UNIVERSIDADE FEDERAL DO RIO DE JANEIRO
CENTRO DE CIÊNCIAS DA SAÚDE
MATERNIDADE ESCOLA UFRJ

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DIETARY INTAKE, NUTRITIONAL PROFILE AND PREGNANCY OUTCOMES OF WOMEN ON PLANT-BASED DIET

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Trabalho de Conclusão de Curso do Programa de Residência Multiprofissional em Saúde Perinatal da Maternidade Escola da Universidade Federal do Rio de Janeiro, como requisito obrigatório para obtenção do título de Nutricionista Especialista em Saúde Perinatal.

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Dietary intake, nutritional profile and pregnancy outcomes of women on plant-based diets

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Research Snapshot

What are the nutritional aspects regarding women on plant-based diets during gestation and its outcomes? This was a cross-sectional study with a convenience sample of self-declared vegetarian

collected on the first prenatal appointment. Pregnancy outcomes were obtained through patient data. Five patients were included. Dietary inadequacies were observed despite the type of plant based diet adopted, mostly due to no previous nutritional supervision and orientation. Maternal and baby weights, however, were within recommendations. Despite the small sample, pregnancy outcomes were similar to the general population.

Abstract

Background: Vegetarian diets are appropriate to all stages in life, including pregnancy and childhood, if well planned and supervised. Healthy vegetarian diets must include a wide variety of plant foods during the day, otherwise it can potentially lead to protein, calcium, iron, zinc, omega 3 fatty acid, vitamin D, and vitamin B12 deficiencies and require greater attention during pregnancy (especially in strict vegetarians). **Methods:** This was a cross-sectional study with a convenience

between December 2018 and October 2019. Dietary intake, clinical and biochemical parameters were collected on the first prenatal appointment. Pregnancy outcomes were obtained through patient data. **Results:** Five patients were included. All women had different nutritional

linked to the type of diet and time without meat consumption and should be monitored. Calcium intake requires attention, especially on a strict vegetarian diet. All babies were born within adequate range for weight and height. Despite the small sample, pregnancy outcomes were similar to the general population. **Conclusions:** Studies with larger samples are necessary to support any beneficial or detrimental association in adopting plant-based diets during pregnancy. However, since choosing this type of diet is a personal choice, health professionals should be trained and prepared to support and correctly advise women following plant-based nutrition.

Dietary intake, nutritional profile and pregnancy outcomes of women on plant-based diets

Introduction

Vegetarianism can be defined as a dietary pattern that excludes meat consumption and can be classified in different subtypes: lacto-ovo vegetarian, which includes the consumption of eggs, milk, and dairy; lacto-vegetarian, which includes only the consumption of milk and dairy; ovo-vegetarian which includes the consumption of eggs; strict vegetarian, the individual who does not not use any kind of material made with animal products, such as clothes, shoes, fur or hygiene products that are tested on animals [1,2]. The adoption of a vegetarian diet may be due to various reasons, such as health issues, environment concerns, animal welfare, religion, ethics, among others. In Brazil, data from a survey by the Brazilian Vegetarian Society, showed a 75 % increase in self-declared population between 2012 and 2018, resulting in an estimative of 14 % of the Brazilian population [3,4]

Recently, a broader concept has been used to define diets that restrict animal products called whole food plant-based diets (WFPB). This dietary pattern could be defined as "a diet rich in vegetables, legumes, fruits, whole grains, nuts, and seeds. Meat, poultry, fish, dairy products, and processed foods are heavily restricted" [5]. Another variation could be the strict WFPB diet that excludes entirely animal-based foods and most processed foods and intend to reassure a healthier lifestyle [6] Vegetarian diets are considered to be appropriate to all stages in life, including pregnancy and childhood, if well planned [2].

Some evidence shows that vegetarian populations tend to have reduced risk of heart attack, stroke, renal failure, and lower blood pressure [6–8]. Regarding pregnancy outcomes, literature it is not clear about the benefits of adopting a vegetarian diet. The increased intake of fruits, legumes, vegetables and seeds, commonly observed in vegetarians, may improve overall health. However, vegetarian diets can lead to potential risk of deficiency for some specific nutrients and require greater attention during pregnancy (especially in strict vegetarians). The main micronutrients of concern are calcium, iron, zinc, vitamin B12, iodine and vitamin D. Protein and omega 3 fatty acid often are the other nutrients considered an issue in plant-based diets [2,9,10]

