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Nutritional Models in Gestational Diabetes

Gestasyonel Diyabette Beslenme Modelleri

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Abstract

Gestational diabetes mellitus (GDM) is glucose intolerance that is diagnosed by Oral Glucose Tolerance Test (OGTT) in pregnant women at 24-28 weeks of gestation and occurs only during pregnancy without pre-pregnancy diabetes. As a result of untreated GDM, both short-term and long-term complications such as birth complications, large-for-gestational-week babies, Type 2 Diabetes (T2DM) in mother and baby can be observed. Treatment is based on lifestyle changes (physical activity and dietary modification). The nutritional model applied by patients with GDM aims to support fetal growth, maintain fasting and postprandial glucose (PPG) within target limits, ensure appropriate body weight gain compared to pre-pregnancy body weight, and provide adequate macro- and micronutrients for the fetus and mother. Treatment of serum glucose fluctuations and episodes of hyperglycemia is achieved with medical nutrition therapy (MNT) and exercise. There is no clear recommendation among dietary patterns for people with GDM. Studies have investigated plant-based dietary patterns, the Mediterranean Diet (MedDiet) and the Diet for the Prevention of Hypertension (DASH), Low Glycemic Index (LGI), Low Glycemic Load (LGL) diets and low carbohydrate diets. The effects of these various dietary patterns on GDM are being investigated, but the precise effects have not yet been established. Different national organizations have different recommendations for macronutrients. MedDiet, LGI diet and DASH nutrition models are the most prominent nutrition models. In this review, the effects of different dietary patterns on pregnant women with GDM were analyzed.

Keywords: Diabetes, gestational diabetes, medical nutrition therapy, nutritional models

Özet

Gebe kadınlarda 24-28.haftada Oral Glikoz Tolerans Testi (OGTT) ile tanı alınan ve gebelik öncesi diyabeti olmayan yalnızca gebelik döneminde görülen glikoz intoleransına gestasyonel diabetes mellitus (GDM) denir. Tedavi edilmeyen GDM sonucu doğum komplikasyonları, gebelik haftasına göre büyük bebekler, anne ve bebekte Tip 2 Diyabet (T2DM) gibi hem kısa hem de uzun vadeli komplikasyonlar gözlenebilmektedir. Tedavinin temelinde yaşam tarzı değişiklikleri (fiziksel aktivite ve beslenme tarzının düzenlenmesi) yer almaktadır. GDM'lilerin uyguladıkları beslenme modeli ile fetüsün büyümesi desteklenir, açlık ve postprandiyal glikoz (PPG) hedef sınırlarında tutulur, gebelik öncesi vücut ağırlığına göre uygun vücut ağırlığı artışı sağlanır ve fetüs ve anne için yeterli makro ve mikro besin öğeleri sağlanması hedeflenir. Serum glikoz dalgalanmaları ve hiperglisemi ataklarının tedavisi tıbbi beslenme tedavisi (MNT) ve egzersiz ile sağlanır. GDM'liler için beslenme modelleri arasında henüz net bir öneri bulunmamaktadır. Çalışmalarda bitki bazlı beslenme modelleri, Akdeniz Diyeti (MedDiet) ve Hipertansiyonu Önleyici Diyet (DASH), Düşük Glisemik İndeks (LGI), Düşük Glisemik Yük (LGL) diyetleri ve düşük karbonhidratlı diyetler araştırılmıştır. Bu çeşitli beslenme modellerinin GDM üzerindeki etkileri araştırılmaktadır fakat kesin etkileri henüz kesinleşmemiştir. Farklı ulusal kuruluşlar makro besin öğeleri için farklı önerilerde bulunmaktadır. MedDiet, LGI diyet ve DASH beslenme modelleri en çok ön plana çıkan beslenme modellerindendir. Bu derlemede, GDM'li gebelere uygulanan farklı beslenme modellerinin GDM'liler üzerindeki etkileri incelenmiştir.

Anahtar Kelimeler: Beslenme modelleri, diyabet, gestasyonel diyabet, tıbbi beslenme tedavisi

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1. Introduction

Gestational diabetes mellitus (GDM) is a condition of glucose intolerance that occurs during pregnancy (ADA, 2024). According to the International Diabetes Federation's (IDF) Diabetes Atlas for 2021, the prevalence of GDM in women aged 20-49 years is 16.7% (IDF, 2021a). According to the data for Turkey, this rate is 9.5%. Considering these rates, it can be said that 1 out of every 10 pregnant women in our country has GDM (IDF, 2021b). Hormonal and metabolic changes occur during pregnancy, which may lead to the development of GDM. Insulin resistance may develop due to increased levels of hormones such as progesterone, prolactin, cortisol, estrogen and placental lactogen, dysfunction of beta cells in the pancreas or beta cells that react late to hyperglycemia. These mechanisms are some of the main causes of GDM (Quintanilla Rodriguez & Mahdy, 2023).

