
SPECIFIC CARE OF WOMEN WITH OVERWEIGHT AND OBESITY DURING PREGNANCY

Lilia Koleva

UMBALSM “Pirogov”, Sofia, Bulgaria, UMBAL “Sofamed”, liliaivanova76@mail.bg

Anatoli Kolev

Medical Faculty, Medical University of Sofia, Bulgaria, anatoli.kolev5@gmail.com

Nadia Manolova

Medical University- Sofia, Faculty of Public Health, Sofia, Bulgaria, nkmanolova@gmail.com

Kristin Nacheva

Medical University- Sofia, Faculty of Public Health, Sofia, Bulgaria, krisi.nacheva@gmail.com

Abstract: Overweight and obesity are becoming a serious public health concern worldwide. The prevalence of people with body mass index (BMI) above the upper limit has increased dramatically over the last decades. In parallel with these results the weight of women of gestational age increases. Consequently, the rate of overweight and obese females getting pregnant rises each year. Overweight and obesity are a risk factor for a large variety of short-term and long-term maternal and fetal complications. Increased weight in young women may cause infertility, early miscarriages, and recurrent pregnancy loss. Later pregnancy complications include pregnancy-associated high blood pressure, preeclampsia, gestational diabetes mellitus, intrauterine growth restriction, preterm birth, congenital anomalies, complications during labor and delivery, and unsuccessful breastfeeding. Moreover, the evidence is growing that children born from obese mothers are at higher risk of developing susceptibility for different chronic diseases.

Based on the sparse data available about one third of women of child-bearing age are overweight or obese with the percentage varying between different ethnic and socioeconomic groups. This means that a significant part of pregnant women have a problem with their weight which puts them in a risk group for the abovementioned conditions. Also, prenatal and perinatal care for these patients is still a great challenge for obstetricians. They must find a balanced approach for managing maternal weight, fetal growth, and minimizing possible complications. Unfortunately, standard guidelines for proper management of overweight and obese women during pregnancy are still missing. This is why obstetricians need to act according to the best available evidence in order to succeed in keeping the life and health of both the mother and the baby.

Our previous study comparing normal weight pregnant females to overweight/obese ones confirmed higher risks for prenatal and perinatal complications in the second group. The results showed us the need for accurate monitoring of women with BMI above normal limit as they are considered high risk pregnancies. We would like to put light over this common medical condition and give more information about the specifics of overweight/obese pregnant women care. We are aware of the comprehensive approach needed to improve problems associated with overweight and obesity during pregnancy – physical activity, improved nutrition, physiological cancelling, and medical interventions. The aim of this paper is informing healthcare providers for the risks and possible measures that may be taken for improving the long-term health of obese women and their offspring.

Keywords: pregnancy, overweight, obesity, complications, management

1. INTRODUCTION

Developed countries worldwide report a concerning rise in the percentage of overweight and obesity during the last few decades (Catalano & Shankar, 2017). A statement from the World Health Organisation claims that “obesity is now so common that it is replacing the more traditional public health concerns, including undernutrition and infectious disease, as one of the most significant contributors to ill health.” (WHO Report, 2000). The rates of women of child bearing age suffering from excess weight also increases dramatically and is considered to reach 37% of women between the ages of 20–39 (Flegal et al., 2016). This turns overweight and obesity into the most common problem during pregnancy associated with complications for both mother and child.

Overweight and obesity affect women’s health, pregnancy, perinatal period, and the future life of the offspring in many different ways. Firstly, obesity is associated with reduced likelihood of pregnancy occurrence (Bolúmar et al., 2000). Secondly, women with a BMI ≥ 25 are at higher risk of miscarriage, stillbirth and congenital anomalies (Metwally et al., 2008, Brite et al., 2014). Thirdly, pregnancy of women with excess weight is associated with a wide range of complications such as preeclampsia, gestational diabetes, gestational hypertensive disease, thromboembolic events, etc (Stubert et al., 2018). Lastly, overweight and obesity have serious effect over the

perinatal period and the later life of children born from obese mothers - complications during labor and delivery, and unsuccessful breastfeeding, susceptibility to various diseases (Dimitrova et al., 2014, Karamisheva et al., 2014, Marinov et al., 2014).

The aim of these paper is to show the possible medical interventions and the preventive measures that may be taken to reduce the risks for obese women of reproductive age.

2. MATERIALS AND METHODS

A few years ago we conducted a study comparing the pregnancy outcomes of women with excess weight and those with normal BMI (Koleva et al., 2020). We confirmed that overweight and obesity are serious risk factors for preterm delivery and pregnancy chronic diseases(Petkova et al., 2021). Managing the pregnancy of 105 obese/overweigh women we notice some differences between the medical care they need compared to women with normal weight. This is why we decided to write this paper in order to help clinicians who take care of such patients.

3. RESULTS

As already mentioned, obesity has an impact over the fertility potential of women. This is why we try our best in our everyday practice to educate young women for the possible complications they may face at the moment they decide to conceive. The longer time it takes for these women to become pregnant is partially due to higher prevalence of the polycystic ovarian syndrome (PCOS) (Dutton et al., 2018, Petkova et al. 2018). The most advice we give to our patients is weight loss prior to conception which is also the official guideline for obese women (Dutton et al., 2018). This is a long and sometimes hard process which includes help from medical specialists, family and friends, and above all - patients will. Special dietary and training programs must be made for obese women to help them lose weight in the healthiest way. Together with the quality food, some supplements may be taken to prepare the body for the future pregnancy - vitamins, minerals, and omega polyunsaturated fatty acids (Petkova et al, 2017, Spasova et al., 2020). In some extreme cases bariatric surgery is also recommended.