Calcium is an essential micronutrient for bone and teeth formation, muscle contraction, and, during pregnancy, for prevention of preeclampsia, with dietary recommendations intake (DRI) of 1000 mg/ day [11]. The main sources are cow's milk, plain yogurt, cheese, sardines, beans, sesame seed/tahini, flaxseed, almonds, tofu, and dark green leafy vegetables [12].

gestational period a hemodilution occurs, to adapt the organism to the needs of oxygen transport to the fetus, therefore increasing the demand for iron [13]. Low hemoglobin levels increase the risk

development and growth. The World Health Organization (WHO) strongly recommends that all adolescent and adult pregnant women take daily a supplement with 30-60 mg of elemental iron (and 400 mcg of folic acid), regardless of diet, to prevent anemia, puerperal sepsis, low birth weight, and premature birth [14]. Main sources are beef and chicken, beans, lentils, dark green vegetables, cashews, almonds, flaxseeds [12].

Zinc is an important mineral that acts in many enzymatic activities, in the immune system, and in protein synthesis, among other functions. The Recommended Dietary Allowance (RDA) for women over 19 years is 8mg/day, and the recommendation for gestational period is increased to 11-12 mg / day [15]. Main sources are red meat, nuts and cashews, beans, lentils, chickpeas, flax seeds, oats, almonds, and walnuts[12].

metabolism of fatty acids and mainly in the conversion of homocysteine (hcy) to methionine, with the participation of vitamin B6 (pyridoxine) and vitamin B9 (folic acid). High levels of hcy are related to cardiovascular diseases, and it could also indicate inadequate levels of vitamin B12 [16]. The recommended intake of B12 during pregnancy is 2.6 mcg per day. Deficiency during pregnancy may pose risks of megaloblastic anemia and fetal malformations [17(p12)]. Main source is red meat, but can also be found in milk, cheese, and eggs; and fortified foods in minor amounts [(11)].

Iodine is a micronutrient which the deficiency can cause several complications in pregnant and children, such as goiter, and women delivering babies with neurological cretinism, a condition associated with an impairment in mental function and other consequences. Main food source of iodine is sea food, however, in some countries, such as Brazil, iodine addition in table salt is

be a problem for most Brazilian women and children. Nevertheless, it is important to ask if the pregnant woman uses different types of salt, such as Himalayan salt, which does not contain iodine [18,19].

Vitamin D is important for calcium metabolism and during pregnancy the necessity increases, with recommendations levels in biochemicals exams above 30ng ml^{-1}. Endogenous production from sunlight is the most effective source to obtain this vitamin, hence may be a concern if the solar exposure is not efficient [20,21].

Vegetarian, or plant-based diets, can increase the risk of nutrient inadequacies if not well supervised. Women following these diets are increasing and many of them will become pregnant, a period of increased nutritional demands. Considering the recent popularity of vegetarian diets and the importance of the appropriate dietary support during pregnancy, the purpose of this study was to analyze the dietary profile and nutritional status of pregnant women, following a vegetarian diet, and discuss possible health implications and gestational outcomes.

Methods

This was a cross-sectional study with a convenience sample of self-declared vegetarian woman regularly attending a public maternity hospital where women are referred to the facility through a

ultrasounds, biochemical exams, appointments with obstetrician, endocrinologist, dietitians, psychologist, nurses, social service, as required. Selection occurred between December 2018 and October 2019. Dietary intake, clinical and biochemical parameters were collected on the first prenatal appointment. Pregnancy outcomes were obtained through patient data.

Participants

Participants were included during the period of December of 2018 and August of 2019 and birth outcome data until October 2019. All of them signed an Informed Consent Form approved by the ethics committee, which allowed access to both mother and baby data. The data collection was through their medical files for information such as weight, medications, ultrasounds, information about birth deliver, such as type of deliver, weight and size birth, breastfeeding. Also, it could be

questioned about their dietary habits upon arrival at the maternity and directed to the research group members and all dietary data was collected by the same trained dietitian.

Anthropometric and Biochemical Data

All pregnant women included in the prenatal care followed the maternity's routine evaluation protocol. Height and weight were measured in the first day of the trial during the nursing appointment and they were submitted to a blood sample test for hemogram and fasting glucose concentration. Those women included in the project, had an additional request for the analysis of vitamin B12, folic acid, and homocysteine in the same blood test. Pre-pregnancy weight (PPW) was established at enrolment using self-declared PPW or the weight in the first trimester (until 13 weeks). Pre-pregnancy body mass index (PP-BMI) was calculated based on height and PPW (kg m^{-2}) and the total gain weight calculated with the last weight described in their files. Weight is recorded every appointment and the weight gain is calculated by week.

