Holistic Assessment of Obesity in Pregnancy: considering metabolic health

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ABSTRACT

Obesity is the most common complication to pregnancy with 16% to 30% of women worldwide living with high weights. Obesity has been defined solely by body mass index (BMI) without consideration of individual metabolic health. Neither most research nor research-based perinatal management guidelines have distinguished between metabolically healthy individuals and those with obesity related diseases. Several international medical organizations now recommend holistic health assessments that include screening for metabolic disorders in addition to BMI measurement, along with care recommendations tailored to metabolic health or disease. This article reviews research that studied outcomes for pregnant individuals living with obesity, who were stratified by metabolic health or disease, and their pregnancy outcomes. Additionally, methods for holistic health assessment during pregnancy are reviewed along with management for preclinical and clinical obesity based on international guidelines.

Introduction

Obesity is the most common complication to pregnancy with 16% to 30% of women worldwide living with high weights.[1-6] Perinatal obesity research literature has focused on identifying maternal, fetal, and newborn complications associated with obesity (Table 1) and management to ameliorate these poor reproductive outcomes, making antenatal care weight and risk-centric, ignoring the large numbers of childbearing people living with obesity who have no obesity-associated disease and their pregnancy outcomes. Relying on the perinatal obesity research to date is problematic. Some studies mix individuals categorized as overweight with individuals in all obesity classes. Few studies stratify subjects by obesity class or divide individuals with obesity into those who are metabolically healthy and those with obesity-related disease. A smaller, growing body of literature has identified individuals living with obesity who are metabolically healthy and have uncomplicated pregnancy outcomes.

Outside of pregnancy, researchers have pivoted toward promoting a more comprehensive assessment of obesity, with patient centred health that is focused on the outcomes desired by the patient for healthy living, not weight loss.[7-10] The American Medical Association, The European Association for the Study of Obesity, The Canadian Medical Association, and the American College of Endocrinology all support a health assessment that is more than only selecting a body mass index (BMI) range, urging one that reviews medical complications and functional status related to obesity.[7-9,11] These holistic health assessments leading to individualized risk determination and care planning have not been described in the perinatal or midwifery literature. Targeted health recommendations that consider metabolic health can reduce overtreatment and potential iatrogenic harm. Pregnancy presents an unparalleled primary care opportunity for clinicians to support individuals living with obesity with health education and lifestyle strategies that can promote an uncomplicated pregnancy and prolong their metabolic health beyond the baby's birth. This manuscript reviews studies documenting metabolic health for pregnant individuals living with obesity. The methods used to determine metabolic health are reviewed and applied to holistic assessment of health in obesity, and antenatal health teaching to support that health.

Table 1. Perinatal Complications Associated with Prepregnancy Obesity[1-5, 10, 12, 13]

MATERNAL
- Gestational diabetes
- Hypertensive disorders of pregnancy
- Pregnancy prolonged to 42 weeks gestation
- Prolonged stages of labor
- Prolonged induction of labor
- Cesarean birth
- Postpartum hemorrhage
- Deep vein thrombosis
- Delayed lactogenesis II
- Cesarean wound dehiscence or infection

FETAL/NEWBORN
- Formation defects, particularly neural tube defects
- Macrosomia
- Fetal death in utero
- Stillbirth
- Shoulder dystocia and traumatic birth injuries
- Newborn hypoglycemia

METABOLICALLY HEALTHY OBESITY

Obesity defined only by body mass index (wt[kg]/height^2 [m^2]) correlates poorly with individual adiposity.[7-9, 14] World Health Organization experts agree that there is no percent body fat cut-off that defines obesity even as research using WHO BMI ranges as indicators of health proliferates.[7, 8, 15, 16] Adipose tissue is the body's largest endocrine organ. It regulates energy homeostasis for the entire body and modulates immune function. Outside of pregnancy, metabolically healthy obesity (MHO) for women has been defined as a systolic blood pressure less than 130 mmHg, no blood pressure lowering medication, no diabetes, and a waist to hip ratio less than 0.95.[7,17] Researchers using this definition with National Health and Nutrition Survey III (NHANES III) data from the United States (US) found that 40% of adults living with obesity were metabolically healthy and at low risk for cardiac disease and related mortality. Higher mortality was observed for people with BMIs $\geq$ 40 regardless of metabolic health (MH). These researchers acknowledged that Asians were under-represented in their samples and that waist to hip ratios might not be a reliable screen for them.[17]

