NCPD 2.5 ANCC Contact Hours

WOMEN WHO GIVE BIRTH PRETERM DO NOT MEET DIETARY GUIDELINES DURING PREGNANCY

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Abstract

Purpose: To evaluate maternal dietary intake during pregnancy compared with the 2015–2020 and 2020–2025 Dietary Guidelines for Americans (DGA). **Study Design and Methods:** A retrospective observational study design was used. The cohort included women who gave birth to preterm infants between 25 1/7 weeks and 33 6/7 weeks of gestation. Within 2 weeks of birth, participants were asked to recall their diet in the last month of pregnancy using the Dietary Screener Questionnaire. Participants' dietary intakes were compared to current 2020–2025 DGA that include specific recommendations for pregnant women and prior 2015–2020 DGA that were in place during the study period but were not pregnancy-specific. **Results:** Forty-five women participated in the study. None met the 2015–2020 or 2020–2025 DGA recommended intake of all seven dietary components. When compared to both DGAs, 2.2% of participants met the recommended dairy intake, 26.7% met the calcium intake, 15.6% were below the threshold for added sugar, and none met the vegetable or whole grain intake. When compared to the 2015–2020 DGA, 28.9% met the fruit intake and 2.2% met the fiber intake. However, when compared to the 2020–2025 DGA, only 2.2% met the fruit intake and none met the fiber intake. **Clinical Implication:** Women who gave birth preterm did not adhere to the 2015–2020 or 2020–2025 DGA recommendations in the last month of pregnancy. Nurses are uniquely positioned to provide pregnant women with nutritional screening and counseling as part of routine prenatal care.

Key words: Diet; Diet surveys; Nutrition assessment; Nutritional requirements; Nutritional status; Obstetric nursing; Pregnancy; Pregnant women; Premature birth.

Improving maternal diet during pregnancy is increasingly recognized as a public health priority considering growing evidence that suggests following a healthy diet during pregnancy is associated with a lower risk of adverse perinatal outcomes, including hypertensive disorders of pregnancy, gestational diabetes mellitus, low birthweight, and preterm birth (Marshall et al., 2022). Although pregnancy represents a unique life stage when diet can have a significant impact on the health of both mother and child, the Dietary Guidelines for Americans (DGA) have historically lacked pregnancy-specific recommendations. Instead, pregnant women were encouraged to follow the basic elements of a healthy dietary pattern applicable to all adults, such as eating nutrient-dense foods such as vegetables, fruits, grains, and limiting intake of saturated fats, added sugars, and sodium (U.S. Department of Agriculture [USDA] & U.S. Department of Health and Human Services [USDHHS], 2015).

For the first time in history, the 2020–2025 DGA provide tailored dietary guidelines for women during pregnancy including estimated daily calorie needs and intake recommendations for specific food groups and dietary components stratified by maternal age group and trimester (USDA & USDHHS, 2020). Although the addition of pregnancy-specific recommendations to the most recent edition of the DGA is an important step aimed at improving maternal–fetal outcomes, there is a gap in the literature regarding DGA adherence among women who gave birth preterm. Therefore, the primary aim of our study was to address this gap by evaluating dietary intake during pregnancy with respect to the prior 2015–2020 and the current 2020–2025 DGA in a cohort of women who gave birth preterm. Our secondary aim was to examine whether any maternal characteristics were associated with dietary intake. Our findings are exploratory and set the stage for future research assessing dietary intake during pregnancy and associations with maternal characteristics.

Methods

Study Design and Population

We conducted a retrospective observational study exploring dietary intake in the last month of pregnancy among women who gave birth to preterm infants requiring admission to the Neonatal Intensive Care Unit (NICU) at a large teaching hospital in Boston between January 2019 and January 2020. This study was approved by our institution's research ethics committee. Inclusion criteria were broad; almost all mother–infant dyads with births prior to 34 weeks of gestation were eligible. The only exclusion criteria were infants who might be transferred to an outside hospital or who might not survive beyond 48 hours after birth. Maternal clinical data were collected from electronic medical records.

