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ORIGINAL ARTICLE

Food supplementation policy for pregnant women: analysis of coverage in Brazilian regions in the light of COVID-19

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Abstract

Objective: in the context of Brazil, a peripheral country, pregnant women are a vulnerable class. Proper nutrition and fetal health depend directly on maternal nutrition, which is often precarious. Thus, the food supplement, which has already changed the health scenario of malnutrition in children, is big important in the best Prenatal Care. The objective is to analyze the quality and supply of food supplementation for pregnant women in Brazil, before and during the COVID-19 pandemic.

Methods: analysis of public domain data, from pregnant women registered in the E-manager primary care system, between 2019 and 2021.

Results: the micronutrients offered in Brazil in the public policy of supplementation for pregnant women are iron and folic acid, since 2005 until the present date. Data analysis showed that the offer of those both in the pre-pandemic year and in the pandemic was inadequate, reaching less than 20% of pregnant women in the five regions of the country, with only one state in the northeast region, of the 27 national states, having an adequate supply to 100% of pregnant women.

Conclusion: supplementation rich in several micronutrients, used preventively during pregnancy, reduces maternal and fetal diseases. However, in Brazil, the supplementation policy during pregnancy is poor in quality, offering only folic acid and iron for years, as well as inadequate distribution of these. This fact proved to be unrelated to the health crisis of the pandemic, as it occurred since the pre-pandemic and worse in numbers before than during it. Therefore, a set of “poor quality and low supply” was identified in the supplementation of pregnant women in Brazil, which contributes to maintaining greater maternal-fetal and child morbidity and mortality.

Keywords : maternal nutrition, maternal and child health, health policy, nutritional supplements

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Authors summary

Why was this study done?
Given the scenario of high morbidity and mortality among pregnant women in Brazil during the COVID-19 pandemic and considering the need for greater promotion of maternal health, this study was carried out with the objective of evaluating quality standards and the provision of dietary supplementation for pregnant women in Brazilian regions, before and during the pandemic.

What did the researchers do and find?
The researchers carried out an analytical, retrospective study, with a quantitative approach, with analysis of the public domain database of pregnant women registered in the government system , in the years 2019 (pre-pandemic) and 2020 to 2021 (pandemic). It was found that the micronutrients offered in Brazil in the supplementation policy for pregnant women are exclusively iron and folic acid, since 2005, without the addition of new nutrients. And that there was no adequacy in the offer of these to pregnant women, with less than 20% coverage, since before the pandemic and not just this one.

What do these findings mean?
The findings show a low quality and supply of food supplementation to pregnant women in Brazilian regions, since the pre-pandemic period, which may have a negative association with high maternal and child morbidity and mortality, bringing knowledge that can be useful in the search for improvements in actions to promote maternal and child health.

INTRODUCTION

In a holistic view of the physiological functions of the female human body, generating new life in your uterus is the most complex of cellular, hormonal and immunological engineering[1].

All the complexity in the formation and healthy development of the new being, from embryonic life to adult life, has the social factor as primordial, due to its direct relationship with the pregnant woman's quality of life. This quality depends on the socioeconomic conditions in which one lives, interfering with the psychological factor and exposure to factors harmful to the fetus, such as smoking, alcohol consumption, poor sanitary conditions, low education and food with low nutritional value[1].

Brazil is a peripheral country, called "developing", with around 30% of the population on low income[2]. Like the entire world, Brazil was hit by COVID-19, a disease caused by the coronavirus SARS-COV 2, declared a pandemic by the World Health Organization (WHO) in March 2020, which caused the biggest health collapse of the last century , corroborating a greater awakening to the importance of seeking health promotion actions[3].

Considering the effects of SARS-VOC2 on the human body, triggering an intense inflammatory and vascular response in the individual, compromising the immune system, pregnant women stood out as a high-risk subpopulation, as they have a fragile immune system and greater vascular risk[4].

Brazil stood out in terms of maternal mortality due to SARS-VOC 2, with a mortality rate 2.5 to 4 times higher in relation to the general population, reaching a mortality rate of 12% in pregnant and postpartum women at the peak of the disease in 2021[5,6].

Adequate nutrition contributes to good maternal health, having great importance in the healthy development of the fetus[7]. Malnutrition (whether of adequate, high or suboptimal weight) can generate serious events such as fetal or infant death (before or after birth until the first year of life) as well as morbidities of the fetus, from intrauterine life to adulthood, from intrauterine fetal growth restriction (IUGR) to endocrine, metabolic or morphological dysfunctions, such as thyroid disorders, diabetes, heart disease, neuropsychic disorders or other diseases[8].

