

# Postpartum Period and Associated Factors Resulting Weight Retention and Obesity

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## ABSTRACT

Postpartum is a period which starts just after childbirth till six weeks. Women at this period are at high risk of gaining weight and obesity. Weight gain before, during, and after pregnancy, not only affects the current pregnancy but it may also contribute to the development of the obesity in the future. Excessive postpartum weight gain contributes to the development of several chronic lifestyle diseases. Improper sleep and Unhealthy diet, taking lots of stress and depression gestational diabetes, breastfeeding, physical activity are some of the important factors which have been associated with postpartum weight retention.

**KEYWORDS:** Depression, Diabetes, Obesity, Postpartum, Pregnancy, Sleep

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## INTRODUCTION

Obesity is serious public health issues that women face worldwide. The six weeks following childbirth are generally referred as, the postpartum period. This is the critical period for mother and new-born babies both. Mother goes through a lot of changes in the first few hours and days following giving birth, both physically and emotionally. The period first six weeks after child birth are also referred as puerperium, puerperal phase or immediate postpartum period (Romano M et.al.,2010). Pregnancy greatly affects various body system of the mother. (ACOG, 2018). Women at this period is at high risk of gaining weight. Gaining weight before, after and during pregnancy not only affect the current pregnancy but it may also contribute to the development of obesity in the future. Obesity is a high risk factor for disease including sleep apnea and arthritis, which can enter with person's ability to sleep (Sanjay R Patel et.al.,2006).

Excessive postpartum weight gain contribute to the development of several chronic lifestyle disease and

increases the risk of mental illness including postpartum mood disorder, it is also linked to decreased fertility, increases maternal and foetal risk during pregnancy and long term health problems in woman (Nohr EA et.al.,2005). Excess weight gain raises the risk of coronary artery disease, ischemic stroke, type 2 diabetes, hypertension, some malignancies such as breast cancer and colon cancer (Chescheir,2011). Study shows that since 1980, obesity rate has more than doubled obesity is undoubtedly the most important public health issue of our day. Obese mom are more likely to give birth to microscopically small babies, (Rode et.al.,2012), having normal tolerance level of glucose (Illman M V et.al.,2013). Woman find it very difficult to lose their weight after giving birth. The World Health Organisation describes the postpartum period as the most critical and yet the most neglected phase in the lives of mothers and babies. It is seen during this period more number of maternal and babies' death occurs. Study shows that improper sleep, depression,

unhealthy diet, gestational diabetes, breastfeeding, stress, physical activity, household income are some factors playing great role in postpartum weight gain. It is important to understand the a etiology and perpetuating factors related to postpartum weight gain to reduce the associated health outcomes.

Weight increase in women of child bearing age has a variety of causes. In younger woman, getting married, having children and starting employment are all risk factors for weight gain. Increased sedentary behaviour decreased physical activity and worsened food habits are common outcomes of these changes (Ball k et.al.,2002 and Ostbye T et.al.,2012). Lack of time, weariness financial restraints and changes in priorities after childbirth all contribute to the barriers to a healthy lifestyle among postpartum woman (Carter-Edwards et. al.,2009 and Nicklas JM et.al.,2011).

**STUDY:** We will see how some of the following factors plays major role in postpartum weight gain:

### 1. SLEEP

Many study shows that reduced sleeping hour is associated with an increase risk for future weight gain and obesity. Increasing sleep time among those who sleep less than 7 hours part of night shows positive result in obesity prevention. Woman sleeping less than 6 to 7 hours are more likely to gain weight about 15 kg and woman sleeping five hours or less are more at high risk of gaining weight. So woman sleeping less than five hours are at most dangerous state of gaining weight and obesity (Patel SR, et.al., 2006). The functions of hypothalamic pituitary which impact feeding, energy balance and metabolism are closely linked to circadian cycles And our intricately linked to sleep regulations (Turek F W et.al., 2005).

