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## Nursing Management of Gestational Diabetes

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### Abstract:

Gestational diabetes mellitus (GDM) is a common condition that can occur during pregnancy, characterized by glucose intolerance that develops or is first recognized in pregnancy. Nursing management plays a crucial role in monitoring and supporting mothers with GDM to ensure both maternal and fetal health. Key nursing interventions include assessing blood glucose levels regularly, educating the patient on dietary modifications to maintain normal glucose levels, and encouraging physical activity as tolerated. Nurses also collaborate with a multidisciplinary team, including dietitians and endocrinologists, to develop individualized care plans that address the unique needs of each patient. In addition to clinical management, psychological support is essential for pregnant women coping with GDM. Nurses should provide guidance on self-management techniques, reinforcing the importance of adherence to treatment plans, and helping patients set realistic goals. Regular follow-ups are critical to assess the patient's progress and modify care plans as necessary. Education on the potential complications of GDM, such as preeclampsia, macrosomia, and long-term risk for type 2 diabetes, is vital in empowering patients to take charge of their health. Effective communication and empathetic care significantly enhance the patient's experience and outcomes.

**Keywords:** Gestational diabetes, nursing management, blood glucose monitoring, dietary modifications, patient education, multidisciplinary team, psychological support, self-management techniques, follow-up care, complications of GDM.

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### Introduction:

Gestational diabetes mellitus (GDM) is defined as glucose intolerance that is first recognized during pregnancy. This condition has garnered increasing attention over the past few decades, particularly in light of the rising rates of obesity and sedentary lifestyles among women of childbearing age. The incidence of GDM varies across populations, but studies indicate that it affects approximately 6-10% of pregnancies in the United States and can have significant short-term and long-term consequences for both mothers and infants. Effective nursing

management of GDM is essential to ensure maternal and fetal health, prevent complications, and provide education and support throughout the pregnancy [1].

The pathophysiology of gestational diabetes involves a complex interaction between pregnancy-related hormonal changes and the insulin resistance they induce. During pregnancy, the placenta produces hormones, such as human placental lactogen (hPL) and corticotropin-releasing hormone (CRH), that lead to increased insulin resistance. This physiological insulin resistance is essential for ensuring that adequate glucose is available for the

developing fetus. However, in some women, these hormonal changes overwhelm the body's ability to produce sufficient insulin, resulting in elevated blood glucose levels. Identifying and managing GDM is crucial because it is associated with a range of potential complications, including preeclampsia, cesarean delivery, and increased risk of developing type 2 diabetes later in life for both mother and child [2].

Nursing management of GDM is critical in mitigating these risks. Nurses play a pivotal role in screening, diagnosing, educating, and providing ongoing support to pregnant women with GDM. Early identification is key to effective management; therefore, nurses must be well-versed in the risk factors associated with GDM, such as advanced maternal age, obesity, family history of diabetes, and previous history of GDM. Regular screening during the second trimester of pregnancy is standard practice, typically via the 1-hour glucose challenge test followed by a diagnostic 3-hour glucose tolerance test if necessary [3].

Once a diagnosis of GDM is established, nursing management involves personalized care plans that include dietary modifications, physical activity enhancement, blood glucose monitoring, and, when necessary, medication management. Education is also a core component of nursing practice. Nurses are tasked with teaching patients about the importance of nutrition and its role in managing blood glucose levels. A balanced diet composed of complex carbohydrates, sufficient protein, and healthy fats is essential, as is the avoidance of excessive calories and processed sugars. Nurses often work closely with dietitians to help develop individualized meal plans tailored to the specific needs of the mother and her developing fetus [4].

In addition to nutritional counseling, promoting an active lifestyle is vital for women with GDM. Nurses encourage moderate physical activity, such as walking or swimming, as regular exercise can improve insulin sensitivity and assist in managing blood glucose levels. Physical activity not only contributes to glycemic control but also supports mental health by reducing anxiety and elevating mood [5].

Blood glucose monitoring is another key area where nursing management plays an important role. Nurses educate patients on how to properly test their blood

glucose levels, understand the significance of their readings, and recognize when to seek medical advice. Consistent monitoring helps assess the effectiveness of lifestyle interventions and, when necessary, allows for timely adjustments to medication regimens. In some cases, insulin therapy or oral hypoglycemic agents may be initiated to maintain optimal glucose levels [6].

Moreover, nursing support extends beyond clinical interventions. Gestational diabetes can evoke emotional and psychological stress in expectant mothers due to the fear of potential complications and the adjustment to a new health condition. Nurses provide both emotional support and reassurance, facilitating open discussions about feelings and concerns related to GDM. This supportive environment fosters adherence to treatment plans and enhances overall maternal well-being [6].

The long-term ramifications of GDM are significant; hence, the focus of nursing management transcends the pregnancy itself. Nurses play a decisive role in educating new mothers about the increased risk of developing type 2 diabetes postpartum, with evidence indicating that approximately 50% of women with a history of GDM will develop type 2 diabetes within 5-10 years. Consequently, follow-up care, lifestyle modification, and regular glucose screenings after delivery are critical components of nursing management, helping to promote long-term health and prevent future complications [7].