Metabolically healthy obesity is the basis for the Edmonton Obesity Staging System (EOSS). Developed originally to prioritize individuals living with obesity who would benefit from bariatric surgery, the EOSS divides individuals with obesity into 5 stages based on obesity-related symptoms and disease (Table 2).[18] In the original EOSS application to United States NHANES III data, 27% of adults in obesity class I were in EOSS stages 0 and 1 (metabolically healthy), 22% in obesity class II, and 19% in obesity class III, demonstrating that metabolic health is imperfectly related to body mass index. The NHANES subjects were adults of all ages, male and female.[18] Demsky, et al., first developed a perinatal adaptation of the EOSS which removes obesity-related symptoms, such as dyspnea, that occur during healthy, uncomplicated pregnancies to women of all sizes (Table 2).[19] The perinatal adaptation of the EOSS can be used to provide a more holistic assessment of health, and guide risk discussions and prenatal health education with those in EOSS stages 0 and 1 needing supportive health education more than interventive management.

Table 2. Perinatal Adaptation of Edmonton Obesity Staging System[19]

STAGE	EOSS PERINATAL ADAPTATION CRITERIA
0	NO sign of obesity-related risk factors
	NO physical symptoms, *excluding common discomforts of pregnancy (dyspnea on moderate exertion, occasional aches/pains, fatigue, sleep disturbances).*
	NO psychological symptoms
	NO functional limitations *excluding those related to pregnancy (inability to bend at waist, inability to lay flat on back)*
1	SUBCLINICAL obesity-related risk factors (borderline hypertension, impaired glucose tolerance, elevated liver enzymes, etc.)
	Dyspnea on moderate exertion, occasional aches/pains, fatigue, etc., are common pregnancy related discomforts and cannot be used for EOSS staging in pregnancy.
	MILD obesity-related psychological symptoms and/or mild impairment of well-being

2	ESTABLISHED obesity-related comorbidities requiring medical intervention (hypertension, gestational hypertension, preeclampsia, type 2 diabetes, gestational diabetes, sleep apnea, polycystic ovary syndrome, osteoarthritis). *Gastro-esophageal reflux cannot be used as it commonly results from physiologic changes of pregnancy*
	MODERATE obesity-related psychological symptoms (depression, eating disorder, anxiety disorder)
	MODERATE obesity-related functional limitations in daily activities (quality of life is beginning to be impacted)
3	SIGNIFICANT obesity-related end-organ damage (eclampsia, myocardial infarction, heart failure, stroke, thromboembolic disease, diabetic complications, renal insufficiency, incapacitating osteoarthritis
	SIGNIFICANT obesity-related psychological symptoms (major depression, suicidal ideation)
	SIGNFICANT impairment of well-being (quality of life is significantly impaired)
4	SEVERE (potential end stage) eclampsia, dialysis, organ damage from obesity-related comorbidities
	SEVERLY disabling psychological symptoms
	SEVERE functional limitations, unable to mobilize

CLINICAL AND PRECLINICAL OBESITY

The Lancet Diabetes and Endocrinology Commission spent several years reviewing and redefining "obesity." Their 2025 publication said that defining obesity as a disease led to overdiagnosis.[20] Obesity (a BMI $\geq$ 30) was divided into preclinical obesity and clinical obesity.[20] Preclinical obesity is a BMI $\geq$ 30 with no obesity-related disease. Clinical obesity, a BMI $\geq$ 30 with obesity related metabolic disease, is a chronic disease specifically caused by excess adiposity.[20] This conceptualization of preclinical and clinical obesity is consistent with the Edmonton Obesity Staging System's levels of obesity.[18] Individuals with preclinical obesity have been treated with the same interventions as those with clinical obesity for decades. The Lancet Commission recommends monitoring with or without prophylactic interventions for those with preclinical obesity.[20] Interventions related to metabolic disease and obesity

are advised for individuals with clinical obesity.[20] Metabolic disease-based approaches along with outcomes research have not been applied to antenatal care.

Aging is associated with increased adiposity and obesity.[21] Premenopausal, reproductive age individuals with obesity may have higher rates of metabolic health because they have not yet been subject to the effects of aging which increase visceral fat deposition and increase insulin resistance, inflammation and impaired immune function, which in turn increase risk for type 2 diabetes, hypertension, hyperlipidemia and heart disease.[21] Age may be the factor that explains the high numbers of pregnant people who are metabolically healthy in the studies reviewed in Table 3. In those studies, midwifery care or births in out of hospital settings are markers for the absence of diabetes, hypertension, preeclampsia

or other obesity-related disease, because in all countries, childbearing people with obesity-related disease receive care management from physicians.