The first-line treatment for GDM management includes medical nutrition therapy (MNT), exercise, and lifestyle changes, with insulin added if necessary. It is reported that lifestyle modification alone is sufficient to control blood glucose in 70-85% of women diagnosed with GDM. It has been reported that the risk of spontaneous abortion, fetal anomalies, preeclampsia, fetal death, macrosomia, neonatal hypoglycemia, neonatal hyperbilirubinemia and neonatal respiratory distress syndrome increases when lifestyle modification treatment is not applied in women with GDM. GDM has been shown to increase the risks of obesity, hypertension and Type 2 Diabetes Mellitus (T2DM) in the later life of the newborn (ADA, 2024). With MNT in patients with GDM, fetal growth is supported, fasting blood glucose (FBG) and postprandial glucose (PPG) are kept within target limits without causing ketosis, appropriate body weight gain is achieved compared to pre-pregnancy body weight, and adequate macro and micronutrients are provided for the fetus and mother (Alphan, 2020; TEMS, 2024).

This article aims to review studies that examine the effects of different dietary patterns that could be recommended as potential MNT for GDM on complications in pregnant women, foetuses and infants.

2. Nutrition Models

There are meta-analyses examining the effects of different dietary strategies such as plant-based dietary models, Mediterranean Diet (MedDiet), Dietary Approaches to Stop Hypertension (DASH), low glycaemic index (LGI) or low glycaemic load (LGL) diets and low carbohydrate dietary models on insulin used ratio, fasting and postprandial glucose; birth weight, macrosomic birth, caesarean delivery in GDM patients (Viana et al., 2014; Yamamoto et al., 2018). In a meta-analysis, LGI diets were associated with a lower of insulin used rate and lower birth weight in people with GDM (Viana et al, 2014). In another meta-analysis, the DASH diet showed positive effects in improving glycemic control, while DASH and LGI diets were reported to reduce the risks of cesarean section and macrosomia (Di et al., 2025). The Turkish Endocrinology and Metabolism Society (TEMS) has highlighted MedDiet and

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DASH diets as nutritional models that provide positive results in terms of establishing healthy eating habits, sustainability and metabolic efficiency for diabetic patients (TEMS, 2024).

2.1. Mediterranean Diet

The MedDiet, which is rich in fruits, vegetables (high in fibre), whole grains, legumes, fish and nuts, small amounts of dairy products and limited amounts of red meat, is low in saturated fats and rich in monounsaturated fatty acids and omega-3 fatty acids due to extra virgin olive oil and fatty fish (Bonaccio et al., 2015). This dietary model includes 1-2 servings of whole grains per day, 1-2 servings of seasonal, varied, and colourful fruits per day, 2 servings of dairy products per day, 1-2 servings of nuts and seeds per day, ≥2 servings of legumes per week, 2-4 servings of eggs per week, ≤2 servings of red meat per week, ≥2 servings of fish and seafood per week, 2 servings of white meat per week, olive oil as the primary fat source, and moderate wine consumption (Dernini & Berry, 2015).