Prenatal Care

The maternity's routine prenatal care comprises of a multi professional team, including obstetrician, endocrinologist, dietitian, nurse, psychologist and social service, as required. All participants had an appointment with an endocrinologist, who was responsible for requesting

intake was estimated using a 24hour-recall in the first appointment with the registered dietitian and in the last contact with the nutrition team before labor. Estimated energy requirement was

gestational BMI. Total energy intake and the nutrition plans for appropriate weight gain were calculated according to the pregnancy trimester and BMI stratification, as obese, overweight, eutrophic or underweight. The micronutrient reference is the dietary reference intake (DRI).

Nutritional Assessment

During the appointment with the dietitian basic information were collected: age, previous diseases, PPW, time since the adoption of the vegetarian diet, the characteristics of the diet, supplements used until that moment of gestation, and a 24hr recall was used for estimating food intake. The 24hr recall was analyzed by using the Brazilian Table of Food Composition (TACO - UNICAMP,

used for the total energy, in kilocalorie (kcal). It was also possible to analyze the consumption of dietary iron, calcium and zinc.

Statistical analyses

No statistical analyses were used since it was a descriptive study with a small sample size.

Results

During the study timeframe, five women were included and all completed follow-up. Considering an average of 80 pre-natal consultations per month, the number of self-declared vegetarians represents less than 1% of the regular maternity attendees. At table 1 there is the classification of the pregnant subject according to age, gestational age, time without eating meat, supplementations and PP-BMI. All women included were receiving folic acid supplementation, but not all for vitamin B12. The majority, 4 of 5 women, were on a vegetarian diet for at least three years and three of them had a body composition classified as eutrophic.

Table 2 describes the calories intake and macronutrient distribution according to data collected in the first appointment. In general, total energy intake estimates were low with a total calorie under 1500 per day. Macronutrients distribution were between adequate range, except for two women with fat intake below recommended values. However, despite an adequate protein intake percentage, total protein (g) per kilogram was under 1,0 g kg^{-1} in 4 out of 5 women.

Biochemical exams are described in table 3. Exams were collected at their first appointment in the maternity, therefore gestational age was different among participants and could lead to the variation seen. Hemoglobin and hematocrit were low in patients 2 and 3, suggesting an anemia and a possible iron deficiency previous pregnancy, while the other patients were considerate normal. Vitamin B12 deficiency was found in all patients, except for patient 5, who was using previous supplementation. Even though could be a correlation between vitamin B12 deficiency and increase of hcy. Levels of hcy were considered normal (below 13 mcmol L^{-1}). Ferritin range is large and if considerate the lowest number only patient 2 had low levels of iron. Vitamin D should be above 30 ng mL^{-1} and 3 patients were deficient.

Outcomes of pregnancies are showed in table 4. Patients had weight gain near to the expected, but

were all full term and most of patients had a vaginal birth, with no interventions. Breastfeeding in the first hour was present for all of them, as stimulated by WHO. Birth size and weight were adequate.

Figure 1 (A, B and C) showed the estimated intake of iron, calcium and zinc (mg per day). Micronutrients in general were low for the patients. Iron and zinc were low for all patients according to DRI [15] and could be related to the low-calorie intake. Calcium was only achieved for one patient[11], who had an increased intake of cheese. Other micronutrients were analyzed through biochemical labs.

Discussion

Main limitation of this study was that it used a convenience sample resulting in a small number of

population, which could be explained due to no specific recruitment applied for this profile outside the maternity, being included self-declared vegetarians that would already be attending the health

could be observed at the appointment, when three of five women stated that they ate fish at least once during pregnancy due to social pressure and insecurity from family and friends toward the need for animal protein. It is important to notice that, although the prevalence of vegetarians in the population is increasing, there are still a lot of myths and misconceptions about the adoption of a healthy diet and the need for animal-based proteins, especially during pregnancy. Health professionals should be educated to improve the knowledge regarding a WFPB diet and be prepared to take care of their needs. A study conducted in Italy showed that health professionals lack information about the outcomes in different stages of life and although it was a small study, it demonstrates that it is a subject that needs to be discussed in the healthcare system [22].

During the 24-hour recall with dietitian when asked about the salt consumption, all patients

presented an inadequate intake of total energy and low ingestion of calcium, iron, and zinc (Table 2 and figures 1A, 1B and 1C). It is interesting to notice that the percentage of protein intake is adequate according to the IOM, considering that it is above 10% of the total kcal [23]

total energy intake was below the recommendation for the gestational period, along with g kg^{-1} of protein, which can be due to the absence of previous supervision by a dietitian.