Table 3. Studies Documenting Metabolically Healthy Obesity during Pregnancy

STUDY, LOCATION, TIME PERIOD	STUDY TYPE, N PARTICIPANTS	FINDINGS
Daemers[22] Netherlands July 2002-November 2004	Secondary analysis of prospective cohort study N=1,329	In obesity classes II and III, 55% of women remained in midwifery care throughout pregnancy and 30% continued to midwifery-led care for birth without an increase in adverse outcomes compared to women of normal weight
Demsky[19] Ontario, Canada January 2018-August 2018	Prospective cohort study N= 423 (69 normal weight women and 354 women with overweight or obesity)	A perinatal adaptation of the Edmonton Obesity Staging System was applied to demonstrate metabolic health in women undergoing induction of labor at term. Women with subclinical symptoms, such as transient hypertension, had a 43.2% cesarean section rate. Those with obesity-related metabolic diseases, such as gestational diabetes or hypertension, had a 90.5% cesarean section rate. Women in the normal weight range had a 30.4% cesarean section rate.
Hollowell[23] England April 2008- April 2010	Prospective cohort study comparing births in alongside midwifery-led birth centres, home, and hospital units N= 11,875 (normal weight 8,936, obese 1,955, very obese [BMI $\geq$ 35] 984)	Multiparous, low risk (no obesity-associated disease] women with obesity had lower risk of outcomes requiring obstetrical intervention than nulliparas with normal weight (21.06% versus 52.9%). For otherwise healthy women with obesity, regardless of obesity class, the risk of all interventions and adverse maternal outcomes requiring physician care increased by 15% compared to healthy of women in the normal weight range.
Jevitt[24] United States, American Association of Birth Centers 2012-2015	Two group retrospective propensity match N=1,922 (961 body mass index in normal range and 961 body mass index in obese range)	Of women in the obese BMI range, 76.3% had no antenatal complications, 48.1% had no intrapartum complications, and their spontaneous vaginal birth rate was 87.5%. There were no significant differences in intrapartum, postpartum, or newborn transfers to hospital; intrapartum, postpartum, newborn complications; newborn Apgar scores or newborn weights between the two groups.

Pétursdóttir[25] Sweden, Uppsala Biobank of Pregnancy Women Sept. 2009-Oct. 2014	Prospective case control study N=8,721 (5,852 women with normal weight,2,302 women with overweight, 567 women with obesity)	33% of women with obesity were metabolically healthy based on 1st trimester blood pressure, lipoprotein levels and nonfasting glucose. 35% of women with metabolically healthy obesity developed at least one obesity-associated adverse outcome, (adjusted odds ratio 1.49, 95% CI 1.03-2.15).
Relph[26] Canada, Ontario Birth Registry April 2012-March 2017	Prospective cohort study N=703,115 total 17% obesity rate	The sample was stratified by BMI groups and outcomes for women with and without pre-existing co-morbidities (hypertension, diabetes, etc.] were compared. Among women with obesity but no early complicating factors, 58.25% experienced a pregnancy without complications. Care in low risk settings can be considered for these women.
Rowe[27] United Kingdom, 122 Midwifery-led alongside birth units 1 January-31 December 2016	Matched case control study N=3,701 (1949 women of normal weights and 1122 women with BMI $\geq$ 35)	Women with BMI $\geq$ 35 were no more likely to have augmentation of labor, instrumental birth, cesarean birth, maternal blood transfusion, 3rd/4th degree perineal tear, or admission to a higher level of care than women of normal weight. Vaginal birth rates were high (nulliparas 67.9%, multiparas 96.3%). Nulliparas with BMI $\geq$ 35 were more likely to have an urgent cesarean birth (12.2% vs. 6.5%, aRR=1.80, 95% CI 1.05-3.08) or a PPH $\geq$1500ml (5.1% vs. 1.7%, aRR = 3.01, 95% CI 1.24-7.31).
Vieira[28] United Kingdom March 2009-June 2014	Secondary analysis of data from a nutrition and activity intervention N=1409 pregnant women with BMI $\geq$ 30	Among 1409 participants (BMI 36.4, SD 4.8 kg/m(2)), the prevalence of uncomplicated pregnancy and birth was 36%. Multiparity and increased plasma adiponectin, decreased maternal age, normal systolic blood pressure and normal HbA1c were independently associated with uncomplicated pregnancy and birth.