The PREvención con DIeta MEDiterránea (PREDIMED) study highlights the importance of nuts and olive oil in the MedDiet for the prevention and treatment of metabolic and cardiovascular diseases (Jacobs et al., 2018). The MedDiet is low in glycaemic index, rich in whole grains, monounsaturated and polyunsaturated fatty acids, antioxidants, and anti-inflammatory components. It has been reported that the incidence of GDM decreased by 30% in healthy pregnant women adhering to the MedDiet due to these nutrients (Barabash et al., 2020). The Nurses' Health Study II, a multicentre study conducted in ten Mediterranean countries examining findings related to pre-pregnancy dietary habits, reported that adherence to the MedDiet was significantly higher in healthy women (average diet index score: 6.3/12) compared to women diagnosed with GDM (average diet index score: 5.8/12), independent of other risk factors (Karamanos et al., 2014). It has been reported that a modified MedDiet (MMedDiet) with at least 40 mL of extra virgin olive oil and a handful (25-30 g) of nuts added daily reduces the incidence of GDM compared to the standard MedDiet (Assaf-Balut et al., 2017). Additionally, it has been reported that pregnant women who follow the Mediterranean diet during pregnancy have a reduced risk of preterm birth and allergic diseases in their children (Amati et al., 2019). In one study, high adherence to the MedDiet, which included increased consumption of fish, whole grains, fruits, and vegetables and reduced consumption of sweets during pregnancy, was reported to reduce maternal serum lipid markers but had no effect on maternal glycaemic profile (Flor-Alemany et al., 2023). Pregnant women with low MedDiet adherence had impaired lipoproteins and increased homocysteine levels in their newborns (Gesterio et al., 2015). In a 7-week randomised controlled trial examining the effects of a diet rich in monounsaturated fatty acids (almonds, nuts, olive oil, and sunflower oil) (MUFA) (2000 kilocalories (kcal) providing 20% or more of energy) compared to a carbohydrate-rich diet (potatoes, rice, bread) In a 7-week randomised controlled trial comparing the effects of a MUFA-rich diet with a carbohydrate-rich diet, the MUFA-rich diet significantly reduced diastolic blood pressure compared to the carbohydrate-rich diet; however, no significant reduction in insulin sensitivity was observed (Lauszus et al., 2001). It has been reported that the MMedDiet reduces the risks of preterm birth, emergency caesarean section, perinatal trauma, large-for-gestational-age babies, and macrosomic births in women with GDM who are on insulin therapy (Assaf-Balut et al., 2017). In the secondary analysis of the study, it was reported that women with GDM who followed the MMedDiet had similar HbA1c levels to normoglycemic pregnant women at 36–38 weeks; there were no differences in excessive weight gain, gestational hypertension, perineal trauma, prematurity, and large for gestational age (LGA) fetüses rates (Assaf-Balut et al., 2018).

Although studies on the MedDiet in GDM are limited, it is discussed that increased adherence to this diet may have beneficial effects. The MedDiet, which is part of the healthy diets group, is recommended for people with diabetes in various guidelines (Dyson et al., 2018; TEMS, 2024).

2.2. Plant Based Nutrition

The term plant-based diet refers to diets that include some animal products or consist of plant-based foods such as fruits, vegetables and legumes. Examples of such diets include vegan and vegetarian diets. Plant-based diets are rich in fibre, magnesium, potassium and antioxidants. Compared to other diets, plant-based diets are lower in saturated fat, cholesterol, and animal protein because they do not include animal products or include them in very small amounts (Schiattarella et al., 2021). A calorie-restricted (-500 kcal/day) vegetarian diet was administered to individuals with T2DM for 24 weeks, while a traditional diabetic diet was administered to the control group; the group on the vegetarian diet experienced a greater reduction in insulin resistance. Additionally, individuals with T2DM on the vegetarian diet experienced greater visceral fat loss and reductions in plasma adipokine and oxidative stress marker concentrations, which may be responsible for the decrease in insulin resistance (Kahleova et al., 2011).

Current systematic reviews, meta-analyses (Qian et al., 2019; Wang et al., 2023), and a cohort study (Satija et al., 2016) suggest that the protective effect of plant-based diets against diabetes may be due to increased consumption of plant-based foods rich in vitamins, minerals, and antioxidants, and reduced consumption of red and processed meats. Another meta-analysis reports that lacto-ovo vegetarian diets and the DASH diet have a blood pressure-lowering effect. The mechanism is thought to involve reduced intake of saturated fats from animal foods, which prevents the triggering of endothelial dysfunction, the vasodilatory effects of flavonoids and potassium in fruits, and the improvement of endothelial dysfunction by nitrates in vegetables, which increase nitric oxide levels, thereby potentially lowering blood pressure (Gibbs et al, 2021). Women who follow a plant-based diet have a reduced risk of GDM (Pistollato et al., 2015; Zhu et al., 2023; Bazshahi et al., 2024). It has been suggested that increased intake of polyunsaturated fats may act as a protective mechanism against gestational glucose intolerance, thereby reducing the risk of GDM (Wang et al., 2015).