National Public Policies aimed at the recovery and prevention of nutritional problems are permanent actions of the Ministry of Health (MS) in recent decades, through the Secretariat of Primary Health Care (APS) with various programs and actions, highlighting in nutrition the Nutritional Disease Prevention and Control Program (PCAN), aimed at children and pregnant women[9].

The scenario experienced in recent years is one of poor food quality, where a balanced diet containing minerals, vitamins, proteins and fatty acids, in addition to carbohydrates, is the exception. In pregnant women, nutritional demand increases not only in quantity, but above all in quality, to guarantee the fetus the adequate nutritional supply for its development[1,9].

The goals established around the world remain the same in plans to reduce maternal and child mortality, within the Sustainable Development Goals (SDGs) for 2030, with a Maternal Mortality Ratio (MMR) estimated at 30 deaths per 100,000 live births (NV). This reality is distant in Brazil, before the pandemic the triple viral infection was 58 per 100,000 LB, increasing by 62% in COVID-19, reaching 107 deaths per 100,000 LB[10,11].

Therefore, such research is justified, in this context of maternal morbidity and mortality, in addition to essential knowledge, of a social context, whose professional practice experiences two divergent realities in public and private services, in something basic which is dietary supplementation for pregnant women.

The general objective is to analyze the quality and supply of dietary supplementation for pregnant women in Brazil, from 2019 to 2021.

METHODS

Study design

This is an analytical, retrospective study, with a quantitative approach.

Location and period of study

Data collection was carried out in the Public Domain Database. The period analyzed was divided in relation to the COVID-19 pandemic into pre -pandemic, 2019 and pandemic, 2020 and 2021.

Study population and eligibility criteria

Pregnant women from Brazil were selected as the study population and those registered in the Unified Health System (SUS) were selected as the sample. The analysis was at a national level, in the five regions and 27 state sub-regions. The sample size was around 1,500,000 pregnant women/year.

Data collect

Data collection was carried out in the Public Domain Database, in the management and information system E-gestor basic care (ab), at the link https://egestorab.saude.gov.br.

Data analysis

In the Statistical Analysis of the data, the distribution rates of nutritional supplements were evaluated and compared in the five regions of the country (North, Northeast, South, Southeast and Central-West) and between the states by region, comparing data from the previous year to the COVID pandemic in Brazil, 2019, with the two calendar years of the pandemic, 2020 and 2021.

The supplementation rates carried out, the adequacy rate or categorization of the distribution or offer and, in case of possible failures, whether these failures were associated with the pandemic or already existed pre -pandemic were used as evaluation parameters in this study.

As iron and folic acid supplementation is a prophylactic measure recommended for all pregnant women in Brazil, the adequacy rate of adequate supply corresponds to 100% of pregnant women who received such supplements.

To tabulate the data, the Windows Excel program was used. The results are expressed in tables.

All data analysis and processing was carried out using the Statistical Package for the Social Sciences – SPSS version 27 statistical program.

The data were analyzed using descriptive statistics and mean comparison tests, with the averages for the 12 months of the year being tabulated for each region and state. Qualitative variables are presented as absolute (n) and relative frequencies (%). Quantitative variables are described as mean and standard deviation or median and interquartile range/minimum and maximum, depending on whether or not the data is normal.

The inferential statistical analysis, as well as the choice of comparison tests between the groups, were carried out respecting the assumptions determined by the results, characteristics and behavior of the study variables, using the paired method for multiple comparisons, with adjustment by the Bonferroni test when the sample was adequate.

Kolmogorov Smirnov test was used . In case of non-normality of the data, non-parametric tests were used, such as Spearman and Friedman.

The results were considered significant when the significance level at p-value was less than 5% ($p<0.05$), adopted in all analyses.

Ethical and legal aspects of research

The project did not require approval from the Ethics Committee (according to Resolution of the National Health Council - CNS nº 466/2012), as it is not research that directly involves individual identification with human beings[12].

The research was carried out by consulting the public domain database, respecting ethical principles and being within the provisions of CNS Resolution No. 510, of 2016, sole paragraph, which says in part: studies that use public domain information do not will be registered or evaluated by the CEP/CONEP research ethics committees, item III[13].

All research is based on the basic principles of Bioethics, defended by Tom Beauchamp and James Childress since 1979 , aiming for the good of the individual, in this case still involving the maternal-fetal binomial.