#### **Pathophysiology of Gestational Diabetes:**

Gestational diabetes mellitus (GDM) is a nuanced metabolic disorder characterized by glucose intolerance that manifests during pregnancy. It poses significant health risks both to the mother and the developing fetus. Understanding the pathophysiology of GDM is pivotal in managing its effects and implementing effective preventive strategies [8].

Pregnancy induces a myriad of physiological changes, particularly involving hormonal fluctuations that are crucial for supporting fetal development. Key hormones, such as human placental lactogen (HPL), progesterone, and estrogen, play a vital role in altering maternal metabolism. HPL increases insulin resistance in maternal tissues, ensuring a steady supply of glucose

to the growing fetus. While this mechanism is beneficial in normal circumstances, it can lead to higher demand for insulin, particularly if pre-existing insulin resistance prevails. In essence, HPL serves as a catalyst that accelerates the transition toward a state of insulin resistance [8].

Additionally, progesterone promotes fat deposition during pregnancy, further influencing maternal glucose metabolism. This hormonal interplay contributes to enhanced glucose levels, elevating the risk factors associated with GDM. In individuals who are unable to meet the increased insulin demand due to compromised beta-cell function or other underlying conditions, the likelihood of developing gestational diabetes increases significantly [9].

At the core of GDM is insulin resistance, which is heightened during pregnancy. Insulin resistance obstructs the normal uptake of glucose in the muscles and adipose tissues, leading to elevated blood glucose levels. The physiological rationale for this resistance is protective; it ensures that sufficient glucose is available to the fetus during critical periods of growth. Nonetheless, in pregnant women whose beta-cells fail to compensate with adequate insulin production, this condition can culminate in GDM [10].

Several factors contribute to the degree of insulin resistance experienced during pregnancy. Genetic factors, such as pre-existing obesity or a family history of type 2 diabetes, can exacerbate insulin resistance. Moreover, dietary habits and lifestyle choices, including sedentary behavior and inadequate nutritional intake, play significant roles. Notably, fat accumulation, particularly in the visceral area, is a powerful driver of insulin resistance, suggesting that the mother's metabolic health significantly influences the likelihood of developing GDM [11].

The incidence of GDM is also strongly influenced by genetic predisposition. Studies indicate that women with a family history of diabetes, particularly type 2 diabetes, exhibit a higher risk of developing GDM. Specific genetic markers have been associated with impaired glucose metabolism and insulin resistance, underscoring the hereditary basis of the condition [11].

Environmental factors further compound genetic predispositions. A growing body of literature has

established a link between lifestyle choices, such as diet and physical activity levels, and the development of GDM. High-calorie diets that promote excessive weight gain during pregnancy, alongside low physical activity, contribute to the disorder's pathophysiology. The interplay between genetic susceptibility and environmental influences sheds light on the multifactorial nature of GDM [12].

The placenta is a critical organ in both nutrient transfer and hormone regulation during pregnancy. It produces several hormones that modulate maternal metabolism, including leptin and adiponectin, which can influence insulin sensitivity. The placental hormones, in conjunction with the maternal hormonal changes, manage the complex balance between nutrient supply and fetal demand [12].

However, placental-produced substances can also exacerbate insulin resistance. For instance, the production of excess amounts of glucagon and cortisol by the placenta can antagonize insulin's action, leading to further elevation in maternal blood glucose levels. Additionally, the alteration in lipid and carbohydrate metabolism orchestrated by the placenta is vital for fetal growth but poses challenges if the maternal body cannot adapt efficiently.

If left unmanaged, GDM can lead to serious maternal and fetal complications. Maternal complications include hypertension, preeclampsia, and an increased likelihood of cesarean delivery. The risks extend to the infant as well, with potential outcomes including macrosomia (an abnormally large baby), neonatal hypoglycemia, and a higher risk of obesity and type 2 diabetes in later life [13].

Furthermore, GDM can predispose women to developing type 2 diabetes significantly after pregnancy, reinforcing the notion of a continuum between GDM and lifelong metabolic symptoms. Longitudinal studies reveal that women with a history of GDM have a 30-70% chance of developing type 2 diabetes within 5 to 10 years postpartum, highlighting the necessity for rigorous postpartum follow-up and lifestyle interventions [13].

## Assessment and Diagnosis of Gestational Diabetes:

Gestational diabetes mellitus (GDM) is a condition characterized by glucose intolerance that is first recognized during pregnancy. It poses significant health risks not only to the mother but also to the developing fetus. Given its potential complications, the assessment and diagnosis of GDM are pivotal components of prenatal care [14].