A study conducted on women with GDM or at high risk of GDM showed that plant-based diets and phytochemicals may lower serum fasting glucose levels and increase antioxidant activity to reduce oxidative stress associated with GDM (Jaworsky et al., 2023). In one study, 68 women with GDM were randomised into two groups to receive either 70% animal protein or 70% plant protein (half of which was soy protein) for 6 weeks, with equal amounts of protein. The plant-based protein group showed significantly lower FBG, insulin, HOMA-IR, and triglyceride levels (Jamilian & Asemi, 2015). In an Australian study comparing South Asian women with GDM, vegetarian dieters derived 14±3% of their energy from protein, while non-vegetarian women derived 17±4% of their energy from protein. The

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study showed that a vegetarian diet is more suitable for GDM management (Croxford et al., 2021). In a study involving a high-fiber, complex carbohydrate diet enriched with soy-based protein (25% of the grain portion was replaced with soy), the soy-based protein diet group had significantly lower PPG levels after one week of dietary intervention. Furthermore, the need for insulin treatment was significantly lower in the soy-based protein group (15.62%) compared to the other group (40.0%) (Sarathi et al., 2016). In a randomized controlled trial, the intervention group consuming 30 g of oat bran daily in addition to a GDM diet for 4 weeks showed significant reductions in FBG and 2-hour PPG levels (Barati et al., 2021).

It is estimated that plant-based nutrition may protect against GDM and may also protect women with GDM from pregnancy complications by regulating blood sugar and lowering blood pressure. More randomised controlled studies are needed on the effects of plant-based nutrition on women with GDM (Schiattarella et al., 2021).

2.3. DASH Diet

The DASH is a nutritional model that is especially applied to hypertensive patients to control high blood pressure and has beneficial effects on insulin resistance (Shirani et al, 2013; Valenzuela-Fuenzalida et al, 2024), hyperlipidemia (Sahebkar et al, 2025; Zare et al, 2025), inflammation (Soltani et al, 2018) and oxidative stress (Asemi et al., 2014b; Pirouzeh et al., 2020) in various meta-analysis and systematic review studies.

The DASH diet is a dietary approach to control hypertension that encourages the consumption of fruits, vegetables, fat-free/low-fat dairy products, whole grains, nuts and legumes while limiting the intake of saturated fat, cholesterol, refined sugar, sodium, red and processed meat (Wickman et al, 2021). The macro and micronutrient targets of a DASH diet containing an average of 2100 kcal/day of energy are 55% carbohydrate, 18% protein, 27% fat, 6% saturated fat, 1,500-2,300 mg sodium, 150 mg cholesterol, 1,250 mg calcium, 4,700 mg potassium, 500 mg magnesium and 30 g fiber (Uzdil & Sökülmez Kaya, 2018). The DASH is a diet rich in potassium, calcium and magnesium; low in sodium, low energy density and rich in dietary fibre (Asemi et al 2014a).

The DASH diet contains more fibre-rich foods such as whole grains, legumes, fruits and vegetables than other diets, which not only slows down gastric emptying and carbohydrate absorption but also regulates the gut microbiota, which plays a role in glucose homeostasis. This not only helps maintain stable glucose levels but also reduces postprandial hyperglycaemia, which is an important aspect of MNT for GDM (Slavin J, 2013). Another feature of the DASH diet is that it contains less saturated fat than other diets and increases the consumption of unsaturated fat, which positively affects lipid metabolism and vascular health and reduces chronic inflammation, thereby preventing insulin resistance (Immamura et al., 2016). It is estimated that high-fat diets exacerbate insulin resistance, while the balanced macronutrient and micronutrient composition of the DASH diet mitigates these effects (Akhlaghi M, 2020). It is estimated that the DASH diet, which includes low-fat protein sources (lean meat products, dairy products), may further increase insulin sensitivity by regulating the incretin response and pancreatic β-cell function (Rooholahzadegan et al., 2023). The DASH diet's high intake