Holistic Prenatal Health Assessment

Antenatal care providers must balance the ethical responsibility to inform childbearing people of the perinatal risks associated with obesity with an unbiased, non-stigmatizing approach to health education.[29] Obesity historically has been viewed as a personal responsibility with those living with high weights viewed as lazy or gluttonous.[16] With several psychiatric medications and endocrine disrupting chemicals known to increase weight along with social stressors including racism, poor sleep, and a nonnutritious food supply, obesity must be viewed as an intergenerational physical, epigenetic adaptation to multiple socio-economic disparities, social and physical environments that alter the hypothalamic–pituitary–adrenal axis (HPA) and appetite regulating systems.[30] Antenatal support for individuals living with obesity includes holistic assessment of health at the first prenatal visit, determination of an optimal weight gain target, assessment of usual eating and activity patterns and advice on optimal eating and activity for pregnancy. Life-style changes made during pregnancy can forestall the onset of obesity-related disease and improve future health.

The World Health Organization definition of health, "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" should inspire clinicians to understand not only the pregnant person's physical being but also the daily environment in which that person lives.[31] The Problem Oriented Medical Record (POMR) developed and promoted in the United States since the 1970s,[32] reduces individuals to a list of their past and present physical and mental health illnesses. Trained in use of this system, clinicians see each problem separately as something to be cured, often lacking the holism to see the interrelatedness of many conditions and their socioeconomic roots.[7, 8, 30] Holistic prenatal assessment begins with an understanding of the childbearing person's physical and metabolic health but must then extend to an understanding of how that person's life is centered in particular socio-economic conditions.

Using the Edmonton Obesity Staging System begins a holistic assessment that takes into consideration adiposity and metabolic health.[7, 18, 19] A perinatal application of the EOSS (Table 2) stages childbearing people according to their metabolic health and enables the clinician to more accurately inform the patient of potential risks and ameliorating care. The perinatal EOSS adaptation does not use symptoms commonly occurring during pregnancy such as dyspnea on exertion, gastro-esophageal reflux, or mobility limitations. Another consideration is that individuals in EOSS stages 3 and 4 (end organ disease and failure) often have infertility, leaving EOSS stages 1-2 as the most used during pregnancy.

A clinician does not have to do a complete EOSS staging during a prenatal assessment. Deciding on metabolic health is as simple as considering, "Does the pregnant person have diabetes, hypertension, heart disease or other obesity-related morbidity?" Individuals with obesity-related disease (EOSS stages 2-4 or clinical obesity) are at the highest risk for perinatal complications and need extra medical support; however, then can benefit from the same nutrition and activity advice as individuals who are metabolically healthy. Figure 1 presents an algorithm for presenting risk-ameliorating medical treatments. The presence of obesity-related disease and high weight must both be considered during informed choice discussions with patients. Individuals with preclinical, metabolically healthy obesity can be offered risk ameliorating strategies and health education that aims to prevent obesity-related disease. Those with obesity-related disease (clinical obesity) should receive stronger recommendations to use risk-reducing treatments (Figure 1). Weight will change during pregnancy and metabolic health might change, necessitating revisiting the best self-care for patients and optimal support from antenatal care providers at each antenatal visit. The prenatal advice that is common to all pregnant individuals includes optimal weight gain, ideal nutrition, regular physical activity, and sufficient sleep.[33] These are often the most difficult conversations for clinicians