Short term sleep deprivation has a significant impact on cortisol glucose tolerance as well as growth hormone release. Reduced sleep in order to produce weight gain may reduces physical activity, and increase calorie intake, which result in decrease in energy expenditure.

Sleeping less than five to six hours per night lowers the level of the appetite promoting hormone, ghrelin and increases which promotes weight gain. (SpiegelK et.al. 2004).

### 2. DEPRESSION:

Hippocrates In 4<sup>th</sup> century provided the first description of depression he named it "MELANCHOLIA", also known as Baby Blues. He said that depression caused due to excess of black bile in the brain. Depression is a medical condition, feeling of unhappiness lasts for a long time or it is serious medical illness that negatively affects once

feeling way of thinking and responding. Depression is experienced by most of the new moms, as having child is the happiest moment for mother but onthe other hand most challenging too. Baby Blues typically begin within the first two or three weeks and last for more than two weeks or can take long time creating depression known as postpartum depression. Some extreme mood disorder called postpartum psychosis may also develop.

Symptoms of postpartum depression are:

- Mood swings
- feeling helplessness
- feeling hopelessness
- persistent sadness
- Anger
- loss of pleasure in activities
- Anxiety
- feeling overwhelmed
- inability to adjust in the family
- Loss of concentration at any work
- sleep disturbances
- Appetite problem
- feeling like mentally distorted
- dysphoria, Psychotic depression
- suicidal attempts

If postpartum depression is untreated for months or longer, can convert into chronic depression disorders. Study shows that depression in postpartum period act as a great barrier in returning to pre pregnancy weight, and is also one of the reason for postpartum weight gain and obesity.

It is seen that in depressed patient, serotonin levels are lower than normal (Nemeroff C.B. 1998), and in order to improve and regulate depression one may consume excessive amounts of carbohydrate rich food which can result in substantial weight gain and obesity (Stice E et.al.,2005). Depression also lowers the level of sex hormones. And the low levels of sex hormone and serotonin may also contribute to hypothalamic pituitary- adrenal axis dysregulations (Benthea C. L et al 2002, Nemeroff C B 1998 and Bjorntorp P., 2001), Which results in persistent cortisol production. Women suffering from postpartum depression had higher cortisol level in their blood, which raises hunger and build up visceral fat, and contribute to abdominal obesity (Bjorntorp. P., 2001).

### 3. GESTATIONAL DIABETES:

Gestational diabetes is a kind of diabetes that exclusively affects woman while they are pregnant. Both mother and baby may experience health issue as a result of gestational diabetes. It is very necessary to manage gestational diabetes to help mother and baby stay safe. Gestational diabetes usually manifests itself

in the third trimester of pregnancy. Between 24 and 28 weeks of pregnancy doctors are most likely to screen for it. GDM (Gestational Diabetes Mellitus) is characterised by low insulin sensitivity and a lack of insulin response. To compensate for their insulin resistance, most women maintain normal glucose tolerance by increasing their insulin secretion (Buchanan TA and Xiang AH, 2005). During pregnancy, an adaptive physiologic state of decreased insulin sensitivity is required for giving enough energy to maintain foetal development. During pregnancy it is seen that insulin sensitivity falls by 50 to 60% in normal physiological state (Catalano PM and Ehrenberg HM, 2006).

Women with GDM have a higher risk of macrosomia, neonatal hypoglycaemia, hyperbilirubinemia shoulder dystocia and Birthtrauma in their children. GDM risk is increased by being overweight or obese before and during pregnancy (Cnattingius S et.al., 1998; Flagal KM et.al., 2014; Ng M et.al., 2013 and Ovesen et. al., 2011). Study shows that gain in body mass index increased the risk Of GDM for all woman. Wait gain between pregnancies and GDM in the subsequent pregnancy where both linked to a high weight gain after 6 weeks of postpartum. (Ovesonet.al., 2011). Pre pregnancy weight gain greatly increases the risk of GDM. Some studies shows that increase in first to second pregnancy BMI (Body Mass Index) could affect postpartum weight and it can affect both short term weight gain and long term weight gain. (Hediger ML et.al., 1997 and Williamson DF et.al., 1994).