All essential amino acids can be found in plant food, with varying quantities between specific foods, and recommendations can be reached with adequate intake of diverse legumes and cereals throughout the day. During pregnancy, due to incremental protein requirements, an increase in plant food protein sources should be indicated [1]. The recommended range for protein intake is 10 to 35% of total calories, therefore, dietary planning should try to maintain this percentage close to 15% to achieve more adequate levels of protein.

Fatty acid intake was very different for all patients (data not showed). The presence of ultra-processed foods in the diet could result in higher cholesterol, on the other hand, the use of olive oil and nuts for some women increased the mono and polyunsaturated fat. Even though total fat intake is not a general concern in vegetarian diets, further studies should discuss the different types of fat, the importance of omega 3 ingestion and the impacts that may bring.

All participants had an estimated iron intake lower than RDA value (Figure 1A). In Brazil the pre-natal protocol from the health government recommends that all women with normal blood tests (hemoglobin> 11mg dl^{-1}) should be supplemented from 20 weeks of gestation until 3 months after birth, as an anemia prevention public health strategy, regardless the type of the diet [24]. In parallel is recommended to increase dietary iron, and combine with vitamin C food sources, such as orange, lemon, acerola, this way can further aid in iron intestinal absorption. If possible, vegetarians could also benefit from germination techniques that reduces phytate, a known iron antinutrient.

Calcium intake reached an average of 500 mg day^{-1} (Figure 1B). Even though some patients classified themselves as ovolactovegetarians, the consumption of milk and dairy products were not frequent or regular. Only patient (number 2) that achieved the recommendation had an elevated consumption of cheese, however, achieved by not necessarily healthy eating habits, such as replacing meals for only bread and cheese.

Gomes et al. showed that the prevalence of inadequate calcium and vitamin D intake was high among pregnant women, regardless of the trimester or the socio-economic status, and the diet type [25]. In Brazil, food fortification for calcium and especially vitamin D is rare, occurring only in some

based calcium options, supplementation should be evaluated if necessary, during pregnancy and lactation. Considering vegetarian diets, calcium bioavailability tend to have lower sodium intake and lower acid renal excretion from protein metabolism, resulting in better calcium metabolism [26], which can be a benefit from this diet. Recommendations to increase intake of plant sources were made to all pregnant women, and they all used calcium supplements at some gestational age.

Vitamin D is mainly endogenously produced from cholesterol metabolism after sunlight exposure to the skin and participants stated that their exposure were less than 15 minutes per day [27]. None of them used vitamin D supplements before pregnancy, and the insufficiency was diagnosed in three of them considering the threshold of under 20 ng ml^{-1}, as observed in table 4. Vitamin D deficiency during pregnancy is associated with preeclampsia, insulin resistance, gestational diabetes, and increased frequency of cesarean delivery [20]. Although abundant sun exposure is expected in tropical countries with high temperatures, the prevalence of vitamin D insufficiency and deficiency in Brazil appears to be similar with countries with lower solar incidence [28]. Among females, a high proportion of Brazilian women of reproductive age have shown vitamin D deficiency [29]. Brazilian Endocrinology and Metabolic Society recommend serum values between 30 to 60 ng ml^{-1} for pregnant and lactating women, and vitamin D supplementation was recommended to all the patients and monitored through exams [30].

Zinc (Zn) is an essential nutrient required for cell growth, differentiation, and survival, and its deficiency causes growth retardation, and other health problems [31]. Maternal zinc deficiency during pregnancy elevates the risks of low birth weight (LBW), small for gestational age infants (SGA) and preterm birth [32]. However, there is not enough evidence for zinc supplementation, since poor nutrition may be involved in the general maternal status of preterm and low birth weight [33]. WHO recommendations for antenatal care states that zinc supplementation for pregnant women is only recommended in the context of rigorous evaluation and the identification of the necessity [34]. Comparing vegetarian and non-vegetarian pregnant women the dietary intake of zinc is lower in vegetarians and it is possible to notice in figure 1C that the participants had lower zinc intake than RDA [35]. Since zinc absorption can be affected by inhibitors, such as phytic acid found in legumes, unrefined cereals, seeds and nuts, culinary techniques can be recommended, for example soaking and sprouting beans, grains and seeds [35]