to have with patients.[34, 35] The next sections of this manuscript review international prenatal care guidelines for individuals with obesity.
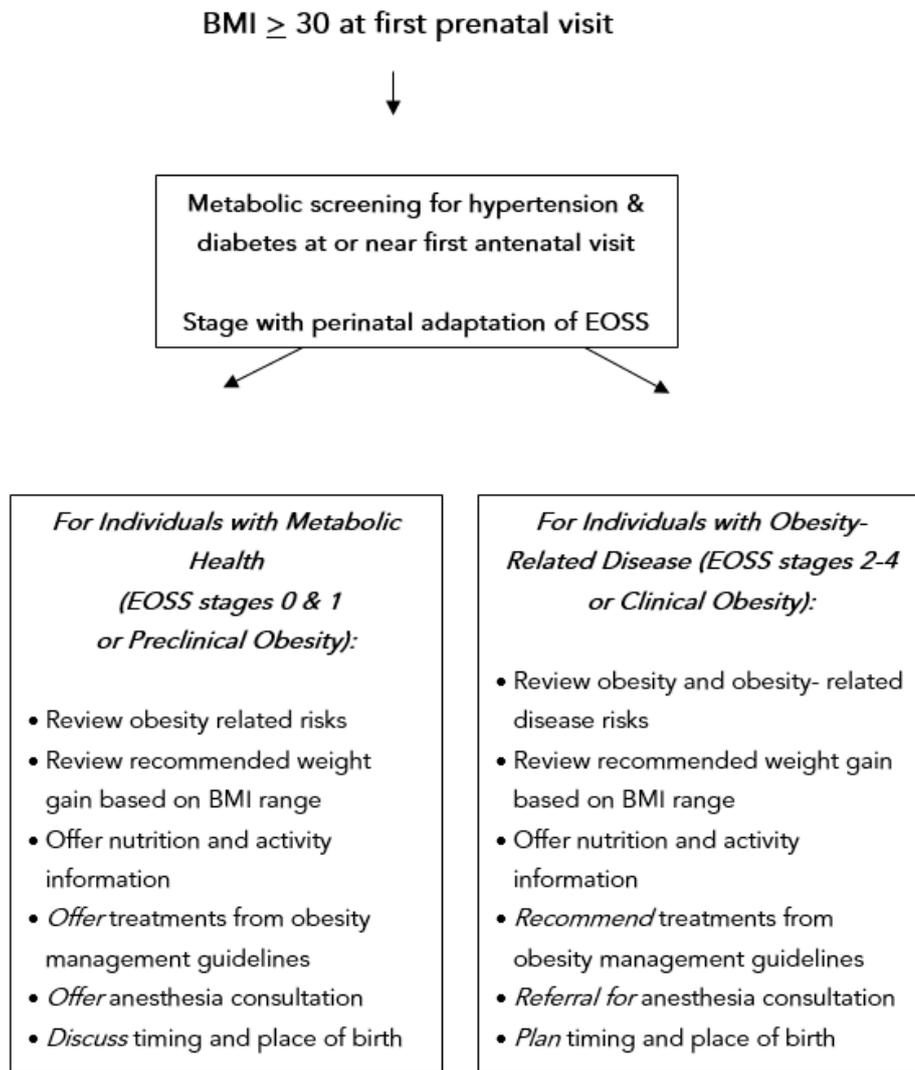
BMI ≥ 30 at first prenatal visit

↓

Metabolic screening for hypertension & diabetes at or near first antenatal visit

Stage with perinatal adaptation of EOSS

For Individuals with Metabolic Health (EOSS stages 0 & 1 or Preclinical Obesity):

- Review obesity related risks
- Review recommended weight gain based on BMI range
- Offer nutrition and activity information
- *Offer* treatments from obesity management guidelines
- *Offer* anesthesia consultation
- *Discuss* timing and place of birth

For Individuals with Obesity-Related Disease (EOSS stages 2-4 or Clinical Obesity):

- Review obesity and obesity- related disease risks
- Review recommended weight gain based on BMI range
- Offer nutrition and activity information
- *Recommend* treatments from obesity management guidelines
- *Referral for* anesthesia consultation
- *Plan* timing and place of birth

Figure 1. Holistic Assessment of High Weight in Pregnancy & Risk Ameliorating Treatments for Obesity

Guideline-Based Prenatal Care for Individuals With Obesity

OPTIMAL WEIGHT GAIN TARGET
Clinicians often fear offending patients when discussing weight gain during pregnancy, particularly since weight gain recommendations became based on BMI.[34, 36, 37] Weight gains that are consistent with 2009 United States Institute of Medicine Recommended Prenatal Weight Gain Guidelines have been shown to improve pregnancy outcomes.[38-40] It is important to recognize that there are BMI categories for Asian populations based on increased risk for obesity-related diseases in Asian populations at lower BMI ranges than in other populations. Asian BMI categories lower the recommended antenatal weight gain for individuals from Asia (Table 4).[41-44] Assisting patients with prenatal weight gain depends on two actions: supportive, unbiased health education and periodic weighing with non-judgmental analysis of weight loss or gain.[45, 46]