RESULTS

It was evident that 4,536,389 (four million five hundred and thirty-six thousand three hundred and eighty-nine) pregnant women were registered, totaling the three years analyzed.

An analysis of supplements offered in the public system in Brazil, iron and folic acid, was carried out in the pre -pandemic year of 2019 and in the pandemic years, 2020 and 2021. The distribution rates of iron and folic acid in the five Brazilian regions were evaluated separately.

Table 1 shows iron distribution rates, generally below recommended levels, with less than 25% of pregnant women having received it. Among Brazilian regions, the one with the highest percentage was the Northeast, with 24.39%.

It was observed that the pandemic year 2021 was the year with the highest rate of iron supply to pregnant women, 19.26%, in relation to the period studied.

Table 1: Iron distribution in pregnant women by Brazilian regions from 2019 to 2021.

Year	region	mean (%)	standard deviation (%)	25th percentile (%)	median (%)	75th percentile (%)
2019	West-central	5.75	4.58	2.80	5.90	8.70
	Northeast	12.18	4.88	9.45	11.24	15.94
	North	6.71	5.78	3.64	4.83	8.70
	Southeast	2.45	2.06	1.35	1.47	3.55
	In	3.44	2.70	1.24	2.63	6.45
	General	7.40	5.70	2.63	5.61	11.20

Continuation - Table 1: Iron distribution in pregnant women by Brazilian regions from 2019 to 2021.

Year	region	mean (%)	standard deviation (%)	25th percentile (%)	median (%)	75th percentile (%)
2020	West-central	5.17	4.18	2.11	5.36	8.23
	Northeast	10.26	4.00	7.04	9.18	13.00
	North	6.15	3.03	3.77	5.32	9.47
	Southeast	3.43	3.69	1.13	1.93	5.74
	In	4.95	6.10	0.97	1.90	11.98
	General	6.84	4.51	2.61	7.03	9.97
2021	West-central	7.73	6.17	3.40	8.01	12.05
	Northeast	30.38	35.77	17.64	22.28	24.39
	North	6.96	6.30	1.75	5.51	8.63
	Southeast	3.98	3.82	1.24	2.75	6.71
	In	9.95	7.59	1.18	14.07	14.59
	General	14.77	23.29	4.03	9.22	19.26
General (2019 to 2021)	west-central	6.22	4.71	2.11	6.34	9.59
	Northeast	17.61	22.17	9.18	13.00	19.26
	North	6.61	4.98	3.77	5.32	8.63
	Southeast	3.29	3.05	1.29	1.50	4.80
	In	6.11	5.85	1.24	2.63	11.98

Source: prepared by the author, via Excel (2023).

For iron, coverage was adequate in only one of the 27 states. In 2019, the highest coverage rate was 11.2%, having been 9.97% in 2020 and a better offer, although still low, of 19.26% in 2021, the second year of the pandemic.

The categorization of iron distribution (table 2) was not adequate in 98.8% of Brazilian regions.

Regarding the distribution of folic acid to pregnant women, this presented an overall rate of less than 20%. It was observed that the year of the 2021 pandemic was the one with the highest supply rate in relation to the period studied, at 15.28% (table 3).

Table 2: Characteristics of iron distribution in Brazilian pregnant women from 2019 to 2021.

Characteristic	Percentage of states (%) *
Not suitable	98,8
Appropriate	1,2
Total	100,0

Source: prepared by the author, via Excel (2023).

*Percentage of Brazilian states, among the 27 existing, that presented coverage of 100% (adequate) or less than 100% (inadequate) of pregnant women receiving iron supplementation.

Table 3: Distribution of folic acid in pregnant women by Brazilian regions from 2019 to 2021.

Year	region	mean (%)	standard deviation (%)	25th percentile (%)	median (%)	75th percentile (%)
2019	West-central	3,73	2,52	2,29	4,70	5,18
	Northeast	9,44	3,23	7,44	10,49	10,76
	North	4,22	3,92	0,97	4,12	7,24
	Southeast	2,00	1,48	1,19	1,39	2,81
	In	1,75	0,79	0,94	1,81	2,51
	General	5,28	4,19	1,37	4,58	8,01

Continuation - Table 3: Distribution of folic acid in pregnant women by Brazilian regions from 2019 to 2021.