Vitamin B12 is the only micronutrient that cannot be obtained exclusively through plant foods [2,36]. Although some of the patients consumes eggs and dairy almost daily, they still showed vitamin B12 deficiency, which are serum levels under 180 pg ml^{-1} (Table 3). The only patient (subject 5) that had no deficiency was using vitamin B12 supplementation since before pregnancy with dosage of 5000 mcg daily. Time without meat intake does not seem to be related with vitamin B12 deficiency.

general malnutrition, vegetarian or vegan diet because there is no or low consumption of food sources [37]. Vitamin B12 deficiency or insufficiency during pregnancy might be associated with complications such as neural tube defects, LBW, preterm delivery [38]. It is important to discuss the criteria to define vitamin B12 deficiency as well as the importance of evaluating other biomarkers such as methylmalonic acid or homocysteine, which can give a more reliable and accurate estimate of deficiency. In this study deficiency was considered serum level of under 180pg ml^{-1}, but some literature suggests serum levels under 300pg ml^{-1} as deficient considering the physiological adjustments of pregnancy [39].

In Brazil, some studies showed deficiency of vitamin B12 in the general population and also during pregnancy, with no correlation with the type of diet followed by the individual [40,41]. One of the explanations of the deficiency in those patients consuming eggs and milk could be that the amount of B12 in those foods is low, for example milk contains between 0.3 and 0.4 mg $100g^{-1}$, with an absorption rate of about 65%. Vitamin B12 is also sensitive to heat treatment, which means that boiling milk can destroy up to 50% of this micronutrient [36]. A reliable source of vitamin B12 for vegetarians should be oral supplementation after clinical evaluation.

Outcomes: deliver, post-partum and new born information

As observe in table 4, weight gain was mostly adequate, none of the patients had excessive weight gain, on contrary, with total weight gain slightly under the recommendation (less than one kilogram). Participants 1, 2 and 4 were diagnosed with gestational diabetes and had to change to a low sucrose diet. Patient 1 presented other risk factors for GD such as age (> 35 years) and family history of diabetes. Patient 2 had no known risk factors. Patient 4 had to use insulin as an additional

Participants had a vaginal birth, except for patient 4 who had a cesarean indicated due to

preeclampsia. The newborns had no apparent malformations and were all classified as adequate for gestational age (Intergrowth biometric) for weight, height and head circumference.

Conclusion

Women following plant-based diets can maintain this dietary pattern during pregnancy if under nutritional supervision to ensure a well-planned, high quality diet. Pre-conception care is also fundamental in those women planning to conceive since all patients began the pregnancy with some nutritional impairment. Vitamin B12 deficiency can be common, although not necessarily linked to the type of diet, and should be monitored. Calcium requires attention, especially on a strict vegetarian diet. Although the small sample, pregnancy outcomes were similar to the general population, not being able to support beneficial or detrimental associations of plant-based diets during pregnancy. Mostly important, health professionals should be informed, trained and prepared to support and correctly advise women on their choice of following a plant-based diet during pregnancy. In the supplementary material there is the summary of main nutrients and recommendations necessary for a whole food plant-based diet during pregnancy.

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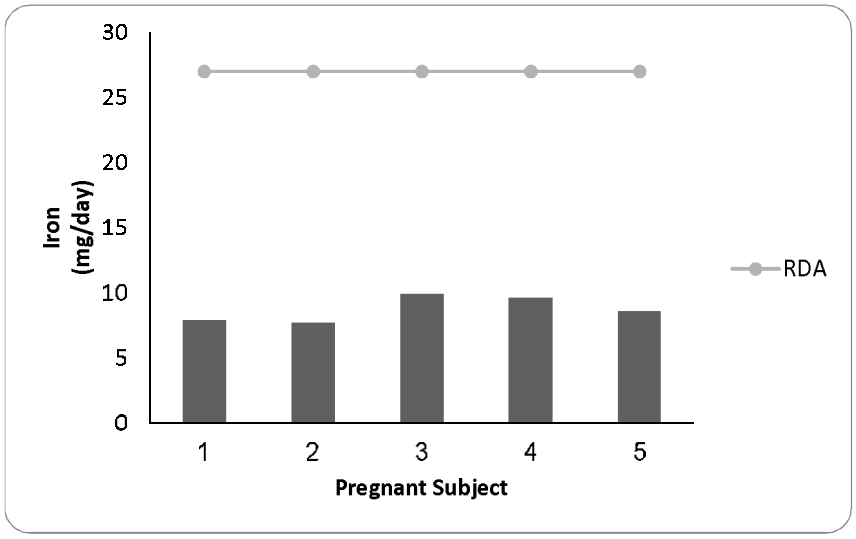
FIGURES: DIETARY INTAKE CONSUMPTION OF IRON, CALCIUM AND ZINC