Prenatal Dietary Intake Assessment

We evaluated prenatal dietary intake using the Dietary Screener Questionnaire (DSQ), a 26-item dietary assessment instrument (Figure 1 Supplemental Digital Content at http://links.lww.com/MCN/A89) developed by the National Cancer Institute (NCI) and validated by the 2009–2010 National Health and Nutrition Examination Survey (NCI, 2021b). We selected the DSQ because its dietary metrics are aligned with the DGA, and it has a low participant burden given its brevity. Women were given the DSQ in paper format within 2 weeks following birth and were asked to recall their usual frequency of consumption of foods and beverages during the past 30 days (NCI, 2021c). A 2-week window was chosen to allow for initial postpartum recovery and because the period immediately following an infant's admission to the NICU is a suboptimal time to approach parents about research participation. All DSQ data were processed and scored according to the publicly available algorithms derived by the NCI (NCI, 2021a; Thompson et al., 2017). Participants' dietary intakes were then compared to the 2015–2020 and 2020–2025 DGA (USDA & USDHHS, 2015, 2020).

TABLE 1. DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF STUDY PARTICIPANTS ($N = 45$)

Characteristic	*n* (%)
Race	
White	27 (60.0%)
Black or African American	8 (17.8%)
Asian	4 (8.9%)
Unknown or Not Reported	6 (13.3%)
Ethnicity	
Not Hispanic or Latina	36 (80.0%)
Hispanic or Latina	6 (13.3%)
Unknown or Not Reported	3 (6.7%)
Age at Birth (years)	34.1 ± 5.8
Pre-pregnancy BMI (kg/m^2)[a]	26.4 ± 5.7
BMI at Birth (kg/m^2)	30.1 ± 5.8
Gestational Weight Gain (kg)[a]	10.8 ± 6.1
Gestational Age at Birth (weeks)	30.3 ± 2.5
Primigravida	22 (48.9%)
Singleton Birth	36 (80.0%)
Cesarean Birth	29 (64.4%)
Maternal Comorbidities	
Preeclampsia or Eclampsia	9 (20.0%)
Chronic Hypertension	3 (6.7%)
Diabetes (Gestational or Type 2)	9 (20.0%)
Previous Preterm Birth	9 (20.0%)
Former Smoker	3 (6.7%)

Note. Continuous variables are expressed as mean ± standard deviation (SD) and categorical variables are expressed as absolute number (percentage).

[a]Based on $N = 44$ due to missing data.

TABLE 2. PRENATAL DIETARY INTAKE AMONG STUDY PARTICIPANTS COMPARED TO THE 2015–2020 AND 2020–2025 DIETARY GUIDELINES FOR AMERICANS

		2015–2020 DGA		2020–2025 DGA	
Dietary Factor	**Participants' Intake (mean ± SD, N = 45)**	**Recommended Intake[a]**	**Participants Who Met Recommended Intake N (%)**	**Recommended Intake[b]**	**Participants Who Met Recommended Intake N (%)**
Vegetables (cup eq)	1.5 ± 0.3	2.5–3	0 (0%)	3–3.5	0 (0%)
Fruits (cup eq)	1.2 ± 0.4	1.5–2	13 (28.9%)	2	1 (2.2%)
Whole Grains (oz eq)[c]	0.7 ± 0.3	3–4	0 (0%)	3.5–4.5	0 (0%)
Dairy (cup eq)	1.7 ± 0.6	3	1 (2.2%)	3	1 (2.2%)
Added Sugar (tsp eq)[d]	17.2 ± 3.5	<10.7–14.3	7 (15.6%)	<13.1–15.5	7 (15.6%)
Fiber (g)[e]	18.6 ± 3.8	25–34	1 (2.2%)	31–36	0 (0%)
Calcium (mg)	907.8 ± 161.3	1,000	12 (26.7%)	1,000	12 (26.7%)

[a]2015–2020 DGA recommendations for women who are 19–50 years old with estimated calorie needs of 1,800–2,400 kcal/day.

[b]2020–2025 DGA recommendations for pregnant women who are 19–50 years old and are in 2nd–3rd trimester of pregnancy with estimated calorie needs of 2,200–2,600 kcal/day).

[c]As defined by the USDA, 1 oz eq of 100% whole grains has 16 g of whole grains.

[d]The DGA recommends limiting added sugars to less than 10% of total daily calories, which was converted to tsp eq using the USDA conversion factors: 1 g = 4 kcal, 1 tsp = 4.2 g.

[e]According to the DGA, 14 g fiber per 1,000 kcal.

Analysis

Descriptive analyses were used to examine participants' demographic and clinical characteristics, dietary intakes, and adherence to the DGA. To check associations between dietary factors and maternal characteristics, one-way ANOVA or simple linear regression was conducted as appropriate. Due to the exploratory nature of our analyses, we did not adjust our models to account for potential covariates. As such, our results are preliminary and should be confirmed by future studies.

