalakshmi Suraj**

Director of Dreamflower  
ivf centre kasaragod

# OVERWEIGHT and INFERTILE

Over the past four decades, obesity (body mass index [BMI]  $>30$  kg/m<sup>2</sup> in Western nations) has become a global epidemic affecting an estimated 603.7 million adults, representing 12% of the world's adult population.

Obesity has adverse effects on reproduction, including on ovulatory and menstrual function, natural fertility and fecundity rates, infertility treatment success rates, infertility treatment safety, and obstetric outcomes.

## DEFINITION OF OBESITY

Obesity is a disease of excess body fat, and it increases the risk of a number of common conditions, including type 2 diabetes, dyslipidemia, hypertension, coronary heart disease, cholelithiasis, endometrial and postmenopausal breast cancer, stroke, osteoarthritis, and infertility.

Body fat is difficult to measure directly and is often estimated by the BMI calculation, a formula first described in the 19th century and calculated as body weight in kilograms divided by height in meters squared.



**WHO classification of obesity.**

Classification	BMI (kg/m <sup>2</sup> )	Risk of comorbidities
Underweight	<18.5	Low (but risk of other clinical problems increased)
Normal range	18.5–24.9	Average
Overweight	≥25	
Preobese	25–29.9	Increased
Obese	≥30	
Obese class 1	30–34.9	Moderate
Obese class 2	35.0–39.9	Severe
Obese class 3	≥40	Very severe

*Note:* Adapted from: Obesity: preventing and managing the global epidemic. Report of a WHO Consultation (WHO Technical Report Series 894), 2000 (19). BMI = body mass index; WHO = World Health Organization.

*Practice Committee of the American Society for Reproductive Medicine\*asm@asrm.org. Obesity and reproduction. Fertil Steril 2021.*

individuals with a normal BMI. This number may be particularly significant for reproductive-aged individuals because most body fat accrues after the age of 19 years in women and after the age of 20 years in men. Adult weight gain is an important risk factor for chronic disease and reduced fecundity.

### Obesity and Female Reproduction

Ovulatory dysfunction is more common in women with obesity. Much of

A BMI of 30 kg/m<sup>2</sup> is often used to define obesity at a population level because it represents a reasonable cutoff in balancing the sensitivity and specificity for identifying people at risk of disease related to excess body fat.

Of note, different BMI cutoffs have been recommended for specific populations on the basis of the local prevalence of adiposity-related disease and population-specific associations between BMI, percentage of body fat, and health risks.

Body mass index cutoffs are easily accessible as clinical screening tools, but they do not account for individual differences in frame size and lean body mass. Additionally, they do not help in determining disease risk related to body fat for individuals who are classified as normal BMI, nor do they differentiate by fat distribution pattern (i.e., “apple” vs. “pear” fat distribution), with central obesity associated with greater metabolic risk. Adult weight gain is a readily interpretable number that is more specific to individuals, and it addresses risk tied to excess body fat in

this ovulatory dysfunction is likely confounded by a diagnosis of polycystic ovary syndrome. Central obesity and visceral fat can result in insulin resistance and hyperinsulinemia. Insulin resistance promulgates hyperandrogenemia through direct actions on the ovary and through decreased hepatic sex hormone-binding globulin production, often suggestive of PCOS. Hyperandrogenemia, increased peripheral aromatization of androgens to estrogens in adipose tissue, storage of sex steroids in adipose tissue, altered levels of leptin and other adipokines, altered insulinlike growth factor binding protein production, and impaired granulosa cell function all contribute to menstrual irregularities through disruption of the hypothalamic–pituitary–gonadal axis.

### OBESITY AND IVF

Several large retrospective analyses (1,721 to 8,145 women undergoing assisted reproductive technologies [ARTs]) also confirm that obesity impairs ovarian responsiveness to gonadotropin stimulation (i.e., increased duration, amount of

gonadotropin administered, increased cycle cancellation; fewer oocytes retrieved).

The ability to deliver optimal care to women with obesity can be limited by difficulties in transvaginal ultrasound imaging of the ovaries and safety considerations, such as difficulty in maintaining an airway during oocyte retrieval. Women with obesity undergoing in vitro fertilization (IVF) have an altered follicular environment with higher levels of insulin, markers of inflammation, and elevated levels of free fatty acids, which were correlated with abnormal cumulus-oocyte complexes. Oocytes from women who are overweight or obese are smaller than those from normal-weight controls. However, fertilization rates have been inconsistently linked to maternal BMI.

Obesity impairs oocyte quality through mitochondrial dysfunction, increases reactive oxygen species, and is associated with abnormal meiotic spindles and chromosomal alignment. In a linear manner, higher BMI is correlated with lower implantation and clinical pregnancy rates and LBRs when undergoing IVF/intracytoplasmic sperm injection treatment. This effect is most prominent in younger reproductive-aged women and is significantly attenuated with

advancing reproductive age. However, the age-related decline in fertility has a greater impact than BMI on LBR at older ages, suggesting that taking time to lose weight before IVF may be detrimental for older women with overweight or obesity.

## OBESITY AND MISCARRIAGE RATES

Obesity has been associated with an increased risk of pregnancy loss in most, but not all, studies. Differences in outcomes between studies are likely related to varying levels of comorbidities and the multifactorial mechanisms through which BMI can influence pregnancy outcomes. Both obesity and miscarriage have been associated with thyroid dysfunction, insulin resistance, leptin resistance, lipotoxicity and inflammation, as well as sleep dysfunction and mental health.