1A



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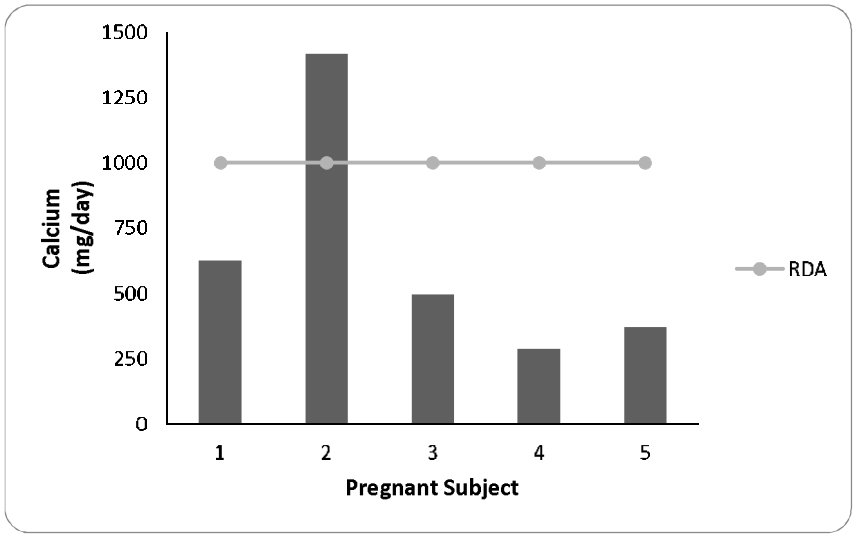

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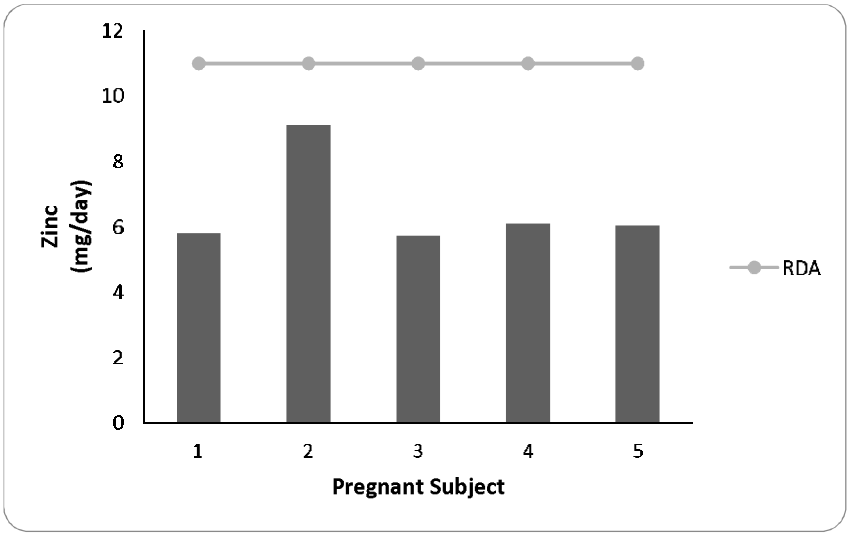

Figure 1: Estimated dietary intake of specific micronutrients by pregnant women on plant-based diets at first appointment with dietitian (A) iron (mg/day) (B) calcium (mg/day) (C) zinc (mg/day). Reference: Institute of Medicine (US) Panel on Micronutrients. Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. Washington (DC): National Academies Press (US); 2001.

Table 1. General characteristics of five pregnant women on plant-based diets at first appointment with dietitian

Pregnant subject	Age (years)	GA (weeks + days)	Time without meat consumption	Folic acid supplementation	B12 supplementation	PP-BMI (kg m^{-2})
1 (OLV)	40	9 + 3	8 years	Yes	No	23.6
2 (OLV)	22	21 + 3	10 years	Yes	No	21.6
3 (SV)	31	18 + 6	3 years	Yes	Yes	30.4
4 (OLV)	24	16 + 5	3 months	Yes	No	31.8
5 (OV)	36	21 + 6	3 years	Yes	Yes	21.6

OLV = Ovolactovegetarian; SV = strict vegetarian, OV = ovovegetarian; GA = gestational age, BMI-PG = pre-pregnancy body mass index;