#### 4. BREAST FEEDING:

Breastfeeding is one of the most effective and essential ways to ensure Child good health and survival. Breast milk is most ideal and safe for infants and contains antibodies providing all the energy and nutrients an infant needs. Breastfeeding women have reduced risk of breast and ovarian cancer. Breast milk is generally composed of 87% water 38% fat 1% protein and 7% lactose. Even if daily nutrient intake falls short of the necessary levels, still milk supply adequate nutrients for infants body uses up all its resources to manufacture milk for baby leaving mothers body depleted and exhausted (Health line).

Breastfeeding has both short and long term health benefits for mothers and babies (Harder Tet.al., 2005 and Crume TL et.al., 2011).

Obesity during pregnancy has been linked to bad outcomes both in terms of breastfeeding onset and duration (Amir LH, Donath L 2007 and Krause KM et.al, 2011). Obese women's prolactin levels are lower cycling reactions in the first postpartum week (Rasmussen KM and Kjolhede CL 2004). It shows a negative correlation between breastfeeding until and

after six months delivery and postpartum weight retention. (Baker JL et. al., 2008).

Study suggests that in most of the cases, breastfeeding plays positive role in illuminating postpartum weight gain, if breastfeeding exceeds six months, and may contribute to weight gain if not.

#### 5. PHYSICAL ACTIVITY/EXERCISE

Physical activity can be defined as planned systematic and repetitive body movements performed to improve physical fitness, it acts as a vital component for a healthy lifestyle (ACSM' S guidelines, 2018)

According to American College of Obstetricians And gynaecologists, physical activity and exercise in pregnancy is associated with few dangers, and also have been demonstrated to benefit the majority of women. Due to typical anatomic and physiological changes, as well as foetal requirements, some modifications to exercise programmes may be necessary.

In comparison to women who were more sedentary, woman who exercised 30 to 60 minutes for 2 to 7 times a week had a significantly lower risk of gestational hypertensive disorders, gestational hypertension and caesarean birth (Magro-Malaso ER et.al., 2017).

Exercise during pregnancy has been proven in studies to lower glucose level (Jovanovic-Peterson L et.al., 1989), and help to prevent preclampsia (Mehers and Duley L 2006).

Prenatal exercise reduced the risk of caesarean birth by 55% in mothers with pre gestational medical conditions (Chronic hypertension, type 1 diabetes, and type 2 diabetes), and did not increases the risk of adverse maternal and neonatal outcomes (Soultanakis HN et.al., 1996).

Dancing, walking, aerobic exercise, stationary cycling, hydrotherapy, resistance exercise, are some of the safe and beneficial exercise that could be done during pregnancy, it shows several benefits in pregnancy like exercise is helpful in vaginal delivery on the other hand it lowers excessive gestational weight gain, gestational Hypertensive disorders, caesarean birth. There are some warning signs of physical activity or exercise which should never be ignored like abdominal pain, vaginal bleeding, regular painful contractions, amniotic fluid leakage, headache, chest pain, calf pain or swelling (Berghella V and Saccone G, 2017).

#### CONCLUSION:

Weight gain should never be ignored as it leads to various risk factors. Being a new mom it is stressful, which produces stress hormone and result in

substantial weight gain and depression too. It is very important to acknowledge women about various risk factors resulting in postpartum weight gain and obesity so that mother can be saved from the dangerous consequences of it.