Higher rate of euploid miscarriages in women with obesity suggests that higher BMI is an independent risk factor for miscarriage.

## MATERNAL-FETAL ENVIRONMENT

Maternal obesity is associated with increased obstetric and neonatal risk.

Obstetric complications of singleton pregnancies among women without prepregnancy diseases by prepregnancy obesity, Consortium on Safe Labor 2002-2008.

Outcome	Normal BMI			Overweight			Obese class 1			Obese class 2			Obese class 3		
	No. (%)	RR	AR%	No. (%)	RR	AR%	No. (%)	RR	AR%	No. (%)	RR	AR%	No. (%)	RR	AR%
Gestational hypertensive disorders	3,351 (5)	-	-	2,096 (8)	1.65 (1.57-1.74)	3	1,274 (11)	2.34 (2.20-2.49)	6	631 (13.2)	2.78 (2.56-3.01)	8.2	536 (17.3)	3.55 (3.26-3.86)	12.3
Gestational diabetes mellitus	1,834 (2.8)	-	-	1,495 (5.7)	1.99 (1.86-2.13)	2.9	959 (8.3)	2.94 (2.73-3.18)	5.5	517 (10.8)	3.97 (3.61-4.36)	8	452 (14.6)	5.47 (4.96-6.04)	11.8
Cesarean delivery	14,872 (22.4)	-	-	7,562 (28.7)	1.26 (1.23-1.29)	6.3	3,936 (33.9)	1.49 (1.45-1.53)	11.5	1,830 (38.3)	1.7 (1.64-1.77)	15.9	1,457 (46.9)	2.01 (1.93-2.10)	23.6
Stillbirth	206 (0.3)	-	-	91 (0.4)	1.07 (0.83-1.37)	0.1	53 (0.5)	1.43 (1.05-1.96)	0.2	15 (0.3)	1.01 (0.59-1.74)	0	14 (0.5)	1.41 (0.82-2.45)	4.7
Large for gestational age	5,272 (7.9)	-	-	3,171 (12)	1.52 (1.45-1.58)	4.1	1,584 (13.7)	1.74 (1.65-1.83)	5.8	712 (14.9)	1.93 (1.79-2.07)	7	538 (17.3)	2.32 (2.14-2.52)	9.4
Congenital anomaly	3923 (5.9)	-	-	1,673 (6.4)	1.08 (1.02-1.14)	0.5	728 (6.8)	1.07 (0.99-1.16)	0.9	317 (6.6)	1.12 (1.00-1.25)	0.7	449 (14.5)	1.2 (1.05-1.36)	1.4
NICU admission	5,880 (8.9)	-	-	2,848 (10.8)	1.16 (1.11-1.21)	1.9	1,335 (11.5)	1.20 (1.13-1.27)	2.6	610 (12.8)	1.3 (1.20-1.41)	3.9		1.38 (1.26-1.51)	5.6

Note: RR adjusted for maternal age, maternal race, insurance type, marital status, parity, smoking and alcohol use. AR% = attributable risk percent, percent of women with complication in the obesity class category minus the percent of women with the complication in the normal-weight category; BMI = body mass index; NICU = neonatal intensive care unit; RR = relative risk.  
Adapted from: Kim SS, Zhu Y, Grantz KL, Hinkle SN, Chen Z, Wallace ME, et al. Obstetric and neonatal risks among obese women without chronic disease. *Obstet Gynecol* 2016;128:104-12.  
Practice Committee of the American Society for Reproductive Medicine. *asrm@asrm.org*. Obesity and reproduction. *Fertil Steril* 2021.

## OBESITY AND MALE REPRODUCTION

As the prevalence of obesity has increased steadily over more than three decades, a concurrent decline in semen quality has been described. The mechanisms by which obesity may result in diminished semen quality and male factor infertility include endocrine alterations, sexual dysfunction, and other medical issues including diabetes mellitus, sleep apnea, or scrotal hyperthermia due to body habitus. One purported and generally accepted mechanism for lower sperm counts is related to aromatization of testosterone to estradiol in peripheral adipose tissue with resultant estradiol-mediated negative feedback and suppression of the hypothalamus–pituitary–testis axis

### MANAGEMENT

#### Medical Treatment

Weight loss medications may be beneficial when used in conjunction with lifestyle

interventions and may increase the likelihood that patients adhere to behavioral and lifestyle interventions, perhaps because of the positive feedback of the rapidity and degree of weight loss. Most result in weight loss through temporary effects on appetite, and thus, patients must reduce energy intake and/or increase energy expenditure in the long term to sustain weight loss achieved with medications. Phentermine/topiramate, orlistat, naltrexone/bupropion, and liraglutide are all FDA-approved for the chronic management of obesity. The average expected weight loss with these medications is 2.9–5.8 kg, making them less efficacious in comparison to the phentermine/topiramate combination. It is worth noting that very few of these medications have been studied in the context of infertility, and all are currently considered pregnancy category X