Results

Prenatal Dietary Intake in the Last Month of Pregnancy

Characteristics of the study population ($N = 45$) are summarized inTable 1. On average, the DSQ was completed within 2.3 ± 1.1 weeks following birth. Participants' mean daily dietary intake in the last month of pregnancy consisted of 1.5 ± 0.3 cup eq of vegetables, 1.2 ± 0.4 cup eq of fruits, 1.7 ± 0.6 cup eq of dairy, 0.7 ± 0.3 oz eq of whole grains, 17.2 ± 3.5 tsp eq of added sugar, 18.6 ± 3.8 g of fiber, and 907.8 ± 161.3 mg of calcium (Table 2 and Figure 2 Supplemental Digital Content at http://links.lww.com/MCN/A89).

Prenatal Dietary Intake Compared to the 2015–2020 DGA

The 2015–2020 DGA were in place at the time of DSQ completion but did not include pregnancy-specific recommendations (Table 3). None of the participants met the 2015–2020 DGA recommended intakes of all seven dietary components (Table 2). Of the 45 women, 28.9% met the fruit intake, 2.2% met the dairy intake, 2.2% met the fiber intake, 26.7% met the calcium intake, 15.6% were below the recommended threshold for added sugar, and 0% met the intake of vegetables or whole grains.

Prenatal Dietary Intake Compared to the 2020–2025 DGA

The 2020–2025 DGA provide pregnancy-specific recommendations, which are summarized in Table 3. None of the women met the 2020–2025 DGA recommended intakes of all seven dietary components (Table 2). Of the 45 women, 2.2% met the fruit intake, 2.2% met the dairy intake, 26.7% met the calcium intake, 15.6% were below the recommended threshold for added sugar, and 0% met the intake of vegetables, whole grains, or fiber.

Associations Between Prenatal Dietary Intake and Maternal Characteristics

Our exploratory analysis assessed potential associations between prenatal dietary intake and maternal characteristics (Figure 3 Supplemental Digital Content at http://links.lww.com/MCN/A89). Women with diabetes (gestational or type 2) consumed less added sugar per day than women without diabetes ($P = .004$), whereas women with a twin pregnancy consumed more added sugar per day than women with a singleton pregnancy ($P = .01$). Women with preeclampsia consumed more whole grains per day than women without preeclampsia ($P = .008$). There was an inverse relationship between the intake of fruits and maternal pre-pregnancy body mass index (BMI; $\beta = -0.022$, $P = .043$); however, after excluding one participant with the highest intake of fruits as an outlier, the relationship was no longer significant ($\beta = -0.017$, $P = .07$). Similarly, there was an inverse relationship

between intake of fruits and maternal BMI at birth (β = -0.026, $P = .013$), which remained significant after excluding the same participant with the highest intake of fruits as an outlier (β = -0.020, $P = .035$). No other significant association between dietary factors and maternal characteristics was found.

Discussion

Results highlight two important issues for prenatal care. First, our findings suggest that the prenatal dietary intake among women who gave birth between 25.1 weeks and 33.9 weeks gestation is inadequate when compared to the 2015–2020 and 2020–2025 DGA recommendations. Thus, given the well-known importance of dietary intake during pregnancy and our findings that underscore the inadequacy of maternal dietary intake, we recommend routine dietary surveillance with a valid and reliable assessment during pregnancy. Second, using dietary screening tools in pregnancy could effectively facilitate dietary interventions to help women meet the DGA recommendations. This may set the stage for future research that could lead to a better understanding of the relationship between prenatal dietary patterns and the risk of adverse pregnancy outcomes such as preterm birth.

TABLE 3. 2015–2020 DIETARY GUIDELINES FOR AMERICANS RECOMMENDED INTAKE, 2020–2025 DIETARY GUIDELINES FOR AMERICANS RECOMMENDED INTAKE, AND 2013–2016 NATIONAL AVERAGE INTAKE FOR PREGNANT WOMEN

