

Female obesity and its consequences: a review

Abstract

Background: Obesity is a huge increasing and pressing worldwide health problem. It impacts negatively on maternal and fetal morbidity and mortality. Urgent focus is needed to tackle it. This will reduce unnecessary preventable deaths and improve outcomes in maternal and fetal health. Clinicians caring for obese women must be made adequately aware of the negative implications of this disease on maternal and fetal health.

Methodology: A Medline/Pubmed search was conducted searching for articles describing female obesity and its complications. The studies selected were analysed for any useful information pertaining to this condition.

Conclusion: Female obesity is indeed a huge and growing health problem. Tackling and reducing it will lead to the reduction in maternal and fetal outcomes and improved long-term health in the population.

Keywords: female obesity, pandemic, sub fertility, complications, preventable deaths

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Solwayo Ngwenya

Department of Obstetrics & Gynaecology, National University of Science & Technology Medical School, Zimbabwe

Correspondence: Solwayo Ngwenya, Consultant Obstetrician & Gynaecologist, Department of Obstetrics & Gynaecology, Royal Women's Clinic, 52A Cecil Avenue, Hillside, Bulawayo, Matabeleland, Zimbabwe, Tel +263 9 214965, Email drsolngwe@yahoo.co.uk

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Introduction

Obesity is defined as a body mass index (BMI) of equal or more than 30kg/m². Obesity is now a huge global health problem. It's prevalence is increasing both in developed and developing countries.¹ Approximately 30% of pregnant women are obese.² The World Health Organisation characterises obesity as a pandemic issue with more females being affected than males.³ It causes significant maternal and fetal morbidity and mortality. Obesity is associated with co-morbidities like hypertension, cardiovascular diseases and type 2 diabetes mellitus.⁴ The more the world population becomes obese, the more the health consequences and health care costs sky-rocket. The effects of obesity on the reproductive function of women are immense.

Aetiology

Obesity genesis may have genetic factors with patients suffering polycystic ovary complicating with obesity. The increasing availability of cheaper genetically-modified highly processed foods causes obesity. The population is also largely leading a sedentary lifestyle. Obese patients have hyperleptinaemia, hyperinsulinemia and hyperandrogenism⁵ that all contribute to anabolism and weight gain.

Complications of obesity

Obese females suffer sub fertility. They have high levels of leptin produced by adipocytes that produce sub fecundity.⁶ Obesity impairs/ alters the hypothalamic-pituitary-ovarian axis, oocyte quality and endometrial receptivity.⁷ A high BMI is associated with decreased oestrogen levels in all phases of the ovarian cycle.⁸ Consequently patients have oligomenorrhea, an ovulation, impaired fertility and reduced conception rates in both natural and assisted reproductive techniques.⁹ Obese patients are at increased risk of endometrial hyperplasia and cancer. They may undergo operative procedures such as hysteroscopies or hysterectomy if malignancy is found complicating their fertility desires. Long-term, they are prone to

developing type 2 diabetes mellitus, hypertension and cardiovascular diseases. Those that conceive have increased rates of sporadic miscarriages^{10,11} and congenital anomalies including neural tube defects.¹² In pregnancies that progress weight loss is discouraged¹³ In pregnancy the complications include pre-eclampsia/eclampsia,³ iatrogenic preterm delivery and post-dates.^{12,14} The babies have the risks of polyhydramnios, macrosomia and intra-uterine deaths.³ The rates of induction of labour are high due to post-dates and macrosomic foetuses. During labour there are difficulties in sigthing intravenous canulae and epidural anaesthesia. They are at increased risks of operative vaginal deliveries,¹³ shoulder dystocia,³ perineal tears, caesarean section, post-partum haemorrhage, wound sepsis and dehiscence. At the operating theatre there may be problems with the size of the operating table and difficult intubation due to short neck. The operations are complicated by bleeding. Post-operatively patients are at an increased risk of thromboembolism and may stay longer in hospital than normal BMI patients. The neonates face problems with respiratory distress syndrome, hypoglycaemia, jaundice, fractured bones and ruptured viscus from difficult deliveries. Surviving children of obese women are also at risk of obesity themselves in adolescence and adulthood.^{2,3}

Management

Preconceptual weight loss should be reduced to normal BMI.^{3,14} Educating women on the negative impact of obesity on maternal and neonatal health¹⁵ should be done pre-conceptually. Multidisciplinary team¹⁶ approach involving dieticians would be helpful. Weight reduction leads to high spontaneous conception rates, better response to ovulation induction therapy and improves pregnancy outcomes.¹⁶⁻²⁰ Folic acid supplementation with 4mg once daily for 12weeks before conception and 13weeks post conception reduces the incidence of neural tube defects which occur at higher rates in obese patients. Obese patients must lose weight before attempting ovulation induction or in vitro fertilisation techniques. Metformin therapy improves systemic hyperglycaemia by reducing hepatitis glucosuria production and enhancing peripheral insulin sensitivity. It also stimulates fat

oxidation and reduces fat synthesis and storage.²¹ Metformin improves menstrual cyclicity and increases rates of ovulation. Subfertile obese women may need higher doses of gonadotrophins for longer duration of treatments.²² Obstetric patients that are obese need a glucose tolerance test at 28 and 34 weeks gestations. Serial growth scans to rule macrosomia and polyhydramnios must be done fortnightly from 28 weeks gestations. Those women that develop gestational diabetes mellitus must be managed in a multidisciplinary team involving dietician, diabetic nurse, physician and obstetrician to achieve best outcomes.