Gestational diabetes typically occurs during the second or third trimester of pregnancy, reflecting the distinct physiological changes that happen in the body. The placenta produces hormones that can lead to insulin resistance, increasing the risk of elevated blood glucose levels in pregnant women who may not have had diabetes before. While many women will return to normoglycemia postpartum, a diagnosis of GDM signifies heightened risk for developing type 2 diabetes in the future, making it crucial to identify and manage the condition effectively during pregnancy [14].

### Risk Factors for Gestational Diabetes

Numerous factors contribute to the likelihood of developing GDM, including:

- **Obesity:** Excess body weight is a significant risk factor as it can lead to increased insulin resistance.
- **Age:** Women over the age of 25 have a higher risk for developing GDM.
- **Family History:** A family history of diabetes, particularly in first-degree relatives, increases susceptibility.
- **Ethnicity:** Certain populations, including African American, Hispanic, Native American, and Asian American, are at a greater risk.
- **History of GDM:** Women who have previously been diagnosed with gestational diabetes are at a higher risk of recurrence in subsequent pregnancies.
- **Polycystic Ovary Syndrome (PCOS):** Women with PCOS may exhibit insulin resistance that can predispose them to GDM [15].

Recognizing these risk factors is essential in guiding healthcare providers to identify pregnant women who may require screening [16].

### Assessment of Gestational Diabetes

The assessment of gestational diabetes typically begins with a screening process that involves glucose monitoring during routine prenatal visits. While there is some debate regarding the optimal timing for initial screening, guidelines generally recommend that all pregnant women undergo an assessment for GDM between 24 and 28 weeks of gestation. Women considered at high risk may be screened earlier [16].

### Screening Methods

1. **Glucose Challenge Test (GCT):** The most common initial screening method involves a one-hour, non-fasting oral glucose challenge. The patient consumes a sweetened beverage containing 50 grams of glucose, and blood glucose levels are measured after one hour. A result of 130 to 140 mg/dL or higher typically prompts further testing through a diagnostic oral glucose tolerance test (OGTT) [17].
2. **Oral Glucose Tolerance Test (OGTT):** This confirmatory test is conducted if the GCT result is above the threshold. It usually involves fasting overnight, followed by measuring fasting blood glucose levels. The patient then consumes a beverage containing 75 grams of glucose, and blood glucose levels are measured at one, two, and three-hour intervals. The diagnostic criteria for GDM require at least one of the following values to be met or exceeded:
  - Fasting:  $\geq 92$  mg/dL
  - One hour:  $\geq 180$  mg/dL
  - Two hours:  $\geq 153$  mg/dL
3. **Alternative Diagnostic Criteria:** The American Diabetes Association (ADA) has proposed an alternative method using a two-hour, 100-gram OGTT, where a woman needs to exceed at least two of the following thresholds:

- Fasting:  $\geq 95$  mg/dL
- One hour:  $\geq 180$  mg/dL
- Two hours:  $\geq 155$  mg/dL
- Three hours:  $\geq 140$  mg/dL

These rigorous testing methodologies ensure that diagnoses are accurate and tailored to the individual's physiological response to glucose.

### Implications of a GDM Diagnosis

The diagnosis of gestational diabetes carries significant implications for both maternal and fetal health. Women diagnosed with GDM are at an increased risk of developing pregnancy-related complications:

- **Macrosomia:** Elevated blood glucose levels can lead to excessive fetal growth, increasing the risk of cesarean delivery.
- **Preeclampsia:** GDM has been associated with a higher incidence of hypertension and preeclampsia.
- **Birth Trauma:** The larger size of the fetus can result in injuries during childbirth. [18]
- **Neonatal Hypoglycemia:** Infants may experience low blood sugar levels shortly after birth due to high maternal glucose levels during pregnancy.

The consequences of GDM extend beyond pregnancy. Women with a history of gestational diabetes are at a notable risk for developing type 2 diabetes in the years following childbirth. Studies indicate that approximately 50% of women with GDM will develop type 2 diabetes within five to ten years after delivery [19].

### Management and Follow-up

Achieving glycemic control is a cornerstone of GDM management. Most women can manage their GDM through lifestyle modifications, including a balanced diet and regular physical activity. In some cases, blood sugar levels may remain elevated, necessitating medical intervention through insulin therapy or oral hypoglycemic agents.

Postpartum follow-up is critical for women who have experienced GDM. Recommendations include:

- **Glucose Testing:** Women should undergo glucose tolerance testing six to twelve weeks postpartum, followed by periodic screening every one to three years to monitor for the development of type 2 diabetes.
- **Healthy Lifestyle:** Focus on maintaining a healthy weight, a balanced diet, and regular physical activity can help mitigate future diabetes risk [20].

### Nursing Assessment and Monitoring:

Diabetes mellitus is a chronic metabolic disorder characterized by high blood glucose levels due to either inadequate insulin production or the insufficiency of the body cells to respond to insulin. As a predominantly growing health concern globally, diabetes requires comprehensive management strategies, including rigorous evaluations and monitoring by nursing professionals. The role of nurses is pivotal in ensuring that individuals with diabetes achieve optimal glycemic control, thereby minimizing complications and improving quality of life [21].