Drug name	FDA approval	DEA schedule	Average weight loss	Mechanism of action	Side effects/warnings	Considerations/contraindications
Sympathomimetics Phentermine Diethylpropion Benzphetamine Phendimetrazine	Short-term use (≤3 months)	I/ IV III II	3.6 kg	Release of catecholamines such as dopamine and norepinephrine to suppress appetite	Headache, elevated blood pressure, elevated pulse rate, insomnia, dry mouth, constipation, anxiety, restlessness, tremor	Pregnancy, breastfeeding, anxiety disorders, history of heart disease, uncontrolled hypertension, MAO inhibitors, pregnancy, breastfeeding, hyperthyroidism, glaucoma, history of drug abuse, sympathomimetic amines
Orlistat	Chronic use	None	2.6 kg	Lipase inhibitor	Decreased absorption of fat-soluble vitamins, steatorrhea, oily spotting, flatulence with discharge, fecal urgency, oily evacuation, increased defecation, fecal incontinence	Cytoposines, chronic malabsorption syndrome, pregnancy, breastfeeding, cholestasis, levothyroxine, warfarin, antiepileptic drugs
Naltrexone SR/bupropion SR	Chronic use	None	5.0 kg	Opioid receptor antagonist, dopamine and norepinephrine reuptake inhibitor	Nausea, constipation, headache, vomiting, dizziness, insomnia, dry mouth, diarrhea, increase in blood pressure and heart rate, hepatotoxicity, angle-closure glaucoma	Pregnancy and breastfeeding, uncontrolled hypertension, seizure disorders, anorexia nervosa, bulimia, drug or alcohol withdrawal, MAO inhibitors, chronic opioid use
Liraglutide	Chronic use	None	5.3 kg	GLP-1 receptor agonist	Nausea, vomiting, pancreatitis	Pregnancy, breastfeeding, personal or family history of medullary thyroid cancer or multiple endocrine neoplasia type 2

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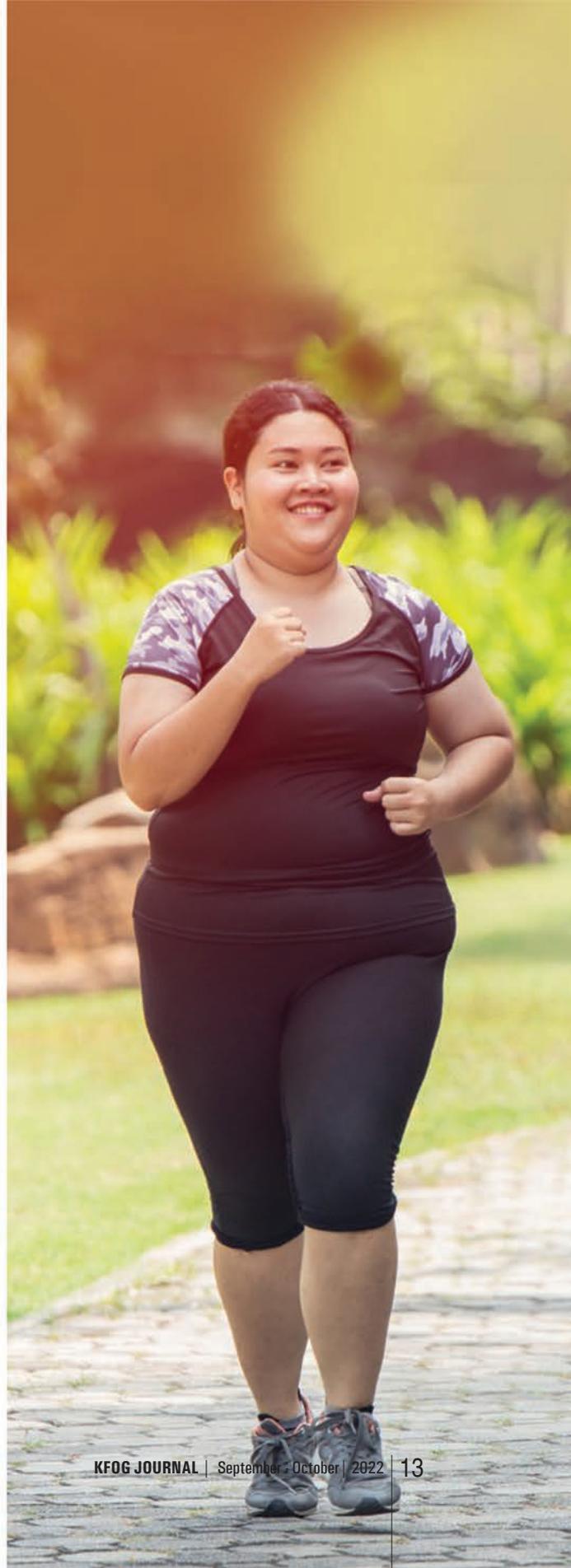
Metformin, although frequently used in patients with PCOS, is not considered a weight loss medication. It is a biguanide that increases peripheral sensitivity to insulin and inhibits hepatic glucose production, resulting in decreased circulating insulin levels. It may promote weight loss when used in combination with lifestyle interventions, although studies suggest that weight loss experienced with metformin is minimal (1.1 kg)

### **LIFE STYLE MODIFICATION**

The lifestyle modification intervention consisted of caloric restriction, behavioral modification, increased physical activity, and weight loss medications (sibutramine or orlistat if the BMI was at least 30 kg/m<sup>2</sup>). Caloric restriction consisted of prescribed diets centered on meal replacements. The diet was designed to create a caloric deficit on the basis of initial weight with at least 15% calories from protein, less than 30% calories from fat, and the remaining calories from carbohydrate. Physical activity included brisk walking or similar aerobic activity 5 days a week with the initial goal of 10 minutes per day, gradually increasing over 4 months to 30–35 minutes per day, for a total activity goal of 150 minutes per week. Women in the lifestyle intervention arms also underwent behavioral modification sessions delivered by trained study coordinators. Smaller RCTs and observational studies have reported conflicting evidence for the benefit of lifestyle interventions on fertility outcomes, with most studies either being underpowered to detect a difference or demonstrating no effect on LBR