Year	region	mean (%)	standard deviation (%)	25th percentile (%)	median (%)	75th percentile (%)
2020	West-central	3,33	2,42	1,81	3,76	4,85
	Northeast	8,62	2,83	5,98	9,28	10,86
	North	4,02	2,67	1,22	3,87	6,35
	Southeast	2,60	2,52	0,98	1,60	4,22
	In	3,08	3,64	0,64	1,34	7,26
	General	5,13	3,61	1,34	5,62	7,60
2021	West-central	4,79	3,76	2,48	4,99	7,11
	Northeast	18,59	11,83	14,27	16,94	18,82
	North	5,49	5,10	1,46	5,35	7,75
	Southeast	2,96	2,97	0,91	1,95	5,02
	In	5,27	4,34	0,78	5,57	9,45
	General	9,35	9,91	1,53	6,29	15,28
General (2019 to 2021)	west-central	3,95	2,76	1,81	4,70	5,27
	Northeast	12,21	8,36	7,44	10,84	14,48
	North	4,57	3,87	1,22	4,12	6,35
	Southeast	2,52	2,21	1,03	1,39	3,52
	In	3,37	3,25	0,94	1,81	5,57

Source: prepared by the author, via Excel (2023).

Therefore, more than 75% of pregnant women were left without access to folic acid, with maximum coverage below 16%, being 8% in 2019, 7.6% in 2020 and 15.28% in 2021.

However, the distribution of folic acid to pregnant women in Brazil, in Primary Health Care, was not adequate in 100% of Brazilian states, as shown in table 4.

What was observed in Brazil in general was the inadequacy of micronutrient intake throughout the period studied, from pre -pandemic to pandemic (tables 3 and 5).

In the comparative analysis between the pre -pandemic (2019) and pandemic (2020 and 2021) periods, there was a significant and strong correlation in the distribution of iron using the Spearman method (table 5).

However, this correlation using the Pairwise method , with significance values adjusted by the Bonferroni correction , showed that between 2019 and 2020 there was no significant difference (p=1.00), but only between the years 2019 and 2020 with 2021 (p<0.05), due to the higher iron distribution rate in the pandemic year 2021 (table 6).

For folic acid distribution, the correlation coefficient between the pre -pandemic and pandemic years was weaker, but significant between the years 2019 and 2020 (p=0.001). Between 2019 and 2021, there was no significant correlation, according to the Spearman method (table 7).

Table 4: Characteristic of folic acid distribution in Brazilian pregnant women from 2019 to 2021.

Characteristic	Percentage of states (%) *
Not suitable	100,0

Source: prepared by the author, via Excel (2023).
*Percentage of Brazilian states, among the 27 existing, that presented coverage of 100% (adequate) or less than 100% (inadequate) of pregnant women using supplemental folic acid.

Table 5: Correlations between iron distribution rates in the pre-pandemic (2019) and pandemic (2020 to 2021) periods by the Spearman method

Spearman correlation		Iron 2019
Ferro_2020	Correlation Coefficient	0,858
	p	0,000*
	N	27
Ferro_2021	Correlation Coefficient	0,723
	p	0,000*
	N	27

Source: prepared by the author, via Excel (2023). *The significance level adopted is p<0.050.

Table 6: Correlation in iron distribution between the years 2019 (pre-pandemic) to 2021 (pandemic) by the Pairwise method.

Years compared	Test statistics	Standard error	Standard test statistics	p	p ajustado Bonferroni
Ferro_2019-Ferro_2020	-0,111	0,272	-0,408	0,683	1,000*
Ferro_2019-Ferro_2021	-0,889	0,272	-3,266	0,001	0,003*
Ferro_2020-Ferro_2021	-0,778	0,272	-2,858	0,004	0,013*

Source: prepared by the author, via Excel (2023). *The significance level adopted is p<0.050.

Table 7: Correlations between folic acid distribution rates in the pre-pandemic period (2019) and pandemic (2020 to 2021) by the Spearman method.

	Spearman correlation	Ac.Folico_2019
Ac.Folico_2020	Correlation Coefficient	-,624**
	p	0,001*
	N	27
Ac.Folico_2021	Correlation Coefficient	0,064
	p	0,753*
	N	27

Friedman's hypothesis test (table 9) showed no association in the distribution of folic acid in the years 2019 to 2021 (p=0.060). Therefore, folic acid supply was not significantly different between years.

DISCUSSION

The present study highlighted the quality and supply of dietary supplementation for pregnant women with disabilities in Brazil. In Brazilian regions, only iron and folic acid are prescribed as minerals offered in PHC prenatal care.