Effective diabetes management involves a multifaceted approach, including medical management, dietary modifications, exercise, and regular monitoring of blood glucose levels. In this context, nurses are crucial in evaluating patient conditions, providing education, and coordinating care to facilitate favorable health outcomes. The American Diabetes Association emphasizes the need for a patient-centered approach that considers the unique circumstances and preferences of individuals diagnosed with diabetes [22].

The nursing evaluation process begins with a comprehensive assessment to understand the patient's medical history, family background, lifestyle, and treatment history. Nurses must gather data regarding the patient's diabetes type, duration, medication protocols, adherence levels, and any existing complications such as neuropathy or retinopathy. This information is essential for tailoring an individualized care plan [23].

Effective diabetes management necessitates that patients are well-informed about their condition. Nurses play a critical role in educating patients regarding the nature of diabetes, the importance of

glycemic control, and complications associated with poor management. Self-management education encompasses training on blood glucose monitoring, understanding insulin administration techniques, and dietary planning. Nurses can utilize various teaching methods, including one-on-one sessions, group classes, or digital resources to enhance patient comprehension and engagement [24].

Continuous monitoring of blood glucose levels is a cornerstone of diabetes management. Nursing professionals must teach patients how to use glucometers correctly and interpret blood glucose results accurately. A nurse's role is not limited to education; it includes monitoring trends and identifying patterns in glucose fluctuations to adjust treatment plans accordingly. Regular check-ups can help in identifying signs of hypo- or hyperglycemia and enable timely interventions. Generally, the target hemoglobin A1c level should be maintained below 7% for most adults, but individual targets may vary based on a patient's specific health conditions [25].

Nurses are also responsible for evaluating and monitoring diabetic complications that may arise over time, including cardiovascular diseases, kidney failure, and foot ulcers. Regular foot assessments should be conducted to detect any issues such as neuropathy or poor circulation, which may lead to serious problems if untreated. Nurses must educate patients on the right footwear, foot hygiene, and the importance of regular check-ups with specialists like podiatrists to prevent severe complications [25].

Eye examinations should be a part of the diabetes management plan, as individuals are at high risk for diabetic retinopathy. Nurses should encourage regular ophthalmic evaluations and be alert for symptoms such as blurriness, poor night vision, or pain. For cardiovascular health, nurses should monitor vital signs and educate patients about modifying risk factors—such as smoking cessation, maintaining healthy blood pressure, and cholesterol levels [26].

Nutrition plays a significant role in diabetes management. Nurses are integral in assessing the nutritional habits of patients and recommending dietary changes that promote better glycemic control. The Diabetes Plate Method, which emphasizes balance among carbohydrates, proteins, and fats while encouraging the inclusion of

vegetables, can be an effective educational tool. Collaborative efforts with dietitians can create tailored meal plans that accommodate cultural preferences while managing glucose levels [26].

Living with diabetes can often lead to emotional stress and anxiety. A comprehensive nursing evaluation must also address the psychosocial aspects of diabetes management. It is valuable for nurses to assess the mental health status of patients and their coping mechanisms. Counseling and support groups may enhance patients' self-management skills and emotional well-being, thereby positively impacting their treatment adherence and lifestyle modifications. [27]

The integration of technology into diabetes management is becoming increasingly vital. Nurses are facilitating the use of continuous glucose monitors (CGMs) and insulin pumps, which help patients to achieve better arterial glucose control by providing real-time data and allowing for more precise dosing of insulin. Nurses should stay updated on emerging technologies and educate patients on their benefits and proper utilization to enhance self-management outcomes [28].

Effective diabetes management requires collaboration among healthcare providers. Nurses act as care coordinators, ensuring that patients receive comprehensive treatment from endocrinologists, dietitians, and diabetic educators. This teamwork can create a multidimensional support system for patients, fostering an environment of shared knowledge and continuous assessment of individual health statuses [28].

### **Nutritional Management and Education:**

Diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia, which arises from defects in insulin secretion, insulin action, or both. With its increasing prevalence globally, diabetes mellitus poses a significant health challenge that impacts millions of individuals and healthcare systems. Essential to managing this condition is an effective nutritional management and educational framework [28].

Diabetes can primarily be classified into two main types: Type 1 and Type 2 diabetes. Type 1 diabetes is an autoimmune condition leading to the

destruction of insulin-producing beta cells in the pancreas. It typically manifests in childhood or adolescence, necessitating lifelong insulin therapy. Conversely, Type 2 diabetes is characterized by insulin resistance and progressive beta-cell dysfunction, primarily associated with obesity, physical inactivity, and genetic factors. It usually occurs in adults but has seen an increase among adolescents and children. Additionally, gestational diabetes occurs during pregnancy and poses risks for both the mother and the child [29].