	2015–2020 DGA Recommended Intake[a]			2020–2025 DGA Recommended Intake[b]				U.S. Average Intake[c,d] (n = 125)
Age (yr)	19–25	26–30	31–50	19–30		31–50		20–44
Trimester (week)	N/A	N/A	N/A	2nd (14–26 6/7 wk)	3rd (27–40 wk)	2nd (14–26 6/7 wk)	3rd (27–40 wk)	not reported
Calories (kcal)[e]	2,000–2,400	1,800–2,400	1,800–2,200	2,400	2,600	2,200	2,400	2,099 (107.0)
Vegetables (cup eq/day)	2.5–3	2.5–3	2.5–3	3	3.5	3	3	1.55 (0.118)
Fruits (cup eq/day)	2	1.5–2	1.5–2	2	2	2	2	1.34 (0.171)
Whole Grains (oz eq/day)[f]	3–4	3–4	3–3.5	4	4.5	3.5	4	1.03 (0.168)
Dairy (cup eq/day)	3	3	3	3	3	3	3	1.78 (0.156)
Added Sugar (tsp eq/day)[g]	<11.9–14.3	<10.7–14.3	<10.7–13.1	<14.3	<15.5	<13.1	<14.3	20.3 (2.16)
Fiber (g/day)[h]	28–34	25–34	25–31	34	36	31	34	18.0 (0.98)
Calcium (mg/day)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,013 (57.7)

Note. DGA—Dietary Guidelines for Americans.

[a]2015–2020 DGA recommended daily intake for women who are 19–50 years old and whose activity level is sedentary to active. Adapted from U.S. Department of Agriculture & U.S. Department of Health and Human Services. (2015). 2015–2020 Dietary Guidelines for Americans. 8th Edition. (https://health.gov/our-work/food-nutrition/previous-dietary-guidelines/2015). In the public domain.

[b]2020–2025 DGA recommended intake for pregnant women by age group, trimester, and calorie level.

Adapted from U.S. Department of Agriculture & U.S. Department of Health and Human Services. (2020). Dietary Guidelines for Americans, 2020–2025. 9th Edition. (https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary_Guidelines_for_Americans_2020-2025.pdf). In the public domain.

[c]2013–2016 U.S. average intake for pregnant women.

Adapted from U.S. Department of Agriculture & U.S. Department of Health and Human Services. (2020). Dietary Guidelines Advisory Committee and Data Analysis Team. Data Supplement for Pregnancy and Lactation: Food Group and Nutrient Intakes. 2020 Dietary Guidelines Advisory Committee Project. (https://www.dietaryguidelines.gov/sites/default/files/2020-07/DA_Supplement_Pregnancy_and_Lactation_0.pdf). In the public domain.

[d]Data presented as mean (se).

[e]According to the DGA, calorie level ranges are calculated based on a reference woman (126 lb, 5"4'). Individual calorie needs may vary based on many factors. The Dietary Reference Intake Calculator, available at https://www.nal.usda.gov/fnic/dri-calculator/, can be used to estimate individual calorie needs.

[f]As defined by the USDA, a one ounce equivalent (oz eq) of 100% whole grains has 16 grams of whole grains.

[g]The DGA recommends limiting added sugars to less than 10% of total daily calories, which was converted to teaspoons (tsp) equivalents (eq) using the USDA conversion factors: 1 g = 4 kcal, 1 tsp = 4.2 g.

[h]According to the DGA, 14 g fiber per 1,000 kcal.

Implementation of a dietary screening tool that is tailored to the needs of pregnant women is needed.

Results in the Context of What is Known

Based on our DSQ data, none of the women met all seven dietary intake recommendations set by the 2015–2020 and 2020–2025 DGA. Very few met the recommended intake of fruits, dairy, fiber, calcium, or added sugar, and none met the recommended intake of vegetables and whole grains. This suggests that all of our study participants had an overall poor-quality diet during the last month of pregnancy despite being engaged in care within a generally high-resource setting. In comparison to the 2015–2020 DGA, the 2020–2025 DGA include a higher daily intake of fruits and fiber, which explains why fewer participants met the current recommendations. Our findings are consistent with the 2013–2016 U.S. average intake for pregnant women, which revealed that the majority of expectant mothers consume diets that are low in vegetables, fruits, whole grains, and dairy and are high in added sugars (Dietary Guidelines Advisory Committee [DGAC], 2020a, 2020b). Taken together, this underscores maternal nutrition as a public health issue and highlights the importance of routine dietary screening for all pregnant women.