## REFERENCE

- [1] ACOG Committee Opinion No. 736: Optimizing Postpartum Care. *ObstetGynecol* 2018; 131:e140.
- [2] American College of Sports Medicine. ACSM's guidelines for exercise testing and prescription. 10th ed. Philadelphia, PA: Wolters Kluwer; 2018.
- [3] Amir LH, Donath S. A systematic review of maternal obesity and breastfeeding intention, initiation and duration. *BMC Pregnancy Childbirth*. 2007; 7:9.
- [4] Baker JL, Michaelsen KF, Sørensen TIA, Rasmussen KM High prepregnant body mass index is associated with early termination of full and any breastfeeding among Danish women. *Am J Clin Nutr* 2007; 86:404–11.
- [5] Ball K., Brown W., Crawford D. Who does not gain weight? Prevalence and predictors of weight maintenance in young women. *Int. J. Obes. Relat. Metab. Disord.* 2002; 26:1570–1578. doi: 10.1038/sj.ijo.0802150.
- [6] Berghella V, Saccone G. Exercise in Pregnancy! *Am J ObstetGynecol* 2017; 216:335-7.
- [7] Bethea CL, Lu NZ, Gundlach C, Streicher JM. Diverse actions of ovarian steroids in the serotonin neural system. *Front Neuroendocrinol*. 2002; 23:41–100.
- [8] Bjorntorp P. Do stress reactions cause abdominal obesity and comorbidities? *Obes Rev*. 2001; 2:73–86.
- [9] Buchanan TA, Xiang AH. Gestational diabetes mellitus. *J Clin Invest*. 2005; 115 (3): 485–91.
- [10] Carter-Edwards L., Ostbye T., Bastian L.A., Yarnall K.S., Krause K.M., Simmons T.J. Barriers to adopting a healthy lifestyle: Insight from postpartum women. *BMC Res. Notes*. 2009; 2:161. doi: 10.1186/1756-0500-2-161.
- [11] Catalano PM, Ehrenberg HM. The short- and long-term implications of maternal obesity on the mother and her offspring. *BJOG*. 2006; 113 (10): 1126–33.
- [12] Chescheir NC. Global obesity and the effect on women's health. *Obstet Gynecol*. 2011; 117:1213–1222.
- [13] Cnattingius S, Bergstrom R, Lipworth L, Kramer MS. Prepregnancy weight and the risk of adverse pregnancy outcomes. *N Engl J Med*. 1998; 338 (3): 147–52.
- [14] Crume TL, Ogden L, Maligie M, Sheffield S, Bischoff KJ, McDuffie R, et al. Long-term impact of neonatal breastfeeding on childhood adiposity and fat distribution among children exposed to diabetes in utero. *Diabetes Care*. 2011; 34:641–5.
- [15] Flegal KM, Kruszon-Moran D, Carroll MD, Fryar CD, Ogden CL. Trends in obesity among adults in the United States, 2005 to 2014. *JAMA*. 2016; 315 (21): 2284–91.
- [16] Garcia-Patterson A, Martin E, Ubeda J, Maria MA, de Leiva A, Corcoy R. Evaluation of light exercise in the treatment of gestational diabetes. *Diabetes Care* 2001; 24: 2006 – 7.
- [17] Harder T, Bergmann R, Kallischnigg G, Plagemann A. Duration of breastfeeding and risk of overweight: a meta-analysis. *Am J Epidemiol*. 2005; 162:397–403.
- [18] Hediger ML, Scholl TO, Schall JI. Implications of the Camden study of adolescent pregnancy: interactions among maternal growth, nutritional status, and body composition. *Ann N Y Acad Sci*. 1997; 817:281–91.
- [19] Jovanovic-Peterson L, Durak EP, Peterson CM. Randomized trial of diet versus diet plus cardiovascular conditioning on glucose levels in gestational diabetes. *Am J ObstetGynecol* 1989; 161: 415 – 9.
- [20] Krause KM, Lovelady CA, Ostbye T. Predictors of breastfeeding in overweight and obese women: data from Active Mothers Postpartum (AMP). *Matern Child Health J*. 2011; 15:367–75.
- [21] Magro-Malosso ER, Saccone G, Di Tommaso M, Roman A, Berghella V. Exercise during pregnancy and risk of gestational hypertensive disorders: a systematic review and meta-analysis. *Acta Obstet Gynecol Scand* 2017; 96: 921 – 31.
- [22] Meher S, Duley L. Exercise or other physical activity for preventing pre-eclampsia and its complications. *Cochrane Database of Systematic Reviews* 2006, Issue 2.