### **The Role of Nutrition in Diabetes Management**

Nutrition plays a pivotal role in the management of diabetes, modifying metabolic pathways and influencing glycemic control. Appropriate dietary management aims to achieve and maintain optimal blood glucose levels while preventing complications. The cornerstone of nutritional management includes:

1. **Carbohydrate Management:** Carbohydrates directly impact blood glucose levels and are often classified as simple and complex carbohydrates. For individuals with diabetes, it is crucial to understand carbohydrate counting—the technique of tracking and managing carbohydrate intake to assist in maintaining stable blood glucose levels. High-fiber foods, such as whole grains, legumes, fruits, and vegetables, can help regulate blood sugar levels due to their low glycemic index [30].
2. **Balanced Diet:** A well-balanced diet should include macronutrients—carbohydrates, proteins, and fats—in appropriate proportions. The American Diabetes Association (ADA) recommends a diet rich in non-starchy vegetables, whole grains, lean proteins, healthy fats, and low-fat dairy. This balance not only aids in controlling weight but also enhances overall health and reduces the risk of cardiovascular diseases, which are prevalent among diabetics [30].
3. **Meal Timing and Patterns:** Regular meal timings and appropriate portion sizes contribute to better glycemic control. Skipping meals may lead to blood sugar

spikes; therefore, it is advisable for individuals with diabetes to consume smaller, more frequent meals throughout the day. Planning meals with a consistent carbohydrate intake and addressing one's personal blood sugar patterns enables tailored glycemic control [31].

4. **Micronutrient Considerations:** Certain vitamins and minerals, like magnesium, chromium, and vitamin D, have been shown to play roles in glucose metabolism and insulin sensitivity. Individuals with diabetes should aim to incorporate foods rich in these micronutrients or consider supplementation when necessary, with guidance from healthcare providers [32].

### **The Importance of Education in Diabetes Management**

Equipping individuals with the knowledge and skills to manage their diabetes effectively is fundamental for achieving optimal health outcomes. Nutritional education plays a vital role, as it empowers individuals to make informed food choices, ultimately leading to improved self-management of their condition [33].

1. **Basic Knowledge of Diabetes and Nutrition:** Comprehensive education regarding the pathophysiology of diabetes and the relationship between diet and blood sugar levels fosters better adherence to dietary regimens. It is crucial for individuals to understand how different foods influence their glucose levels, including knowing the role of carbohydrates, proteins, and fats [34].
2. **Effective Communication with Healthcare Providers:** Effective management of diabetes requires collaboration between individuals and their healthcare team. Education can enhance communication, allowing individuals to express their dietary preferences, concerns, and challenges. Healthcare providers can tailor their recommendations based on the individual's lifestyle and preferences.
3. **Behavioral Strategies for Change:** Education should incorporate behavioral

strategies that promote sustainable lifestyle changes. Techniques such as goal setting, self-monitoring, and problem-solving can enhance adherence to dietary recommendations. Engaging in peer support groups, where individuals share their experiences and challenges, can also provide motivation and accountability.

4. **The Role of Technology:** The digital age has transformed the landscape of diabetes management. Mobile applications and online platforms provide educational resources, meal planning tools, and a means to track food intake and glucose levels. These technologies empower individuals to take charge of their health and allow for real-time feedback from healthcare providers [34].

#### Implications for Long-term Health Outcomes

Nutritional management and education are integral to preventing long-term complications associated with diabetes, such as cardiovascular diseases, neuropathy, retinopathy, and nephropathy. A well-managed diet reduces the risk of these complications, improving overall quality of life. Furthermore, maintaining a healthy weight and making informed food choices can lead to reduced healthcare costs associated with diabetes management [35].

Another critical aspect of diabetes management is addressing the psychological burdens often associated with the disease. Many individuals experience stress and anxiety about managing their condition, especially when it comes to dietary choices. Educational programs that incorporate mental health support can significantly enhance an individual's ability to cope with the challenges of living with diabetes [35].

#### Physical Activity Guidelines for Patients:

Diabetes has emerged as one of the most prevalent chronic health conditions globally, affecting millions of individuals. As research continues to emphasize the importance of lifestyle choices in managing diabetes, physical activity stands out as a vital component for maintaining optimal health and improving quality of life for diabetic patients. Understanding suitable physical activity guidelines

is essential for both prevention and management of diabetes, as well as for reducing the risk of complications associated with the disease [36].

Diabetes mellitus is characterized by high blood glucose levels, primarily due to issues with insulin production or utilization. The two most common types are Type 1 diabetes, which arises from an autoimmune attack on insulin-producing beta cells in the pancreas, and Type 2 diabetes, which is more prevalent and often related to lifestyle choices, including sedentary behavior and obesity. Additionally, gestational diabetes affects pregnant women and can predispose them to future diabetes.

Regardless of the type, physical activity plays a crucial role in managing blood sugar levels, enhancing insulin sensitivity, and contributing to overall well-being [37].