Table 4. 2009 Institute of Medicine Recommended Prenatal Weight Gains with Asian Body Mass Indices Included[12, 47]

WEIGHT CATEGORY	EUROPEAN BMI RANGES	ASIAN BMI RANGES	RECOMMENDED WEIGHT GAIN	
			KILOGRAMS	POUNDS
Underweight	BMI <18.5	BMI <18.5	12.5-18.0	28-40
Normal Weight	BMI 18.5-24.9	BMI 18.5-24.9	11.4-15.9	25-35
Overweight	BMI 25.0-29.9	BMI 23.0-24.9	6.8-11.4	15-25
Obese	BMI >30.0	BMI ≥25	5.0-9.0	11-20

Until the 1960s in the English-speaking world, women were told to restrict weight gain during pregnancy to prevent preeclampsia and birth complications such as macrosomia.[48] Maternal weighing, once a part of routine prenatal visits, was abandoned in the United Kingdom, Australia, New Zealand and Canada during the 1990s following research that demonstrated poor links between weighing and preventing low birth weight newborns or diagnosing preeclampsia.[45, 49] Guidelines for antenatal weight gain were introduced by the United States Institute of Medicine in 1990 that aimed to reduce low birth weights.[12, 35, 46] These guidelines, still the current practice standard, required periodic weighing to determine the success of the nutrition and weight gain advice. Controversy about weighing persisted with routine weighing remaining part of prenatal visits in the United States.[46] In other places, clinicians worried that weighing was embarrassing and stressful for patients and routine weighing was dropped.[35, 39]

To recommend an antenatal weight gain target, clinicians will need to measure height and weight at the first prenatal visit. Patients not desiring these measurements can give prepregnancy measurements. An initial weight can be useful as a baseline if patients experience excessive nausea and vomiting with dehydration or insufficient weight gain is a concern. Patients can be offered regular weighing with antenatal visits. Weights should be taken in a private area, ideally with patients weighing themselves and reporting the weight to the clinician. Periodic weighing during pregnancy has been shown to assist patients in optimizing weight gain while avoiding excessive gain.[46, 50] How patients want their size used in conversation varies person to person from large body, high weight, and person of size.[51,52] Surveys of adults found that the three top preferred terms were "weight," "unhealthy weight," and "overweight," with responders universally disliking the terms fat and obesity.[53, 54] If a patient has a BMI > 30, the clinician can ask, "How do you prefer to talk about your weight? Overweight? Large body? Large size?"

Motivational Interviewing (MI) is a counseling style that has been used successfully during antenatal care to begin conversations about tobacco use, physical activity, and weight management.[5, 55] MI assumes a patient-centred approach with the plans and goals of patient being primary, not the rigid guidelines that could be imposed by clinicians. MI starts with the clinician asking permission to talk about a topic. For example, "Would it be alright with you if we talked about what you know about weight gain in pregnancy?" In that sentence, the clinician both asks permission and acknowledges that most patients have some ideas about their own health. If the patient does not want to talk about weight, the antenatal care provider still has an obligation to present evidence-based information about the risk for perinatal complications associated with high weights. The clinician could say, "Based on your health today, I have to let you know that there is increased risk for diabetes during pregnancy and high blood pressure." The clinician would add community appropriate risk statistics, describe the screening for disease that will be done, and then ask if the patient has any questions. If the patient has no questions, the clinician can assure the patient that questions are welcome at any time.

A patient who agrees to discuss a topic or has a question, gives the clinician an opportunity to present unbiased information using the four core skills of MI: open-ended questions, affirmation, reflection, and summary. Open-ended questions cannot be answered with a "yes" or "no," and often start with "what" or "how." Affirmations support the client's thoughts and actions. A clinician might say, "You should feel good about your eating and activity this month. Your weight gain is just what you planned." A reflection is a restatement of what the patient has said, giving the patient time to hear what was said and reflect further on it. "You said that trying to pack a lunch to eat at work is challenging and you feel defeated," is a reflection. Reflections give the patient time to correct a misunderstanding by the clinician or rethink what has just been said. Finally, conversations are concluded with a summary. "We talked about your goals for these coming two months to walk after dinner four to five nights a week and to have a piece of fruit with breakfast. Did I miss anything?" If a problem-oriented documentation style is used, the goals stated in the summary become part of the plan.