The higher rates of pregnancy loss and congenital anomalies detected in women with overweight and obesity are a serious health concern. The exact cause for these complications remains elusive but most likely abnormal glucose metabolism and nutrient deficiencies have the major impact (Brite et al., 2000). Because the cause is still unknown, so is the way to prevent the problem. However, some measures may be taken before conception.They include optimizing blood glucose, folic acid supplementation, correction in drugs women take to reduce the risks of congenital anomalies (Masho et al., 2016, Petkova, 2018). For example serum vitamin D is lower in obese women. The neonatal vitamin D level is associated with maternal level. However, several factors affect it, such as maternal nutrition, multivitamin/vitamin D supplementation, and the seasons(Stanislava Hitrova-Nikolova et al., 2012, Stanislava Hitrova-Nikolova et al., 2015),(Table1).

Table 1. Model of maternal nutrition and vitamin intake

Maternal nutrition (intake of milk, meat, eggs, n (%))	Regular intake	34 (75,6%)
	Irregular intake	10 (22,2%)
	Vegetarians	1 (2,2%)
Supplementation with multivitamins, n (%)	Regular intake	23 (51,1%)
	Irregular	2 (4,4%)
	None	20 (44,4%)
Pre-pregnancy BMI (kg/m²), n (%)	Normal	36(80%)
	Overweight	5(11,1%)
	Obesity, Excessive	4(8,9%)
BMI at birth (kg/m²), n(%)	Normal	12(26,7%)
	Overweight	14(31,1%)
	Obesity	19(42,2%)

Women who are overweight or obese are at increased risk of some comorbidities and this is why they need to make regular doctor appointments to make sure they have their conditions under control. Also, they need to be screened for the most common metabolic complications prior to pregnancy (Dutton et al., 2018, Hitrova 2017)(Table 2)

Table 2. Model of maternal week of delivery, arterial pressure and Apgar score

	Group	N	Mean	Median	SD	Min	Max	p
Week of delivery	Control group	91	37,99	38,00	2,30	31,00	42,00	0,51
	Obesity group	105	37,74	38,00	2,78	21,00	42,00	
Systolic pressure	Control group	91	113,24	110,00	11,84	90,00	150,00	<0,001
	Obesity group	105	124,93	120,00	14,61	90,00	160,00	
Dyastolic pressure	Control group	91	71,54	70,00	8,05	60,00	100,00	<0,001
	Obesity group	105	78,01	80,00	8,92	60,00	95,00	
Apgar 1 minute	Control group	91	6,91	7,00	1,16	3,00	9,00	0,82
	Obesity group	105	6,95	7,00	0,96	3,00	9,00	
Apgar 5 minute	Control group	91	8,35	9,00	0,85	6,00	9,00	0,45
	Obesity group	105	8,27	8,00	0,87	6,00	9,00	

After the pregnancy is already registered additional measures must be taken starting with regular screening for high blood sugar. During the first 24 weeks of gestation fasting plasma glucose is measured each month (McIntyre et al., 2016). After this period a special screening for gestational diabetes is conducted using the official guidelines (McIntyre et al., 2016).

As it has been known for a long time, excess weight is a major risk factor for hypertensive disorders. The most common such disorders during pregnancy include preeclampsia and gestational hypertension (Robinson et al., 2005). The working measures for preventing these complications include special diet and appropriate physical activity (Magee et al., 2014). Of course, lifestyle interventions are not enough in all cases and sometimes specific medical therapy is needed (Petkova & Atkinson, 2017).

The increased risk for preterm delivery is known for a long time and confirmed in our previous study (Koleva et al., 2020). The main cause for this complication are the increased inflammatory response as well as the risk of intrauterine bacterial infections (Karamisheva et al., 2014, Karamisheva et al., 2015). Unfortunately, there is still not enough data for effective actions against preterm birth in obese women. The best strategy is limiting the unwanted complications of the existing comorbidities and taking care for weight control (Dutton et al., 2018).

Breastfeeding is recommended for all women, including those with excess weight. Medical specialists who take care of these women must make sure that young mothers understand the importance of this process for both their own health and those of their children. Breastfeeding decreases the cardiovascular risk in mothers and reduces the risk for visceral adiposity in later life (Schwarz et al., 2009, McClure et al., 2011).

Overweight and obesity are a serious health concern not only for adults, but also for children. Those who are born from obese mothers are at higher risk of having the same problem later in life, in addition to the increased risk of insulin resistance, cardiovascular disease, and nonalcoholic fatty liver disease (Dutton et al., 2018). Those findings confirm the fact that weight control is of highest priority for future mothers. In future we will try to identify some novel diagnostic and prognostic biomarkers for multiple human diseases such as microRNAs (Spasova V. et al., 2021)

4. DISCUSSION AND CONCLUSION

The problem with the increasing weight of world populations is a large topic with many things to be discussed. Our aim is to put light over the young women suffering from obesity and to discuss the possible complications for them, as well as the special care they need. Obstetricians and other medical specialists who take care of such women must be aware of the differences between the metabolism of women with normal and excess weight. They should try discussing pregnancy plan with obese women as early as possible and try to propose a strategy for healthy weight

control. The risks associated with obesity in women of reproductive age cannot be neglected and special measures must be taken.

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