#### Benefits of Physical Activity for Diabetic Patients

1. **Improved Glycemic Control:** Regular exercise has been shown to lower blood sugar levels. Physical activity increases insulin sensitivity, allowing cells to utilize glucose more efficiently. This can lead to better overall glycemic control and potentially reduce reliance on medication for Type 2 diabetics [38].
2. **Weight Management:** One of the primary contributors to Type 2 diabetes is obesity. Exercise burns calories and builds muscle, both of which are essential for weight loss and maintenance. Even modest weight loss can lead to significant improvements in blood sugar levels for those living with diabetes.
3. **Cardiovascular Health:** Individuals with diabetes are at a higher risk for heart disease. Regular physical activity strengthens the heart, improves circulation, and helps manage blood pressure and cholesterol levels. As such, it is critical for diabetic patients to incorporate cardiovascular exercises into their routine.
4. **Enhanced Mental Health:** Managing diabetes can be challenging and stressful. Exercise has been shown to improve mood and reduce anxiety levels, thereby offering psychological benefits that can lead to



improved adherence to treatment plans [38].

5. **Reduction in Complications:** Physical activity can help prevent or delay complications associated with diabetes, such as neuropathy, retinopathy, and kidney disease, by improving overall health and boosting blood flow [38].

### General Physical Activity Guidelines for Diabetic Patients

The American Diabetes Association and the Centers for Disease Control and Prevention provide comprehensive guidelines for physical activity, which can serve as a framework for diabetic patients:

1. **Frequency and Duration:** Adults with diabetes should engage in at least 150 minutes of moderate-intensity aerobic exercise per week, spread over at least three days. It is important to avoid prolonged inactivity; if sitting for more than 30 minutes, individuals should stand up or walk around [39].
2. **Types of Exercise:** A well-rounded exercise program should include:
  - **Aerobic Activity:** Such as brisk walking, swimming, cycling, or dancing. These activities enhance cardiovascular health and support weight management.
  - **Resistance Training:** Incorporating strength training exercises at least two times per week helps build muscle mass and increase metabolic rate. This can include weightlifting, using resistance bands, or body-weight exercises like push-ups and squats.
  - **Flexibility and Balance Exercises:** Activities like yoga or tai chi can improve flexibility, balance, and prevent falls, particularly in older adults [39].
3. **Monitor Blood Sugar Levels:** It is crucial for diabetic patients to monitor their blood

glucose levels before, during, and after exercising. Physical activity can influence blood glucose in different ways; for example, it may lower blood sugar during prolonged exercise, while short bursts of high-intensity training could potentially elevate levels. Patients should be aware of their individual responses and adjust their food intake or medication accordingly [40].

4. **Hydration and Nutrition:** Adequate hydration is vital, particularly during exercise. Individuals should drink water before, during, and after physical activity to maintain proper hydration levels. Additionally, paying attention to nutrition – including carbohydrate intake before and after workouts – can help manage blood sugar levels effectively.
5. **Consultation with a Healthcare Provider:** Before starting any new exercise program, diabetic patients should consult with their healthcare provider. This is particularly important for those with complications or other health conditions that may affect their ability to exercise safely. A personalized exercise plan that considers individual health status can be developed in collaboration with a healthcare professional [41].

### Special Considerations for Diabetic Patients

While physical activity offers numerous benefits, there are specific considerations for diabetic patients to keep in mind:

- **Foot Care:** Diabetes can lead to nerve damage and poor blood circulation, making foot care essential. Patients should wear appropriate footwear and regularly inspect their feet for injuries or sores that may go unnoticed [42].
- **Avoiding Extreme Conditions:** Diabetic patients should avoid exercising in extreme heat or cold, as temperature regulation can be compromised. It is advisable to choose safe environments for physical activity, such as gyms, community centers, or indoor spaces during adverse weather conditions [42].

- **Blood Sugar Spikes and Drops:** Patients should be aware of the symptoms of hypoglycemia (low blood sugar) such as dizziness, sweating, or fatigue, as well as hyperglycemia (high blood sugar) which may cause symptoms like increased thirst and frequent urination. Carrying fast-acting carbohydrates during exercise can help manage potential low blood sugar situations.
- **Gradual Progression:** For those who have been inactive, it is essential to start slowly and listen to the body. Gradually increasing the intensity and duration of physical activity can help prevent injuries and ensure sustainability in the long run [42].

### **Psychosocial Considerations and Support:**

The intricate tapestry of human experience is woven from threads of psychological well-being and social context, giving rise to the field of psychosocial considerations and support. These elements encompass the complex interplay between individual mental health and the surrounding social environment, illuminating how each influences the other. As society evolves, the importance of understanding and addressing psychosocial factors becomes increasingly evident, particularly in the realms of healthcare, education, and community development [43].

At its core, psychosocial considerations refer to the combined influence of psychological and social aspects on individual and community well-being. Psychological factors encompass cognitive processes, emotional states, and behavioral patterns, including resilience, mental health conditions (such as anxiety, depression, and PTSD), and coping mechanisms. Conversely, social factors pertain to interpersonal dynamics, community engagement, social networks, cultural norms, and socioeconomic conditions. Together, these dimensions form a holistic perspective that is essential for understanding how individuals navigate life's challenges and opportunities [43].