Observing the results, it is necessary to reflect on important points in the literature, in parallel with the findings and possible improvements in the Brazilian scenario.

The low distribution of supplements in almost all states was the exception of the state of Pernambuco, in the Northeast region, which economically has populations with lower income[2]. And, on the contrary, more developed regions, such as the Southeast, presented the least satisfactory rates. This discrepancy is possibly due to greater concern and care with health promotion actions on the part of professionals who deal with care in more economically needy regions.

The results of low supplementation have no causal relationship with the pandemic. The pre-pandemic numbers for 2019 were more unsatisfactory compared to the years 2020 and 2021 (pandemic). This fact reveals chronic deficiencies in the health system and its management, and may be related to failures ranging from professional training to the importance of promotion actions, as well as management planning to the supervision of results, which aims to improve in the face of failures. This entire basic health management chain needs to be reevaluated for changes and improvements.

Looking at Brazil's Food and Nutrition Surveillance System (SISVAN), created more than 30 years ago and still in force, these results bring reflections on possible flaws in the system. It should be noted that the objectives of SISVAN are "health promotion and prevention actions and updated situational diagnosis of food and nutritional problems relevant to public health"[9].

Given this duty of the State to promote, diagnose and prevent health problems for the population, possible causes of inadequate coverage of iron and folic acid supplementation in Brazil include failures at various points such as: in health education actions for women of childbearing age, pregnant women and their families, about the importance of supplementation for the mother and fetus; in the National Policy for Permanent Education in Health (PNEPS), which aims to periodically update health professionals, who in Primary Care range from community agents, to technicians, nurses, pharmacists, nutritionists, doctors and everyone in this cycle of assistance to pregnant women , certainly contributing to greater effectiveness in guidance, prescription, dispensing, use and supervision; in administrative management, from planning to execution, from purchase to exit and monitoring results and maternal and child indicators of morbidity and mortality, among other possible factors.

Focusing on this nutritional care, the National Food and Nutrition Policy – PNAN was created in 1999, updated in 2021, which aims to monitor, promote and prevent food and nutrition, as well as management and qualification of the work team[9].

In 2005, the National Iron Supplementation Program (PNSF) was created to guarantee the preventive supply of iron and folic acid to all pregnant women, offering folate from the beginning of pregnancy and ferrous sulfate from 20 weeks, maintaining it until 3 months after childbirth (puerperium) or after abortion. In 2013 it was updated, ceasing to be a federal program and

decentralizing it to States and Municipalities; indicating starting folic acid during preconception, at least 30 days before becoming pregnant, for the best prevention of malformations of the Central Nervous System-CNS; prolonging the use of folate throughout pregnancy, acting against anemia and other possible formation problems, in addition to the CNS and bringing forward the use of iron to the beginning of pregnancy and not just after the 20th week, when anemia may already be present[14].

The importance of these nutrients available for years in the care policy for pregnant women in Brazil is highlighted, which are iron and folic acid.

Iron is an important metal in the formation of hemoglobin, the most important protein in red blood cells or red blood cells. There are 2 types of iron, heme iron and non-heme iron. Heme iron is best absorbed and is found in meat, especially red meat. Non-heme is present in vegetables, among others[15].

Iron deficiency leads to a drop in hemoglobin, which can have several reasons, including low food intake. This drop in hemoglobin is called anemia, which in iron deficiency is called iron deficiency anemia. Hemoglobin is responsible for transporting oxygen to all cells in the body. Failure in oxygenation leads to inflammation and cell death, reflected in various diseases throughout the body, from growth deficits, fatigue, tiredness, heart problems, among others. And specifically in pregnancy, it can be associated with maternal pre-eclampsia, fetal growth restriction, premature births and hemorrhages, due to various vascular and coagulation disorders. For the diagnosis of anemia, the laboratory standard evaluated is a hemoglobin concentration below 11 g/dl and ferritin, which signals hepatic iron reserves[16-20].

According to the WHO, 38% of pregnant women in 2011 had anemia, around 80% due to iron deficiency. The use of iron was the initial milestone in supplementation in the last century, 1990, given the serious situation of malnutrition and anemia in children under 5 years of age, when formulas or flour enrichment were introduced in several countries, which in Brazil occurred in 2005, through the PNSF[14,18].

The second nutrient recommended for years in the national policy for assistance to pregnant women is folic acid, or vitamin B9, also called folate in its active form or methylfolate. Food sources of folate are dark green leaves (which gave rise to the name), whole grains, beans, mushrooms, chicken and beef liver, eggs, fruits, among others[16].