### **Surgical Treatment**

Bariatric surgery is currently the most effective intervention for significant and sustained weight loss regardless of the type of procedure used . Patients may lose as much as 70% of excess weight within 12



months after surgery, and on average, 5 years after surgery, patients maintain approximately 50% of their excess weight loss. These procedures cause weight loss by restricting the amount of food that the stomach can hold, by causing malabsorption of food, or by a combination of restriction and malabsorption. According to the American Society for Metabolic and Bariatric Surgery (ASMBS), the most commonly performed bariatric procedures are Roux-en-Y gastric bypass, sleeve gastrectomy, adjustable gastric band, and biliopancreatic diversion with duodenal switch, with the Roux-en-Y gastric bypass considered the gold standard of weight loss surgery. Delaying pregnancy until 1–2 years after bariatric surgery has been recommended to avoid fetal exposure to nutritional deficiencies from rapid maternal weight loss, and the ASMBS recommends waiting 12–18 months

## **BMI THRESHOLDS AND INFERTILITY TREATMENT**

Arbitrary BMI thresholds, below which fertility treatment is permitted and above which fertility treatment is denied until the patient loses weight, have been enacted or contemplated by some programs as well as some national health systems. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists has recommended a BMI threshold of 35 kg/m<sup>2</sup>, and New Zealand limits access to publicly funded IVF to women with a BMI of <32 kg/m<sup>2</sup>. In the United Kingdom, the Clinical Commissioning Groups typically set BMI thresholds in the 30–35 kg/m<sup>2</sup> range, above which women cannot access publicly funded

fertility care. In North America, there are no recommended national BMI thresholds. A survey of Canadian IVF centers found that 50% of programs had a declared BMI threshold, which ranged from 35 to 45 kg/m<sup>2</sup>. The most frequent reason given for having a cutoff was concern about obstetric risk.

## **CONCLUSION**

- \_ Obesity should not be the sole criteria for denying a patient or couple access to infertility treatment.
- \_ Individual programs should be empowered to adopt program-specific BMI thresholds solely on the basis of the ability to safely perform oocyte retrievals and other procedures within their clinical environment.
- \_ When obesity increases medical risks, a process of shared decision-making should be undertaken, balancing patient autonomy with nonmaleficence

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American Society for Reproductive Medicine, Birmingham, Alabama
- World Health Organization. WHO Technical Report Series 894. Available at: [https://books.google.com/books?hl=en&lr=&id=AvnqOsqv9doC&oi=fnd&pg=PA1&dq=WHO+Technical+Report+Series+894&ots=6WF2ao\\_V8P&sig=4x3I66StMIP9UkonTtJFRoEXrVfw#v=onepage&q=WHO%20Technical%20Report%20Series%20894&f=false](https://books.google.com/books?hl=en&lr=&id=AvnqOsqv9doC&oi=fnd&pg=PA1&dq=WHO+Technical+Report+Series+894&ots=6WF2ao_V8P&sig=4x3I66StMIP9UkonTtJFRoEXrVfw#v=onepage&q=WHO%20Technical%20Report%20Series%20894&f=false)

Accessed June 2, 2021



## **Dr Darsana K**

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# **OBESITY PROBLEMS IN PREGNANCY**

**O**besity is considered as a global pandemic, often a neglected disease. Like elsewhere in the world, the prevalence of obesity is increasing in Kerala also. The problems of obesity among reproductive age group in Kerala is 47.5%. Kerala is only second to Punjab in obesity among pregnant women.

WHO definition of maternal obesity based on BMI have been revised for Asian Indian based on consensus guidelines and categorization as follows, overweight is between 23 - 24.9 kg per meter square and Obesity is > 25 kg per meter square.

There is a normal weight gain during any pregnancy. Fetus , amniotic fluid , placenta ,uterus and breast hypertrophy contributes significantly to overall weight gain in pregnancy.



Obstetrician should keep this in mind while treating a patient with overweight in the early pregnancy.

Although management of obese women is a challenge to obstetrician, understanding how obesity affects pregnancy and how to manage obese women throughout the pregnancy, intrapartum and postpartum optimizes health outcome for these patients.

Successful management of obese women in pregnancy include the following steps

- 1) Identify and recognise over weight or obesity early in the pregnancy
- 2) Anticipating problems during pregnancy, delivery and postpartum.
- 3) Appropriate preparedness
- 4) Counsel the patient and relatives regarding the anticipated complications
- 5) Educate patient regarding setting a weight gain goal in pregnancy, prescribing healthy diet, physical activity and routine antenatal care.

### **Obese women face many medical challenges**

Obesity may be secondary to endocrine abnormalities like Hypothyroidism, Cushing syndrome or depression or secondary to medications like steroids, anti epileptics etc. Thorough work up and optimisation is mandatory in early antenatal visits. Multidisciplinary consultation is often required in the antenatal period because of their poor cardio respiratory reserve , chances of obstructive sleep apnea and endocrine abnormalities.

They are at increase risk of gestational diabetes, hypertension, pre-eclampsia, congenital anomalies, fetal macrosomia, and IUGR. So early diagnosis of these problems is crucial for successful outcome. Ecospirin may be considered in obese patients early in the pregnancy to prevent pre eclampsia. . The limitations of sonography in obesity must be appreciated as fetal anatomy will remain poorly visualized on ultrasound in 10% to 20% obese patients.

The rate of cesarean section is also increased in obese women. If cesarean delivery is required, anticipated complications include increase in operating time, bleeding, prolonged hospital stay, wound complication and deep vein thrombosis. Immediately after delivery, the chance of venous thromboembolism has been estimated to be double in obese women delivered by cesarean section. Along with early ambulation and sequential compression devices, ACOG and American College of Chest Physicians recommend prophylactic anticoagulation.