A critical aspect of psychosocial considerations is the acknowledgment of how life events—ranging from trauma and loss to economic hardship and social isolation—impact an individual's psychological state. For instance, loss of

employment can trigger anxiety and feelings of inadequacy, while supportive relationships can foster resilience and facilitate recovery. Thus, the assessment of psychosocial factors is vital for comprehensively addressing mental health needs and promoting overall well-being [44].

### **The Importance of Psychosocial Support**

Psychosocial support encompasses a range of interventions designed to enhance the well-being of individuals by addressing both psychological and social needs. This can include therapeutic techniques, community services, social activities, and education that collectively aim to improve mental health and social functioning. The significance of psychosocial support is particularly evident in contexts such as mental health disorders, chronic illness management, and response to traumatic events [45].

1. **Mental Health Treatment:** In the realm of mental health, psychosocial support plays a crucial role in complementing traditional psychiatric treatments. Therapeutic modalities such as cognitive-behavioral therapy (CBT) incorporate psychosocial elements by engaging individuals in exploring their thoughts, emotions, and behaviors in relation to their social contexts. Group therapy, peer support, and family involvement further enhance treatment efficacy by fostering social connections that are often absent in conventional therapeutic settings [45].
2. **Chronic Illness Management:** Individuals living with chronic conditions such as diabetes, cancer, or autoimmune diseases often face not only physical challenges but also emotional and social obstacles. Psychosocial support programs in healthcare settings can provide patients with educational resources, coping strategies, and social support networks, effectively aiding them in managing their conditions while enhancing their quality of life.
3. **Trauma and Crisis Response:** Following natural disasters, acts of violence, or personal tragedies, psychosocial support becomes indispensable. Interventions such

as psychological first aid (PFA) focus on addressing the immediate emotional needs of those affected by crisis situations. PFA is designed to foster safety, promote psychological comfort, and encourage social support, allowing individuals to process their experiences and gradually rebuild their lives [45].

### **The Role of Community in Psychosocial Support**

Community dynamics significantly influence psychosocial support systems. Communities serve as fundamental social units where individuals come together to share experiences, resources, and support. A strong sense of community can bolster psychological resilience, while fragmented communities may exacerbate mental health challenges [46].

1. **Social Networks and Relationships:** The presence of supportive social networks—friends, family, peers, and mentors—can serve as a buffer against psychological distress. Research has consistently shown that strong social ties are linked to improved mental health outcomes. Conversely, social isolation can lead to adverse mental health conditions, underscoring the need for community-based interventions that foster connections among individuals [47].
2. **Cultural Considerations:** Culture plays a critical role in shaping psychosocial dynamics and perceptions of mental health. Various cultures have different approaches to dealing with psychological issues, and understanding these differences is essential for providing effective support. Culturally sensitive interventions that respect and incorporate local traditions and values can enhance engagement and compliance with psychosocial support systems.
3. **Access to Resources:** The distribution of resources—such as mental health services, social support programs, educational opportunities, and economic supports—within a community directly affects individuals' mental health outcomes. Addressing systemic barriers and ensuring equitable access to psychosocial resources

are essential for fostering community well-being and resilience [47].

### **Future Directions in Psychosocial Support**

As we move forward, several emerging trends are shaping the landscape of psychosocial considerations and support [48].

1. **Technology and Telehealth:** The rapid advancement of technology has transformed how psychosocial support is delivered. Telehealth options, including online therapy and virtual support groups, have expanded access to resources, particularly for individuals in remote or underserved areas. While technology provides new avenues for support, it also necessitates careful consideration of potential drawbacks, including the digital divide [49].
2. **Integrating Approaches:** The integration of psychosocial support into broader healthcare systems is gaining traction. Holistic models that acknowledge the interplay between physical and mental health—as seen in initiatives like patient-centered medical homes—are becoming more prevalent. By creating interdisciplinary teams that address both psychosocial and medical needs, healthcare providers can deliver more comprehensive care [50].
3. **Advocacy and Policy:** The growing recognition of mental health as a public health priority is driving advocacy efforts and policy changes aimed at improving psychosocial support systems. Policymakers are increasingly acknowledging the essential role of mental health in overall well-being, leading to initiatives that promote mental health awareness, reduce stigma, and enhance access to care [51].

### **Follow-Up Care and Long-Term Implications:**

In the realm of healthcare, effective treatment does not end with the culmination of a surgical procedure or the conclusion of a prescribed medication regimen. Instead, follow-up care emerges as a critical component that can have profound

implications for patient outcomes and long-term health. Follow-up care encompasses a spectrum of activities designed to assess ongoing recovery, monitor health status, manage potential complications, and provide necessary adaptations to treatment plans [52].