Outcomes

Success rates in in vitro fertilisation cycles is better in normal weight patients than those with higher BMI, significantly worsening outcomes in groups with higher BMI with respect to clinical pregnancy and live birth rate.²³ At times morbidly obese patients have to undergo bariatric surgery.⁵ The patients must be counselled on the safety profiles of the surgery¹⁴ and that there may have growth restricted babies to the nutritional consequences of the operation. Pregnancy outcomes after gastric by-pass surgery remain unclear.²⁴

Contraception

Obese women have limited contraceptive choices. The combined oral contraceptive pill may be contraindicated if there are other comorbidities such as hypertension. Progestogen based contraceptives are safe. The intrauterine device or intrauterine systems are also safe.

Conclusions

Increasing global obesity rates impacts negatively on reproductive function of women. A new shift to eating healthy foods and exercise can reduce weight and the ghastly complications associated with obesity. Early preventable deaths from cardiovascular disease and type 2 diabetes mellitus can be reduced. Savings in healthcare costs in treating sub fertility, maternal and neonatal complications can be obtained.

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Conflict of interest

The author declares no conflict of interest.

References

- Ogbuji QC. Obesity and reproductive performance in women. *Afr J Reprod Health*. 2010;14(3):143–151.
- Nodine PM, Hastings-Tolsma M. Maternal obesity: improving pregnancy outcomes. *MCN Am J Matern Child Nurs*. 2012;37(2):110–115.
- Satpathy HK, Fleming A, Frey D, et al. Maternal obesity and pregnancy. *Postgrad Med*. 2008;120(3):e01–09.
- Tsur A, Machtinger R, Segal-Lieberman G, et al. Obesity, bariatric surgery and future fertility. *Harefuah*. 2014;153(8):478–496.
- Sharma A, Bahadursingh S, Ramsewak S, et al. Medical and surgical interventions to improve outcomes in obese women planning for pregnancy. *Best Pract Res Clin Obstet Gynaecol*. 2015;29(4):565–576.

- Brewer CJ, Balen AH. The adverse effects of obesity on conception and implantation. *Reproduction*. 2010;140(3):347–364.
- Klenov VE, Jungheim ES. Obesity and reproductive function: a review of the evidence. *Curr Opin Obstet Gynecol*. 2014;26(6):455–460.
- Rehman R, Hussain Z, Faraz N. Effect of oestradiol levels on pregnancy outcome in obese women. *J Ayub Med Coll Abbottabad*. 2012;24(3-4):3–5.
- Moran LJ, Dodd J, Nisenblat V, et al. Obesity and reproductive dysfunction in women. *Endocrinol Metab Clin North Am*. 2011;40(4):895–906.
- Lo W, Rai R, Hameed A, et al. The effect of body mass index on the outcome of pregnancy in women with recurrent miscarriage. *J Family Community Med*. 2012;19(3):167–171.
- Boots CE, Bernardi LA, Stephenson MD. Frequency of euploid miscarriage is increased in obese women with recurrent early pregnancy loss. *Fertil Steril*. 2014;102(2):455–459.
- Dinatale A, Ermito S, Fonti I, et al. Obesity and fetal-maternal outcomes. *J Prenat Med*. 2010;4(1):5–8.
- Triunfo S, Lanzone A. Impact of overweight and obesity on obstetric outcomes. *J Endocrinol Invest*. 2014;37(4):323–329.
- Marsh CA, Hecker E. Maternal obesity and adverse reproductive outcomes: reducing the risk. *Obstet Gynecol Surv*. 2014;69(10):622–628.
- McLean M, Wellons MF. Optimizing natural fertility: the role of lifestyle modification. *Obstet Gynecol Clin North Am*. 2012;39(4):465–477.
- Arendas K, Qiu Q, Gruslin A. Obesity in pregnancy: pre-conceptional to postpartum consequences. *J Obstet Gynecol Can*. 2008;30(6):477–488.
- Khaskheli MN, Baloch S, Baloch AS. Infertility and weight reduction: influence and outcome. *J Coll Physicians Surg Pak*. 2013;23(10):798–801.
- Sim KA, Dezarnaulds GM, Denyer GS, et al. Weight loss improves reproductive outcomes in obese women undergoing fertility treatment: a randomized controlled trial. *Clin Obes*. 2014;4(2):61–68.
- Zain MM, Norman RJ. Impact of obesity on female fertility and fertility treatment. *Womens Health (Lond)*. 2008;4(2):183–194.
- Dağ ZÖ, Dilbaz B. Impact of obesity on infertility in women. *J Turk Ger Gynecol Assoc*. 2015;16(2):111–117.
- Sivalingam VN, Myers J, Nicholas S, et al. Metformin in reproductive health, pregnancy and gynaecological cancer: established and emerging indications. *Hum Reprod Update*. 2014;20(6):853–868.
- Ozekinci M, Seven A, Olgan S, et al. Does obesity have detrimental effects on IVF treatment outcomes? *BMC Womens Health*. 2015;15:61.
- Provost MP, Acharya KS, Acharya CR, et al. Pregnancy outcomes decline with increasing recipient body mass index: an analysis of 22,317 fresh donor/recipient cycles from the 2008–2010 society for assisted reproductive technology clinic outcome reporting system registry. *Fertil Steril*. 2016;105(2):364–368.
- Goldman RH, Missmer SA, Robinson MK, et al. Reproductive outcomes differ following roux-en-Y gastric bypass and adjustable gastric band compared with those of an obese non-surgical group. *Obes Surg*. 2016;26(11):2581–2589.