Table 2. Dietary energy intake and macronutrient distribution (%) of five pregnant women on plant-based diets from 24h-recall at first appointment with dietitian

Pregnant subject	Total calories (Kcal)	Carbohydrate (%)	Protein (%)	Protein (g kg^{-1})	Lipids (%)
1	1407	75%	12%	0.7	13%
2	2274	58%	18%	2.0	24%
3	1153	73%	12%	0.5	15%
4	1186	62%	15%	0.5	23%
5	1254	64%	12%	0.6	24%

Table 3. Biochemical exams of five pregnant subjects on plant-based diets at first appointment with dietitian

	Hemoglobin (g dl^{-1})	Hematocrit (%)	Vitamin B12 (pg ml^{-1})	Folic acid (ng ml^{-1})	Homocysteine (mcmol L^{-1})	Ferritin (ng/ml)	Vitamin D (ng ml^{-1})	Glycaemia (mg dl^{-1})
1	12.9	38.5	162	>24	6.2	29.7	15.2	97
2	9.6	29.2	104	18.48	8.2	8.9	17.8	92
3	10.4	30.8	97	16.76	5.5	27.7	30.7	83
4	11.9	35.2	147	>23.6	5.5	103.9	26.6	98
5	12.5	37.5	1154	>20	7.1	13	34	91

Reference values: Hemoglobin 11-16g dl^{-1}; Hematocrit 36-47%; Vitamin B12 180 -914 (pg ml^{-1}); Folic acid: above 2,3 ng ml^{-1}; Homocysteine up to 13.56 mcmol L^{-1}; Ferritin 11-307 ng ml^{-1}; Vitamin D above 30 ng ml^{-1}; Glycaemia under 92 mg dl^{-1}

Table 4. Maternal and baby outcomes of five women on plant-based diets

Pregnant subject	Total weight gain (kg)	Week of delivery	Type of delivery	Breastfeeding within first hour post delivery	Birth weight (g)	Birth Size (cm)
1	12	40	Vaginal	Yes	3620	50
2	10.8	39+6days	Vaginal	Yes	3365	50.5
3	4.3	38+5days	Vaginal	Yes	3365	48
4	5	37 + 1day	Cesarean	Yes	2575	46
5	10.5	37+5days	Vaginal	Yes	2825	48

Supplementary material

Table 5: Whole Food Plant Based recommendations for nutrients during pregnancy

Nutrients	DRI	Sources	Notes
Carbohydrate	45-65% of total Kcal	Cereal, Starch	Preferably whole grains and cereals. Minimal ultra-processed food.
Protein	10-35% of total Kcal	Legumes, nuts,	Maintain levels next to 15%
Lipids	25-35 % of total Kcal	Vegetable oils, avocado, nuts and seeds	Attention to the different types of fat
Omega 3 fatty acid	1.4g	Flax seed and oil, Chia seed, Walnuts, algae	Daily ingestion of these food sources or Algae supplementation
Calcium	1300 mg (14-18 years) 1000 mg (19-50 years)	Green leafy vegetables (kale, broccoli), sesame seed/tahini, legumes, almonds, flaxseed, tofu	2-3 portions daily
Vitamin D	200 UI	Sunlight exposure; fortified food	Supplementation if necessary.
Iron	27 mg	Legumes (black beans, lentils, chickpea), Green leafy vegetables, nuts	Germination of legumes. Eating fruits high in vitamin C. Avoid drinking coffee, black tea, chocolate with meals rich in iron.
Vitamin B12	2.6 mcg	Supplementation	Supplementation according to lab results.
Vitamin B9 (Folic Acid)	600 mcg	Green leafy vegetables;	Supplement in the first trimester as the recommendations
Zinc	11 mg	Legumes (black beans, lentils, chickpea), cereals, nuts.	Germination reduces antinutrients.
Iodine	160 mcg	Iodized salt	Attention to different types of salt that does not contain iodine.

UFRJ - MATERNIDADE
ESCOLA DA UNIVERSIDADE
FEDERAL DO RIO DE JANEIRO

PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: PROPOSTA DE PROTOCOLO NUTRICIONAL PARA GESTANTES VEGETARIANAS
Pesquisador: THAIS SANTOS DE MELO
Área Temática:
Versão: 1
CAAE: 04265218.8.0000.5275
Instituição Proponente: Matemidade-Escola da UFRJ
Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 3.096.954

Apresentação do Projeto:
Trata-se um projeto de TCC da residência multiprofissional da ME/UFRJ que consiste na elaboração de protocolo nutricional para gestantes vegetarianas acompanhadas na mesma maternidade, baseado em publicações recentes. Além disso, irá fazer uma análise descritiva de 10 gestantes dessa população, acompanhadas ao longo do ano de 2019, observando evolução clínica ao longo do pré-natal e desfechos perinatais.