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of nutrient-dense carbohydrates, vitamins, and minerals, along with its ability to lower fasting plasma glucose levels and maintain blood sugar homeostasis in GDM. It is estimated that the DASH diet, with its lower intake of pro-inflammatory fatty acids and adequate amounts of plant-based protein, may have a blood pressure-lowering effect and could be a suitable diet for use in hypertensive disorders during pregnancy (Si et al., 2020). In another study, the caesarean section rate among GDM women consuming the DASH diet was 47.1%, while the caesarean section rate among GDM women consuming the control diet (45-55% carbohydrates, 15-20% protein, and 25-30% fat) was 81.3% ($p<0.01$). Additionally, the rate of initiating insulin therapy among women with GDM who followed the DASH and control diets was reported to be 23.5% and 75%, respectively ($p<0.01$) (Yao et al., 2015). The presence of GDM increases the risk of preeclampsia (Weissgerber & Mudd, 2015). It is predicted that the protective effect of DASH against hypertension will also reduce the risk of preeclampsia (Asemi et al., 2014a). A case-control study conducted among pregnant women in China reported an inverse relationship between adherence to the DASH diet and preeclampsia (Cao et al., 2020). Various studies have shown that implementing the DASH diet for 4 weeks in women with GDM reduces caesarean section rates, maintains birth weight within a healthy range, and improves biochemical parameters such as serum insulin, FBG, CRP, HOMA-IR, and total antioxidant capacity (Asemi et al., 2013; Asemi et al., 2014a). In the current study, when the food consumption records of the GDM group following the DASH diet were examined, calcium and magnesium intake were approximately 50% higher than the control diet, while vitamin C and β-carotene intake were 100% higher than the control diet. It has been reported that increased intake of magnesium, vitamin C, and β-carotene in the diet may prevent inflammation, reduce adverse obstetric outcomes, and lower the risk of caesarean delivery, with a possible mechanism underlying these effects. Another mechanism is thought to be that the lower sodium and higher potassium, magnesium, and calcium intake in the DASH diet may protect against maternal hypertension and reduce caesarean section rates. Arginine intake was also reported to be higher in the DASH diet group, which is a possible mechanism for increased nitric oxide production, improved endothelial function, and reduced insulin resistance (Asemi et al, 2014a).

In the TEMS 2024 guideline, it is reported that the MedDiet and DASH nutrition model is healthy and sustainable in diabetics based on evidence (TEMS, 2024).

2.4. Low Glycemic Index and Low Glycemic Load Diets

The Glycemic Index (GI) refers to the percentage comparison of the blood glucose response after consuming 50 grams of carbohydrate from a test food, measured 2 hours post-consumption, to the blood glucose response produced by a reference food (glucose or white bread) containing the same amount of carbohydrate. Based on the GI value, foods are classified as high (GI >70), moderate (GI = 56-69), and low (GI ≤55). The GI of a food is influenced by various factors such as its dietary fiber content, starch structure, monosaccharide amount, the relationship between protein and starch, anti-nutrients, ripeness, temperature, processing method, consumption speed, and the meal's acidity (Toptas et al., 2018).

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A LGI diet has been reported to improve glycemic control in individuals with T2DM. Since both GDM and T2DM are characterized by insulin resistance, similar results may be applicable to GDM as well (Rasmussen et al., 2020). In a meta-analysis, which included six randomized controlled trials, the LGI diet significantly reduced two-hour plasma glucose (2-h PG) mark in women with GDM compared to the control diet group. However, it was reported that there was no significant effect on FBG, HbA1c, birth weight, macrosomia, or insulin requirements (Xu & Ye, 2020). In a randomized controlled trial by Moses et al. in 63 women with GDM, it was reported that a diet with LGI significantly reduced insulin requirements more in women with GDM compared to a diet rich in fiber and low in sugar (Moses et al, 2009). It shows that the LGI diet improves glycemic control and pregnancy outcomes in ethnic Chinese women with GDM and confirms previous evidence of the association between insulin resistance and the LGI diet (Wan et al., 2019). In a systematic review of diets in GDM, which included 19 studies with 1389 women with GDM, no effect of the LGI diet on macrosomia or neonatal mortality was reported (Han et al, 2017).

While the effect of a certain amount of carbohydrate (50 grams) on blood glucose is taken into account in determining the GI, the carbohydrate content of the food consumed is taken into account in determining the Glycemic Load (GL). GL is calculated by dividing the GI value of the food by one hundred and multiplying it by the amount of carbohydrate consumed. GL is calculated by dividing the food's GI value by 100 and multiplying it by the amount of carbohydrate consumed. GL = (GI/100) × Carbohydrate amount (g). Glycemic load is classified as low (0-10), medium (11-19), and high (>20) (Toptas et al., 2018). It is suggested that a LGL diet could improve glycemic control in individuals with T2DM. As with T2DM, women with GDM are also characterized by insulin resistance (Herath et al., 2017).

In a randomized controlled trial conducted with 134 women with GDM, the GL diet was compared to traditional nutrition; it was reported that the group following the GL diet had significantly lower FBG and 2-h PG levels. Although there was no statistically significant difference in the rates of adverse pregnancy outcomes such as preterm birth and fetal macrosomia, the group following the GL diet showed a lower incidence of preterm birth, eclampsia, pregnancy-induced hypertension syndrome, and fetal macrosomia (Lv et al., 2019).