So unless contraindicated, vaginal delivery should be entertained in all obese women. Even though vaginal delivery is less morbid, problems faced are difficulty in assessing the fetal parts and monitoring fetal heart rate due to thick abdominal fat, difficulty in assessing progression of labor and also inadequate force exerted by the mother to push the baby out

Obstetrician should alert the anesthetist about the obese patient and pre anesthetic evaluation should be made well before the onset of labor. This will help the anesthetist to prepare for difficult airway management. Spinal or epidural anesthesia is preferred over general anesthesia. But palpating the spinal levels is also difficult and consumes time especially in emergencies. The standard

hospital facilities and equipments are often inadequate for managing women with the severe or class III Obese mothers. During labour or cesarean section, enough manpower should be made to shift the patient to operating table and positioning.

In postpartum period, wound complication including gaping and infection are common. Patient may be unable to see their incision themselves, so instructing family members to look at the wound and keep the wound clean can help to reduce infection.

Several studies have demonstrated association between obesity and breastfeeding failure. Higher BMI is associated with shorter breastfeeding duration.

Post bariatric surgery pregnancy is a recent problem faced by obstetrician. Pregnancy should be avoided for 12 to 18 months after bariatric surgery. Screening should be done to rule out vitamin deficiencies such as B12, folic acid, calcium and iron. Post bariatric surgery, several complications may occur, that includes persistent vomiting, gastrointestinal bleeding, anemia, placental vascular disease, neural tube defect, intra uterine growth restriction, and miscarriage.

## Conclusion

The label of obesity may be upsetting for many pregnant women. Care and

communications need to be conducted in a sensitive and respectful manner.

The ideal time to deal with obesity is pre conception period. Encourage weight loss before conception and folic acid supplementation are very important.

Anticipating medical problems for the mother and child and appropriate preparedness to tackle these issues is the key to manage an obese patient in pregnancy.

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# INCREASING WAISTLINES IN MIDDLE AGE

Born in 1975 Mona and her 4 friends have been through thick and thin. Till 1985 they discussed games, dolls and birthday parties By 1990 it was heroes and crushes. In 1995 they discussed boyfriends. Ten years later, by 2005, the 4 thirty-year-olds discussed children, children and children. And now, for the past 12 years since 2010, they have discussed only their diet plans, exercise regimes, and weight loss in grams.

- The Mediterranean diet. ...
- The DASH diet. ...
- Plant-based and flexitarian diets. ...
- The MIND diet. ...
- WW (formerly Weight Watchers)...
- intermittent fasting. ...

- The Volumetric diet. ...
- The Mayo Clinic Diet.

If you have not heard of these, you are definitely living under a rock.

According to the latest report by WHO, overweight and obesity are one of the five primary causes of death worldwide, and in medium to high income countries, these conditions are considered among the top three risk factors for mortality.

According to available data 61.9% of over 20 year olds in America and 54.8% of the population in EUROPE suffer from overweight issues.

## WHAT IS OBESITY??

### Clinical Information

- A condition marked by abnormally high, unhealthy amount of body fat
- A disorder characterized by having a high amount of body fat.
- A status with body weight that is grossly above the acceptable or desirable weight, usually due to accumulation of excess fat in the body. The standards may vary with age, sex, genetic or cultural background. In the body mass index, a bmi greater than 30.0 kg/m<sup>2</sup> is considered obese, and a bmi greater than 40.0 kg/m<sup>2</sup> is considered morbidly obese (morbid obesity)
- Excessively high accumulation of body fat or adipose tissue in relation to lean body mass; the amount of body fat (or adiposity) includes concern for both the distribution of fat throughout the body and the size of the adipose tissue deposits; individuals are usually at high clinical risk because of excess amount of body fat (bmi greater than 30.)
- Obesity means having too much body fat. It is different from being overweight, which means weighing too much. The weight may come from muscle, bone, fat

and/or body water. Both terms mean that a person's weight is greater than what's considered healthy for his or her height. Obesity occurs over time when you eat more calories than you use. The balance between calories – in and calories out differs for each person. Factors that might tip the balance include your genetic makeup, over eating, eating high fat foods and not being physically active. Being obese increases your risk of diabetes, heart disease, stroke, arthritis and some cancers. If you are obese, losing even 5 to 10 percent of your weight can delay or prevent some of these diseases.

- Researchers say people with obesity in middle age face more serious health effects and higher medical costs when they are older.
- They add the people who have over overweight but not obesity in middle age live about as long as people of moderate weight, but they tend to have more lifestyle limitations.
- Experts say it's never too late for people to begin managing their weight.

People with obesity in midlife have higher healthcare and die younger than people who have “normal” body mass index (BMI) scores, a new study reports.

Researchers reported that people with overweight have higher healthcare and economic costs later in life – what they called the “cumulative burden of morbidity”.

People who are overweight or obese are more likely to need treatment for coronary heart disease, heart attacks, peripheral vascular disease, cerebral vascular disease (stroke), and failure than people who had normal BMI scores in middle age.

## OBESITY AND MENOPAUSE

Many women report gaining weight as they transition through menopause. For most, the weight gain is modest and can be reduced with a conscious effort to limit energy intake and increase energy expenditure. However, many women who are already overweight and obese will gain more weight as they approach menopause.

The hormonal changes of menopause might take you more likely to gain weight around your abdomen than around your hips and thighs. But, hormonal changes alone don't necessarily cause menopause weight gain. Instead, the weight gain is usually related to aging, as well as lifestyle and genetic factors.