Objetivo da Pesquisa:
Objetivo geral
Desenvolver um protocolo de atendimento nutricional para gestantes vegetarianas.
Objetivos específicos
1. Realizar revisão da literatura científica para que possam ser identificadas as deficiências nutricionais e demais cuidados necessários para gestantes vegetarianas.
2. Analisar qualitativamente o plano alimentar existente na Maternidade Escola da UFRJ em relação a necessidade do vegetariano.
3. Proposta de adaptação do plano alimentar geral e para diabetes e orientações nutricionais para vegetarianas com base na revisão da literatura.
4. Analisar financeiramente o plano alimentar proposto para vegetarianas e comparar com o já existente na maternidade.
5. Avaliar as adaptações no plano alimentar sobre o estado nutricional e clínico da gestante

por meio de estudo de casos.

Avaliação dos Riscos e Benefícios:

É descrito como risco o não seguimento das orientações alimentares por alguma paciente.

O benefício é a contribuição para o acompanhamento de gestantes vegetarianas na Maternidade Escola.

Comentários e Considerações sobre a Pesquisa:

É um projeto de grande importância visto que tem crescido o número de pessoas que aderem ao vegetarianismo. Gestantes vegetarianas precisam de orientações e cuidados específicos par um bom desfecho perinatal.

Considerações sobre os Termos de apresentação obrigatória:

Está incluído TCLE para as gestantes que terão seus dados coletados em seus prontuários. O TCLE está adequado para o esudo proposto.

Recomendações:

Não há.

Conclusões ou Pendências e Lista de Inadequações:

Sem pendências.

Considerações Finais a critério do CEP:

Importante lembrar que de acordo com a Resolução CNS 466/2012, no inciso XI.2., assim como a Resolução CNS 510/2016, cabe ao pesquisador:

d) elaborar e apresentar os relatórios parciais a cada 6 meses e o relatório final ao término do projeto (o site da

após o término da pesquisa;

g) encaminhar os resultados da pesquisa para publicação, com os devidos créditos aos pesquisadores associados e ao pessoal técnico integrante do projeto; e

h) justificar fundamentadamente, perante o CEP ou a CONEP, interrupção do projeto ou a não publicação dos resultados. Plataforma Brasil tem um link para relatório);

e) apresentar dados solicitados pelo CEP ou pela CONEP a qualquer momento;

f) manter os dados da pesquisa em arquivo, físico ou digital, sob sua guarda e responsabilidade, por um período de 5 anos

OBS.: O parecer consubstanciado, emitido pelo colegiado, encontra-se disponível na árvore lateral esquerda de arquivos, na pasta "Pareceres".

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Continuação do Parecer: 3.006.954

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_1270929.pdf	05/12/2018 21:16:34		Aceito
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_1270929.pdf	05/12/2018 21:14:20		Aceito
Projeto Detalhado / Brochura Investigador	projetodepesquisa.docx	05/12/2018 20:56:54	THAIS SANTOS DE MELO	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	TCLE.doc	05/12/2018 20:51:11	THAIS SANTOS DE MELO	Aceito
Folha de Rosto	folhaderosto_TCR.pdf	05/12/2018 20:50:40	THAIS SANTOS DE MELO	Aceito

Situação do Parecer:
Aprovado

Necessita Apreciação da CONEP:
Não

RIO DE JANEIRO, 20 de Dezembro de 2018

Assinado por:
Ivo Basílio da Costa Júnior
(Coordenador(a))

Submission Confirmation for Dietary intake, nutritional profile and pregnancy outcomes of women on plant-based diets

Dear Ms Santos de Melo,

Your submission entitled "Dietary intake, nutritional profile and pregnancy outcomes of women on plant-based diets" has been received by the Journal of the Academy of Nutrition and Dietetics.

You will be able to check on the progress of your paper by logging on to EM as an author. The URL is https://www.editorialmanager.com/jandjrl/.

Your manuscript will be given a reference number once an editor has been assigned.

Thank you for your effort and interest in the Journal of the Academy of Nutrition and Dietetics.

With kind regards,

Journal of the Academy of Nutrition and Dietetics%