It has been reported that either the LGI diet or the LGL diet is a healthy and feasible diet that can control body weight gain, protect against excessive body weight gain, and reduce the risk of macrosomic or premature birth of the infant in people with GDM (Liu et al, 2023).

2.5. Low Carbohydrate Diet Models

Current guidelines of the ADA and TEMS recommend a minimum intake of 175 g/day of carbohydrates and 28 g of fiber in people with GDM (TEMS, 2024; ADA, 2024). The National Institute of Medicine (IOM) guidelines recommend a minimum carbohydrate intake of 175 g and 46-65% of energy from carbohydrates to ensure proper fetal growth and cerebral development and function (Yaktine & Rasmussen, 2010). National and international organizations have different recommendations regarding the percentage of energy provided by carbohydrates; American College

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of Gynecology and Obstetrics 33-40% (ACOG, 2021), The National Federation of Gynecology and Obstetrics 35-45% (Hod et al., 2015) and German Diabetes Association 40-50% (Schäfer-Graf et al., 2018). In Scandinavian countries such as Denmark, the general carbohydrate intake recommendation for healthy pregnant women is 45-60% of energy and the recommendation is the same for pregnant women with GDM (Blomhoff et al, 2023).

In a systematic, which included 11 randomized controlled trials, showed that low carbohydrate intake increases the risk of micronutrient deficiencies, and that carbohydrate intake between 47-70% of pregnant women with GDM supports normal fetal growth patterns (Sweeting et al 2021). In a randomized crossover study compared diets containing 40% carbohydrate with diets containing 60% carbohydrate and reported that although PPG values were below target glucose values in 60% carbohydrate diet subjects, PPG, daytime mean glucose concentrations, and 2nd hour PPG were lower in GDM subjects consuming 40% carbohydrate diet. No significant difference was reported between the two groups in terms of fasting blood glucose (Hernandez et al, 2014). In a non-crossover randomized trial, compared a 40% carbohydrate diet with a 55% carbohydrate diet and found no difference between the groups in terms of pregnancy outcomes such as initiation of insulin therapy, cesarean delivery, low birth weight babies, macrosomia or gestational age at birth, but that lower carbohydrate intake would lead to an increase in fat intake, which was associated with an increase in serum fatty acids, insulin resistance and fetal adiposity (Moreno-Castilla et al, 2013). In a study conducted in GDM patients on a moderately low carbohydrate diet (135 g/day) and a control diet (minimum 175 g/day carbohydrate), it was reported that the energy intake of the moderately low carbohydrate diet group was lower; there was no significant difference between the groups in terms of birth weight, proportion of large babies for gestational age, percentage of fetal fat mass or fat-free mass (Mijatovic et al, 2020).

3. Conclusion

This review examined the effects of plant-based nutrition, MedDiet, DASH, LGI and low-carbohydrate diets on GDM. All women with GDM should receive dietary counseling from a clinical dietitian for MNT, which is the cornerstone of GDM treatment. MNT protects GDM from preeclampsia, hypoglycemia, hyperglycemia and many other complications. MNT protects the baby from premature and macrosomic birth. In meta-analyses, LGI stands out among the nutritional models recommended in the guidelines because the type of carbohydrate has an effect on glucose homeostasis, MedDiet stands out because it is rich in antioxidants and unsaturated fats and low in saturated fats and increases insulin sensitivity, and DASH, which is rich in minerals (Mg, K and Ca) and has reduced saturated fat, lowering blood pressure. These nutritional models play a role in preventing complications such as birth complications, cesarean section, LGA babies and type 2 diabetes in later life. Carbohydrate intake is a macronutrient that particularly affects blood sugar. The type, amount and distribution of carbohydrates consumed should be focused on. The effect of low carbohydrate intake on glucose homeostasis is still unclear. A diet with high antioxidant content, adequate vitamin and mineral content, rich in unsaturated fats and low in saturated fats may play a role in increasing insulin sensitivity. One of the individual healthy nutrition models should be selected considering the pregnant woman's eating habits,

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preferences and access to healthy nutrition. Optimum development of the fetus should be ensured, FBG and 1-hour PPG should be monitored and MNT should be kept at target values by creating an appropriate nutrition model. Randomized controlled studies on this subject are limited in number. More meta-analyses and systematic reviews are needed on the subject.

Authors Contributions

Topic Selection: MEA; Design: KK; Planning: MEA, KK; Writing of the article: MEA, KK; Critical review: MEA, KK.

Conflict of Interest

The authors declared no conflict of interest.

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