For example, muscle mass typically diminishes with age, while fat increases. Losing muscle mass slows the rate at which your body uses calories (metabolism). This can make it more challenging to maintain a healthy weight. If you continue to eat as you always have and don't increase your physical activity you are likely to gain weight.

Genetic factors might also play a role in menopause weight gain. If your parents or other relatives carry extra weight around the abdomen, you are likely to do the same.

Other factors such as a lack of exercise, unhealthy eating and not enough sleep, might contribute to menopause weight gain. When people don't get enough sleep, they tend to snack more and consume more calories.

### How risky is weight gain after menopause?

Menopause weight gain can have serious implications for your health. Excess weight, especially around your midsection, increases your risk of many issues, including:

- Breathing problems
- Heart and blood vessel disease
- Type 2 diabetes

Excess weight also increases your risk of various types of cancer, including breast, colon and endometrial cancers.

### What's the best way to prevent weight gain after menopause?

There's no magic formula for preventing-or reversing-menopause weight gain. Simply stick to weight-control basics:

- **Move More.** Physically activity, including aerobic exercise and strength training, can help you shed excess pounds and maintain a healthy weight. As you gain muscle, your body burns calories more efficiently—which makes it easier to control your weight.

For most healthy adults, experts recommend moderate aerobic activity, such as brisk walking, for at least 150 minutes a week or vigorous aerobic activity, such as jogging, for at least 75 minutes a week.

In addition, strength training exercises are recommended at least twice a week. If you want to lose weight or meet specific fitness goals, you might need to exercise more.

**Eat less.** To maintain your current weight—let alone lose excess pounds—you might need about 2000 fewer calories a day during your 50s than you did during your 0s and 40s.

To reduce calories without skimping on nutrition, pay attention to what you are eating and drinking. Choose more fruits, vegetables and whole grains, particularly those that are less processed and contain more fiber.

In general, a plant-based diet is healthier than other options. Legumes, nuts, soy, fish and low-fat dry products are good choices. Meat, such as red meat, or chicken, should be eaten in limited quantities. Replace butter, stick

margarine and shortening with oils, such as olive or vegetable oil.

**Check your sweet habit.** Added sugars account for nearly 300 calories a day in the average American diet. About half of these calories come from sugar-sweetened beverages, such as soft drinks, juices, energy drinks, flavored waters, and sweetened coffee and tea.

Other foods that contribute to excess dietary sugar include cookies, pies, cakes, doughnuts, ice cream and candy

- **Limit alcohol.** Alcoholic beverages add excess calories to your diet and increase the risk of gaining weight.
- **Seek Support.** Surrounded yourself with friends and loves ones who support your efforts to eat a healthy diet and increase your physical activity. Better yet, team up and make the lifestyle changes together.

## WHAT ACTION CAN BE TAKEN?

The earlier a person corrects bad eating and lifestyle habits, the more likely they are to correct the negative effects of obesity. Once organ damage starts, the effects are harder to reverse.

It is never too late to acquire healthy eating habits such as plant forward or plant based eating. Also never too late to begin an exercise or fitness program. The American Heart Association suggests a diet that includes A variety of fruits, vegetables and whole

grains Fat free and low fat dairy products Legumes Poultry and lean meats Oily fish at least two times a week

There are numerous ways older adults can improve their diet, according to Sadarangani:

- Get screened by your healthcare professional to understand your nutritional risk
- Exercise, even a short walk or chair-based activities using some of the many free YouTube videos. It will stimulate appetite and improve dietary intake.
- Join your local senior center or phone a friend. Eating is more fun when done with others, and many senior centers offer free or low cost nutritionally balanced meals.
- Ask for help. This might seem lie the most challenging piece of advice, but there are many resources embedded in communities that can help older adults with shopping and cooking
- Embrace herbs and spices as a healthy way to add flavor to meals.
- Eat small, frequent meals. Try to establish a healthy routine around eating.

Exercise more often. Daily brisk walking, muscle building exercises at least thrice a week.

Remember, successful weight loss at any stage of life requires permanent changes in diet and exercise habits. Commit to lifestyle changes and enjoy a healthier you.