ASSESSMENT OF EATING AND ACTIVITY PATTERNS

When doing nutritional counseling, the word "diet" is best avoided. Diet connotes food restriction and is associated with negative experiences for many. Diet can be replaced by eating or nourishment. The clinician could ask, "What do you usually eat?" or "What are your favorite foods?" Assumptions should not be made that individuals with high weights eat large amounts of high sugar or high fat foods.[35] Activity can be assessed by asking what a usual day or workday is like for a patient. Is there a regular activity that they do such as walking a dog? Activity assessment includes usual sleep patterns and hours of sleep per day.[33]

OPTIMAL EATING DURING PREGNANCY

Weight gains within the 2009 Institute of Medicine Guidelines depend on optimal eating and nutrition. No pregnancy-specific diets have been developed; however, the Mediterranean diet, the Nordic diet, the flexitarian diet, the DASH diet (Dietary Approaches to Stop Hypertension), the United States My Plate diet, and low glycemic index diets all include fiber rich fruits and vegetables, whole grains, peas, beans, and nuts, eggs, dairy products, plant-based oils and lean meats such as fish.[33] All these eating patterns can provide the macro- and micro-nutrients needed for a healthy pregnancy and fetal growth. Use of the Mediterranean and DASH diets has been shown to reduce the risk for gestational diabetes by 15-38%.[56] Approximately 100 kcal per day more per day are needed during the first 16-20 weeks of pregnancy, increasing to 300 kcal per day for the last half of pregnancy.[2] Weight loss during pregnancy is not recommended, even for those with high prepregnancy weights.[5]

OPTIMAL ANTENAL ACTIVITY

Exercise is another term that may be off-putting to some individuals because of its association with the grueling work done by professional athletes. Physical activity is a term that includes work activity, housework, walking, swimming and other low impact activities. More than 90 minutes of physical activity per week has been shown to reduce the odds for gestational diabetes by 21-46%.[57] Regular physical activity including walking, approximately150 minutes per week, has been shown to reduce the risk for cesarean section.[2, 58]

Sleep is not often thought of as activity even though lack of sufficient sleep is associated with insulin resistance, high leptin levels, higher daily intake, weight gain and obesity.[59, 60] Six to seven hours of nighttime sleep recommended.[61] A 2022 survey of sleep in American adults showed that 30% of those working 40 or fewer hours per week and 50% of those working more than 60 hours per week slept less than 7 hours during a 24 hour period.[62] Fetal movement after 20 weeks gestation can regularly wake women, decreasing sleep quality.

MANAGEMENT STRATEGIES FOR INDIVIDUALS WITH CLASS III OBESITY OR OBESITY RELATED DISEASE

Risk ameliorating strategies vary country to country, however, folic acid 4-5mg per day oral supplementation in the first trimester to prevent neural tube defects and low dose aspirin to reduce the incidence of preeclampsia and as thrombus prophylaxis are recommended.[1,2,4,5] Because adipose deposition may obscure fetal palpation, an ultrasound to document fetal position in labour is recommended. [1,2,4,5] Some guidelines recommend screeening for obstructive sleep apnea and a prenatal anethesia consult. [52]A moving and handling risk assessment and moving to prevent pressure sores if mobility is limited during labour can be considered when BMI exceeds 39 (Class III obesity).[1] Multiparas who are metabolically healthy are candidates for low-risk, midwifery-led units.[53] Venous access should be discussed with patients at the start of labour.[1] Because the risk of stillbirth increases with a BMI greater than 39, consideration should be given to induction of labour at 39 to 40 weeks gestation. [1,2,4,5] Postpartum chemoprophylaxis to prevent deep vein thrombosis needs to be considered particularly if mobility is limited.[1]

Conclusions

Conceptualizations of obesity have evolved during the last two decades. Future perinatal research will need to continue the search for eating and activity patterns that support health without a stigmatizing focus on weight alone. This research will need to stratify participants by preclinical or clinical obesity and by WHO BMI groupings and obesity classes. Clinicians have newer concepts to apply such as metabolically health obesity or preclinical obesity, and assessment tools such as the Edmonton Obesity Staging System that assist in a nuanced evaluation of health. Use of a holistic health assessment paired with informed choice discussions that more accurately portray weight-related perinatal risks, will enable clinicians and patients to form individualized plans of care that support health and growth in pregnancy without focusing on weight alone.

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