- [23] Nemeroff CB. The neurobiology of depression. *Sci Am.* 1998; 278:42–49.
- [24] Ng M, Fleming T, Robinson M, Thomson B, Graetz N, Margono C, Mullany EC, Biryukov S, Abbafati C, Abera SF, et al. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980-2013: a systematic analysis for the global burden of disease study 2013. *Lancet.* 2014;384 (9945): 766–81.
- [25] Nicklas J.M., Zera C.A., Seely E.W., Abdul-Rahim Z.S., Rudloff N.D., Levkoff S.E. Identifying postpartum intervention approaches to prevent type 2 diabetes in women with a history of gestational diabetes. *BMC Pregnancy Childbirth.* 2011; 11:23. doi: 10.1186/1471-2393-11-23.
- [26] Nohr EA, Bech BH, Davies MJ, Frydenberg M, Henriksen TB, Olsen J. Prepregnancy obesity and fetal death: a study within the Danish National Birth Cohort. *Obstet Gynecol.* 2005; 106:250–9.
- [27] Ostbye T., Peterson B.L., Krause K.M., Swamy G.K., Lovelady C.A. Predictors of postpartum weight change among overweight and obese women: Results from the active mothers postpartum study. *J. Womens Health.* 2012; 21:215–222. doi: 10.1089/jwh.2011.2947.
- [28] Ovesen P, Rasmussen S, Kesmodel U. Effect of prepregnancy maternal overweight and obesity on pregnancy outcome. *Obstet Gynecol.* 2011; 118 (2 Pt 1): 305–12.
- [29] Patel SR, Malhotra A, White DP, Gottlieb DJ, Hu FB. Association between reduced sleep and weight gain in women. *Am J Epidemiol* 2006;164:947-54
- [30] Rasmussen KM, Kjolhede CL. Prepregnant overweight and obesity diminish the prolactin response to suckling in the first week postpartum. *Pediatrics* 2004; 113:e465–71.
- [31] Rasmussen KM, Kjolhede CL. Prepregnant overweight and obesity diminish the prolactin (PRL) response to suckling in the first week postpartum [abstract]. *FASEB J.* 2003; 17: A697.
- [32] Rode L, Kjaergaard H, Ottesen B, Damm P, Hegaard HK. Association between gestational weight gain according to body mass index and postpartum weight in a large cohort of Danish women. *Matern Child Health J.* 2012; 16 (2): 406–13.
- [33] Soultanakis HN, Artal R, Wiswell RA. Prolonged exercise in pregnancy: glucose homeostasis, ventilatory and cardiovascular responses. *Semin Perinatol* 1996; 20: 315 – 27.
- [34] Spiegel K, Leproult R, L'hermite-Balériaux M, Copinschi G, Penev PD, Van Cauter E. Leptin levels are dependent on sleep duration: relationships with sympathovagal balance, carbohydrate regulation, cortisol, and thyrotropin. *J Clin Endocrinol Metab.* 2004
- [35] Stice E, Presnell K, Shaw H, Rohde P. Psychological and behavioral risk factors for obesity onset in adolescent girls: a prospective study. *J Consult Clin Psychol.* 2005; 73:195–202.
- [36] Turek F.W., Joshu C., Kohsaka A., Lin E., Ivanova G., McDearmon E., Laposky A., Losee-Olson S., Easton A., Jensen D.R., et al. *Science.* 2005; 308 (Published online April 21, 2005): 1043-1045.
- [37] Williamson DF, Madans J, Pamuk E, Flegal KM, Kendrick JS, Serdula MK. A prospective study of childbearing and 10-year weight gain in US white women 25 to 45 years of age. *Int J Obes Relat Metab Disord.* 1994; 18 (8): 561–9.
- [38] World Health Organization. Available from: <http://www.who.int/mediacentre/factsheets/fs311/en/>