# HEAVY and HAZARD for surgery



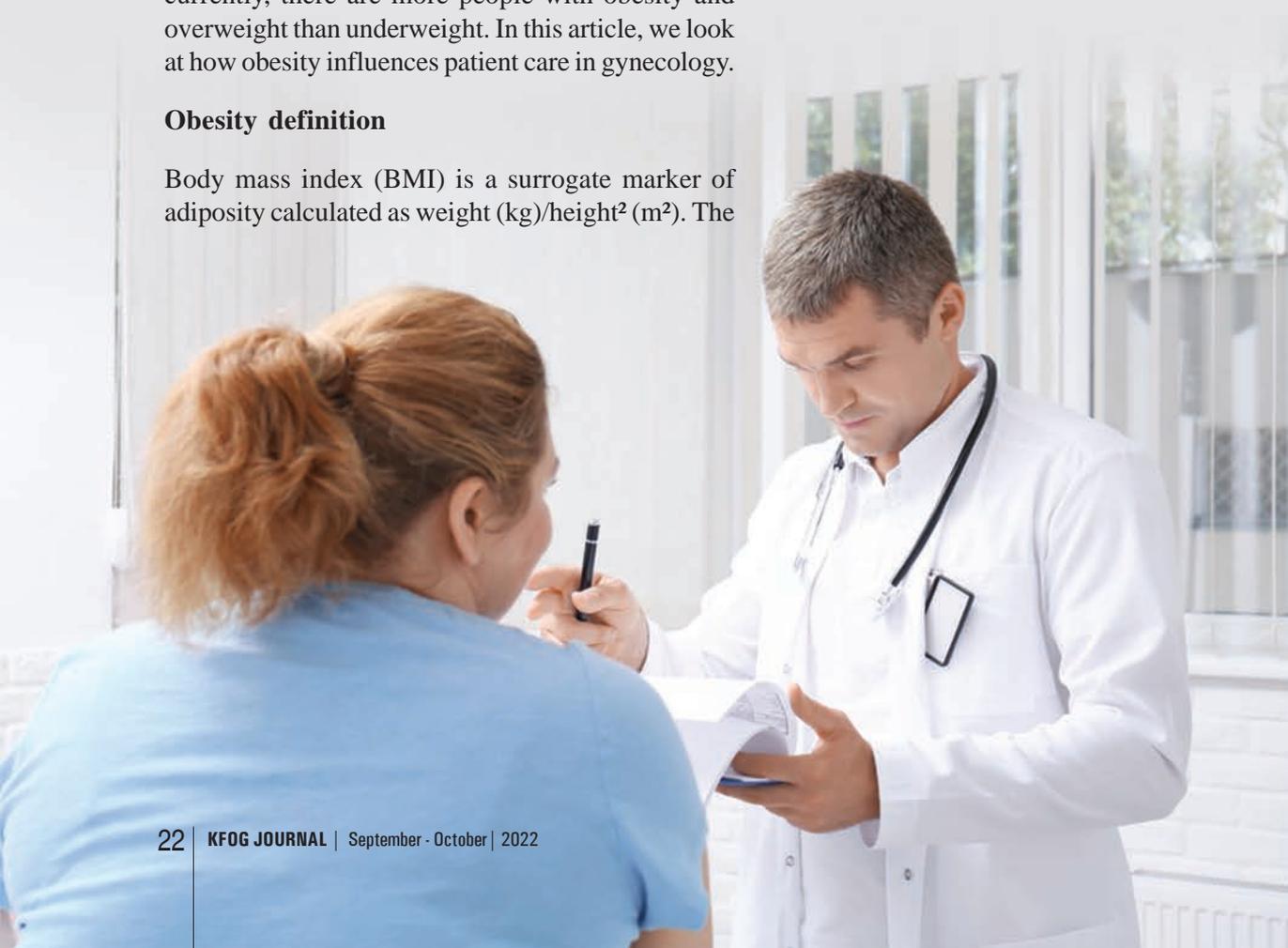
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## Introduction

Obesity is a latent disease that was declared by the World Health Organization (WHO) in 2015 as a non-infectious and noncommunicable pandemic, and its prevalence trends and disease-related morbidity and death have continued to rise in both sexes worldwide. Worldwide obesity has nearly tripled since 1975. Except in some parts of sub-Saharan Africa, currently, there are more people with obesity and overweight than underweight. In this article, we look at how obesity influences patient care in gynecology.

## Obesity definition

Body mass index (BMI) is a surrogate marker of adiposity calculated as weight (kg)/height<sup>2</sup> (m<sup>2</sup>). The



BMI categories for defining obesity vary by age and sex in infants, children, and adolescents. For adults, obesity is defined by a BMI greater than or equal to 30 kg/m<sup>2</sup>. A BMI ranging from 25 to 29.99 kg/m<sup>2</sup> is also associated with increased disease risk and is referred to as pre-obesity. This continuum of risk is acknowledged by considering overweight, which includes adults with a BMI greater than 25.00 kg/m<sup>2</sup>(1).

### Preoperative optimization

Identifying and optimizing risk factors prior to surgery is the key to reducing surgical risks for obese patients. Weight reduction prior to surgery would be ideal but delaying surgery for the months or years required is rarely practical. Hypertension, diabetes, and OSA are common in obese patients. Factors not related to weight, such as smoking, should also be addressed. Obstructive sleep apnoea can be screened for using the STOP-BANG questionnaire. STOP-BANG incorporates symptoms, hypertension, age, BMI, neck circumference, and gender. Using this scoring system, a score e"5 indicates high risk and the need for further evaluation for OSA, including referral to anesthesia or sleep medicine.

### Perioperative issues

Obese patients need to be positioned carefully to avoid injury and maximize exposure, and equipments appropriate for the patient's weight is required. Boot-type stirrups provide more support than other stirrup types. Operating tables with Side extensions are available and may be necessary. Obese patients are more susceptible to nerve injuries and pressure sores, and extra padding should be used as necessary. The pannus can be taped up to allow access to the lower abdomen and restore the abdominal wall to a more anatomic position if needed. Depending

on the individual's anatomy, some patients' exposure may be enhanced by taping the pannus down and incising above the umbilicus.

### Operation table with width extenders



### Booted Stirrups



### Instrumentation

Longer instruments and retractors with deeper blades are usually necessary for obese patients.

### Incision

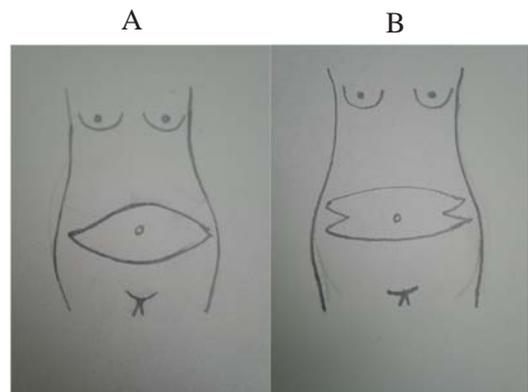
Obesity is a recognized risk factor for postoperative wound infections, and thus, placement of an abdominal incision can be challenging in these patients. If a transverse incision is chosen for obese patients, it should be away from the anaerobic moist environment of the subpannicular fold.