The cause of inadequate prenatal diet is likely multifactorial. We hypothesize that one of the key determinants of women's diet quality during pregnancy may be their limited knowledge about nutritional needs specific to pregnancy and potential heterogeneity in the nutrition education received from obstetric care providers (de Jersey, 2013; Lee et al., 2018). Thus, some pregnant women may be unaware of the DGA entirely due to having received minimal or no prenatal nutritional counseling. Kim et al. (2017) reported that among a representative sample of 376 pregnant women from the 2005–2006 National Health and Nutrition Examination Survey (NHANES), only 47.8% have heard of the DGA. It is also possible that even if women have some knowledge of the DGA, they may still find it challenging to follow the DGA during pregnancy. Grenier et al. (2021) and Blondin and LoGiudice (2018) found pregnant women reported having a general awareness of the nutritional guidelines but admitted having difficulty interpreting and implementing specific recommendations (e.g., due to nausea and vomiting of pregnancy), which reinforces the need for health care providers to deliver in-depth, yet easy-to-understand, nutrition education and interventions focused on behavior change among pregnant women to address this gap in care.

Prenatal Dietary Intake and Maternal Characteristics

Women with diabetes had a lower average daily intake of added sugar in the last month of pregnancy than women without diabetes. This finding is consistent with a recent study by Hinkle et al. (2021) that revealed a decrease in participants' intake of added sugar after they were diagnosed with gestational diabetes, perhaps as a result of additional nutritional counseling, as a referral to a registered dietitian is recommended for this patient population (American College of Obstetricians and Gynecologists [ACOG], 2018a; American Diabetes Association, 2020; Stang & Huffman, 2016). Although it is reassuring that our findings suggest that pregnant women with diabetes may consume less sugar, this supports importance of providing nutrition education to all pregnant women regardless of comorbidities.

Women pregnant with twins had a higher average daily intake of added sugar in the last month of pregnancy than women with a singleton gestation. According to ACOG (2020), women carrying twins should consume about 600 extra calories per day, which is double the amount a woman pregnant with one fetus needs to consume. Women with multiple gestations may benefit from nutritional counseling that is specifically tailored to address the challenges associated with an increase in caloric intake and to provide strategies for how to meet food group recommendations healthfully.

In contrast to a recent meta-analysis by Traore et al. (2021), which revealed that risk of preeclampsia may be reduced by a higher intake of whole grains, our findings suggest that women with preeclampsia may have a higher average daily intake of whole grains in the last month of pregnancy than women without preeclampsia. This finding is counterintuitive as whole grains are typically regarded as one of the hallmarks of a healthy diet that offer many protective health benefits. However, it should be noted that we did not assess the risk of preeclampsia in the context of other clinical factors, such as nulliparity and advanced maternal age, which are known risk factors for preeclampsia (Shiozaki & Saito, 2018). Our study cohort included only nine women with preeclampsia and therefore, future research with a larger cohort is warranted to examine any potential association between prenatal diet and preeclampsia.

Maternal pre-pregnancy BMI and BMI at birth were inversely associated with the mean daily fruit intake in the last month of pregnancy. This is consistent with a study by Heo et al. (2011) that reported an inverse association between fruit and vegetable intake and BMI among US adults. Our observations are further supported by a review by Alinia et al. (2019) which reported an inverse association between fruit intake and body weight in 11 out of 16 studies.

Strengths and Limitations

A strength of our study is that it captures the dietary intake of pregnant women who are historically underrepresented in all areas of research, including nutrition research. According to the What We Eat in America report (USDA, 2020), which analyzed the 2013 to 2018 National Health and Nutrition Examination Survey data, pregnant women comprised only about 6% of surveyed females (DGAC, 2020b). A recent article by Smith et al. (2021) revealed pregnant women were included in only 17.5% of studies that inform nutrient reference values, such as the Dietary Reference Intakes. Our study addresses this disparity by focusing solely on the diet during pregnancy. Our findings highlight the inadequacy of prenatal diet in comparison to the DGA and contribute to the limited body of literature that characterizes dietary intakes during pregnancy using the DSQ (Chu et al., 2016; Mahabamunuge et al., 2021).

Limitations include a modest sample size and a cohort of only women who gave birth preterm, thus we could not conduct comparative analyses related to the association between diet and pregnancy outcome (e.g., preterm vs. term). Subsequent studies would benefit from prospectively enrolling a larger cohort of pregnant women and administering the DSQ at multiple time points during prenatal care to better estimate dietary intake over the course of the entire pregnancy. We were unable to collect sociodemographic factors, such as education, income, employment, and insurance status, which are important social determinants of health that influence food choices or purchasing power. We acknowledge limitations related to the use of a self-reported questionnaire and the possibility of recall bias, which is inherent in all dietary recall tools. Nonetheless, the DSQ has been shown to produce estimates of mean intake that are comparable with the more precise 24-hour recalls (Thompson et al., 2017). It should also be noted that the DSQ, as a rapid assessment tool, does not capture all components of a healthy dietary pattern outlined in the DGA (i.e., protein and oils) and does not assess whether the intake of saturated fat and sodium is within the limits.