Follow-up care is essential for a number of reasons. First and foremost, it fosters continuity of care, ensuring that patients remain connected to their healthcare providers after initial treatment. Continuity of care facilitates timely interventions and adjustments based on a patient's evolving health status. Research indicates that patients who receive comprehensive follow-up care are more likely to report positive health outcomes, including reduced rates of readmission to hospitals, lower morbidity rates, and improved overall health satisfaction [53].

Moreover, follow-up care provides an opportunity for healthcare professionals to educate patients about their conditions and recovery processes. Education empowers patients, enabling them to take an active role in managing their health. This empowerment can lead to higher rates of adherence to medication schedules, lifestyle changes, and follow-up appointments. Effective education, coupled with ongoing support, helps patients navigate the complexities of their health, ultimately contributing to improved long-term outcomes [54].

Follow-up care can take various forms, ranging from in-person evaluations and telehealth appointments to remote patient monitoring and patient education programs. Traditional follow-up visits typically involve physical examinations, symptom assessments, and laboratory tests to gauge the effectiveness of treatment. These visits allow healthcare providers to identify any complications or adverse effects resulting from treatment, enabling timely intervention [55].

Telehealth has revolutionized follow-up care, particularly highlighted during the COVID-19 pandemic when in-person visits posed challenges. Virtual consultations can provide convenience for patients, reduce travel burdens, and enhance access to specialty care. As technology continues to evolve, remote monitoring tools—wearable devices that track vital signs, symptoms, and other health metrics—are becoming increasingly integrated into follow-up care. These tools provide real-time data

that can inform clinical decisions and enhance communication between patients and providers [56].

In addition to clinical follow-up, supportive care services play a crucial role in managing chronic diseases and long-term health conditions. These services may include nutritional counseling, physical therapy, psychological support, and lifestyle coaching, all of which facilitate recovery beyond the clinical realm. Such integrative approaches underscore the multifaceted nature of health and the necessity of addressing psychological, emotional, and social factors in patient care [57].

Chronic diseases, such as diabetes, hypertension, and chronic obstructive pulmonary disease (COPD), exemplify the critical need for effective follow-up care. These conditions often require ongoing management and monitoring to prevent complications and optimize patients' quality of life. Regular follow-up visits allow healthcare providers to evaluate disease progression, adjust treatment plans, and reinforce adherence to self-management strategies [58].

For instance, in diabetes management, follow-up appointments are vital for monitoring glycemic control through regular hemoglobin A1c testing. Healthcare providers can assess whether patients are adhering to their dietary plans, exercising regularly, and taking medications as prescribed. Discrepancies can then be addressed through tailored education efforts and motivational interviewing techniques, which encourage patients to engage in their care actively [59].

Furthermore, follow-up care also plays a significant role in mental health management. Conditions such as anxiety and depression warrant ongoing support and monitoring to ensure patients' psychological well-being. Regular follow-up visits facilitate the identification of early signs of relapse, allowing for timely interventions that can prevent more severe crises and improve long-term mental health outcomes [59].

The implications of effective follow-up care extend well beyond individual patients, impacting the broader healthcare system. Strong follow-up practices can significantly reduce healthcare costs by minimizing unnecessary readmissions, emergency visits, and prolonged treatments. This

aspect is particularly pertinent in a landscape where rising healthcare costs burden both patients and providers [60].

Moreover, robust follow-up care systems contribute to healthier populations. Population health management hinges on the efficient tracking of diseases and outcomes over time. Healthcare systems that prioritize follow-up care can analyze aggregated data to identify trends, monitor health outcomes, and implement community-wide interventions. These initiatives can, in turn, enhance preventive care measures, ultimately reducing the incidence and prevalence of chronic diseases [61].

In the context of public health, effective follow-up care also plays a critical role in managing infectious diseases and vaccination campaigns. Tracking patients who have received vaccinations or treatment for infectious diseases ensures ongoing immunity and effective disease containment. By fostering comprehensive follow-up care, health authorities can combat public health challenges more effectively, enhancing community resilience against potential outbreaks [62].

#### **Conclusion:**

In conclusion, effective nursing management of gestational diabetes is essential for optimizing maternal and fetal health outcomes. By implementing comprehensive assessment and monitoring protocols, nurses play a pivotal role in identifying and addressing the unique challenges posed by GDM. Patient education on nutrition, physical activity, and self-management strategies is crucial in empowering patients to take an active role in their care. Additionally, providing psychosocial support helps to alleviate anxiety and fosters a collaborative relationship, enhancing adherence to treatment plans.

Ongoing follow-up care is vital for monitoring any potential complications and ensuring a smooth transition into postpartum health, while also addressing the long-term risk of developing type 2 diabetes. As the prevalence of gestational diabetes continues to rise, the nursing profession must remain committed to advancing their knowledge and skills in managing this condition, thus ensuring better outcomes for mothers and their children. Ultimately, a comprehensive, patient-centered approach in nursing management not only mitigates the risks

associated with GDM but also promotes overall well-being and family health throughout the pregnancy continuum.

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