The midline skin incision is started periumbilical and is usually extended more cephalad due to the caudally deviated position of the umbilicus. The fascial incision is always extended to the symphysis. Incisions should not be performed in the suprapubic fold after lifting the fat pad because of the poorly vascularized skin, which is typically thin and submitted to intense maceration due to the moist warm anaerobic environment that promotes the proliferation of numerous organisms.

### Panniculectomy

An alternate surgical approach in the massively obese patient is to remove the large panniculus before the intended pelvic surgery. Although removal of large panniculus results in better exposure, patient selection for this potentially morbid procedure should be carefully considered. Also, the patient must be counseled and must be strongly motivated to lose weight and change her nutritional habits. If the patient is not committed to these lifestyle changes, it seems impractical to perform an extensive abdominoplasty and incur the associated morbidity. If the surgical procedure is not urgent, an alternative would be to defer the procedure until the patient has achieved 40% to 50% of the planned weight loss. The choice of incision for panniculectomy is the elliptical transverse incision, originally described by Kelly. Two modifications of the transverse panniculectomy can be useful. Inferiorly, the transverse incision follows the concave skin fold that separates the overhanging panniculus from the suprapubic skin. The underlying fat is excised deeply in a slightly wedged manner, with the deep portion of the fat extending outward and slightly beyond the skin margin to avoid ischemia of the skin edge. Meticulous attention must be given to absolute hemostasis to avoid postoperative hematoma

formation and infection. The excessive use of cautery, which produces a favorable environment for bacterial growth in devitalized tissue, should be avoided. After the removal of the large panniculus, the abdomen can be opened either transversely or vertically. A vertical incision has been advocated to improve exposure.



A: Elliptical transverse incision extending from the region of iliac crest passes above and below the umbilicus. B: V-shaped incision in lateral angles eliminates folds of skin in abdominal wall.

### DVT prophylaxis

Patients should be assessed for thromboembolism risk and receive prophylaxis as recommended in the standard guidelines. Obesity is a risk factor for venous thromboembolic events, and factors into the Caprini score for assessing the risk of perioperative venous thromboembolism (VTE). Depending on other risk factors, patients who are obese undergoing gynecologic surgery often fall into the moderate- or high-risk categories. For gynecologic surgery patients who are at moderate risk of VTE and not at increased risk of bleeding complications, mechanical thromboprophylaxis (preferably with intermittent pneumatic compression) or pharmacologic thromboprophylaxis (with

low-dose unfractionated heparin or LMWH) is recommended. For patients who are at high risk of VTE and average risk of bleeding complications, dual thromboprophylaxis with a combination of mechanical prophylaxis (preferably with intermittent pneumatic compression) and pharmacologic prophylaxis (low-dose unfractionated heparin or LMWH) is recommended. A weight-adjusted dosage regimen should be considered for patients with obesity. For patients with obesity who receive mechanical thromboprophylaxis, devices should be inspected to ensure proper fit.

### **Surgical site Infection prevention**

The risk of surgical site infection (SSI) can be reduced with appropriately dosed preoperative antibiotics and skin preparation. Although data in gynecologic surgery are limited, weight-based doses of prophylactic antibiotics are generally recommended, and patients who weigh more than 120 kg should receive a 3 g dose of cefazolin as opposed to the standard 2 g. Different surgical techniques have been suggested to decrease SSI, including the closure of subcutaneous tissue and special surgical dressings like wound vacuums. Data on these techniques are limited for now.

### **Drains**

The use of prophylactic drains in the subcutaneous space to reduce the formation of hematoma and seroma or to reduce abscess and infection remains controversial. Drain placement is not recommended solely due to patient obesity.

### **Minimally invasive surgery**

MIS and vaginal surgeries are preferred in obese patients whenever possible. Obese women who undergo laparoscopy recover faster, with less pain, fewer wound infections, and shorter hospital stays than with

laparotomy. Obesity may increase the operative time and sometimes conversion to laparotomy may be necessary.

In central obesity, the subcutaneous tissue is thick, often requiring extra-long ports to attain peritoneal access. The relationship of the umbilicus to the underlying aortic bifurcation also shifts more caudally. While positioning, arms tucked in, low lithotomy, and liberal padding improves ergonomics and decreases the risk of nerve injuries. Stationary shoulder blocks can be used to maintain positioning in the Trendelenburg (head down) position.

To decrease extraperitoneal insufflation and the risk to the underlying vasculature, it is recommended to use a 45° angle from the umbilicus toward the pelvis in nonobese patients and a 90° approach in obese patients. For attaining intraperitoneal access any one particular site or method cannot be considered superior, hence individualization is needed. To improve visualization during surgery sometimes additional ports may be necessary for manipulating the bowel. During the closure, port closure devices can be helpful as the fascial layers will be deep inside.

### **Postoperative care**

Aggressive pulmonary physiotherapy and early ambulation are a must to avoid complications. In order to maintain respiratory drive, conservative use of postoperative opioids is recommended. A multimodal approach to the use of postoperative pain medicine allows for a decrease in postoperative opioid use. Regional anesthesia also may be an option to decrease the total opioid amount required for postoperative analgesia. The patient should be counseled regarding weight reduction, exercise, and a healthy diet at discharge.



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