Implications for Nursing Practice

Evidence from a systematic review suggests that pregnant women do not receive adequate nutrition education from health care professionals (Lucas et al., 2014; Whitaker et al., 2016). Because nurses provide most of the direct one-on-one care to pregnant women, and patient education has long been considered a cornerstone of nursing care, nurses are uniquely positioned to provide nutrition education as part of routine prenatal care. Nurses work in a multidisciplinary team and can help ensure collaboration with other health care providers knowledgeable about diet, nutrition, and food access and security (e.g., registered dietitians, social workers, physicians, midwives, etc.) when needed to meet patient care needs. There is a need for a systematic implementation of nutritional screening and education that addresses the importance of following a healthy diet and meeting the newly published pregnancy-specific DGA recommendations.

CLINICAL IMPLICATIONS

- There was inadequate dietary intake during the last month of pregnancy among women who gave birth to preterm infants.
- All pregnant women should be educated on the current Dietary Guidelines for Americans recommendations during routine prenatal care visits and receive nutritional screening to identify any potential dietary inadequacies. Nurses can refer to the Dietary Guidelines for Americans at https://www.dietaryguidelines.gov/ when counseling pregnant women and provide a handout with additional information on healthy nutrition during pregnancy found at https://www.dietaryguidelines.gov/sites/default/files/2021-12/DGA_Pregnancy_FactSheet-508c.pdf
- Pregnant women whose diets do not meet the Dietary Guidelines for Americans recommendations should receive timely nutritional counseling, and nurses are uniquely positioned to address this gap in care.
- A better understanding of factors that contribute to the dietary intake of pregnant women is a public health priority.
- Nursing education must include core content on nutrition, ensuring that the nurse can effectively assess and educate patients and families about nutrition during pregnancy and across the lifespan.

Like other screening tools that are used in prenatal or postnatal care at specific time points (e.g., Edinburgh Postnatal Depression Scale), we suggest that a validated and rapid dietary screening tool, such as the DSQ, be included in routine prenatal care (ACOG, 2018b; Siu et al., 2016). Counseling on appropriate weight gain, nutrition, and exercise at the initial prenatal visit is recommended by ACOG (2013), and we suggest that a dietary screening be conducted at this time and periodically throughout pregnancy so appropriate referrals and interventions can be made early. Based on the general feedback from our participants, the DSQ had a low perceived burden and was "quick and easy" to complete and thus could be integrated into an electronic medical record, as other tools are, and implemented in clinical practice.

We recommend after administering a dietary screening tool, such as the DSQ, nurses work with their pregnant clients using the MyPlate food-planning guide (USDA, n.d.), which is recommended for educational purposes, to estimate their caloric needs and obtain a personalized food plan that aligns with the DGA. Because pregnant women may be more willing to modify their food choices, there is an opportunity for nurses to use this tool to provide targeted education, for example, limiting calories from added sugars (Hillesund et al., 2016; Lindqvist et al., 2017; Phelan, 2010; Swift et al., 2017). Patient education should emphasize prenatal diet as an important modifiable risk factor for adverse pregnancy outcomes. Routine nutritional screening and counseling of all pregnant people are important areas of nursing care

to be further developed and adopted as part of ensuring uniformly excellent evidence-based practice.

Implications for Nursing Education

Our study reinforces the importance of prenatal dietary assessments, timely patient education, and a robust nursing knowledge base related to nutrition and diet. These essential interventions may be facilitated by nurses as part of prenatal visits; however, for nurses to feel confident in delivering the DGA recommendations, they also must be educated about the components of a healthy diet. It has been well documented in the literature that health care professionals encounter dietary issues frequently yet do not have a high level of confidence in addressing them (Arrish et al., 2016; Hanson et al., 2016; Mitchell et al., 2018). It is important for nursing students and nurses in practice to have a strong foundation in nutrition and dietary principles and to stay up-to-date on the latest guidelines to effectively educate pregnant patients. As nursing education moves toward implementing core competencies for practice, additional emphasis on nutrition within the curriculum will be essential to disease prevention, health promotion, and meeting domains such as person-centered care and population health. Future efforts should also be directed toward assessing obstetric nurses' current knowledge regarding the DGA and nutritional interventions. Any identified gaps in knowledge could be addressed by providing continuing education opportunities that allow nurses to develop competencies needed to help patients achieve and maintain a healthy diet throughout pregnancy. ✣

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