Folate deficiency can cause anemia, worsened immunity and other problems related to growth and formation by acting as a coenzyme in cellular reactions, cell division, protein metabolism and DNA synthesis. Its greatest importance in prevention is related to CNS malformations, with spina bifida and anencephaly being the most prevalent (90% of cases)[18,21-23].

CNS malformations begin between the third and fifth week of gestation and supplementation with ideal folate is started preconception due to the precocity of the malformation. This supplementation reduces the risk of serious defects by 50 to 70 percent. Unfortunately, many women's accession occurs late and the neural tube defect may already be present. Less than half of pregnant women know that the use of folic acid should be started during preconception, as well as continued throughout pregnancy[18,20].

Such supplementation studied in 56 countries, estimated that 65,380 cases of spina bifida and anencephaly were avoided, where early folate supplementation reduced at least 23% of CNS malformations[20].

Regarding the dose of folate to be used, there is no consensus. For years and still in Brazil and other countries, the 5 mg dose has been used, as it is the standard dose distributed in tablet form in Primary Care. More recent studies, the WHO itself and the Brazilian Federation of Gynecology and Obstetrics (FEBRASGO) demonstrate efficacy with smaller doses and the use of the active form methylfolate, at an average dose of 0.4 to 0.6 mg, although there is no standard[21,22].

A study in Malaysia of doses of iron and folic acid in CNS protection identified that the dose with the best neuroprotective effect was seven times higher than the currently recommended dose of 2.8 mg of folate per day[23].

Thus, iron and folic acid are of great importance in the prevention of maternal-fetal diseases, but the PNSF during pregnancy has existed for 18 years and there is no update regarding the nutritional quality to be supplemented.

What was different with children, whose public supplementation policy has already undergone successive changes, from the supply of iron and folic acid, followed by vitamins A and D to multivitamin and mineral supplementation, now distributed in public schools in Brazil in sachets. , in the 2014 NutriSUS program[9,18].

The approximate standard of dietary reference intake (DRI) for pregnant women, both American and another developed by Freitas in 2010, ratifies the need for an adequate intake of multivitamins and minerals, in addition to macronutrients, such as fatty acids, in addition to carbohydrates and proteins, with greater maternal demand compared to non-pregnant women[25,26].

In the analysis of the variables in this research, the results reveal this supplementary deficiency in Brazil, both in distribution and quality, as in addition to iron and folic acid, several other micronutrients have their value in the pregnancy process[19].

Vitamins such as A, C, E, D, all the others in the B complex (B1, B2, B3, B5, B6, B7 and B12), in addition to folic acid (B9), as well as other minerals in addition to iron (Iodine, Zinc, Selenium, Magnesium and Calcium) are essential in cellular metabolism and vascular protection, from the formation process, homeostasis to the prevention of oxidative and epigenetic damage. The adequate supply of these and other micro and macronutrients (omega 3, 6, proteins and others) has an important association in reducing maternal and fetal damage, such as pre-eclampsia, gestational diabetes, maternal depression, premature birth and neuroendocrine and neuropsychic disorders from childhood to adult life, whether resulting from prematurity or just poor fetal nutrition in this pregnancy process of formation and healthy development of human organs and systems[27-33,36].

It is worth highlighting the fact that many women already begin their pregnancy with nutritional deficiencies, whether due to poor diet or even iron losses due to menstrual cycles and, therefore, nutritional assessment and supplementation are of great importance not only at the beginning of pregnancy, but also in preconception.

This research clarifies the importance of supplementation with various micronutrients for maternal health, ratified by the Brazilian Federation of Gynecology and Obstetrics and WHO, popularly called "multivitamin"[19,21-26].

Considering the doses of vitamins and minerals to be supplemented during pregnancy, there is no consensus, but it is reiterated that maternal needs are greater than those of non-pregnant women and that supplementation is carried out under medical and nutritional supervision, with individualized management. , assessing the needs of each pregnant woman[21,25,26].

And a last important consideration concerns public spending. The lack of "multivitamin" supplementation in this class can bring several complications in the short and long term, maternal, fetal and postnatal child, leading to high costs in expenses with complications, from surgeries and non-surgical treatments, intrauterine life, childbirth and the lifelong[37].

Therefore, the importance of supplementation during pregnancy rich in macro and micronutrients, in the prevention of maternal, fetal and child diseases, is in contrast to the numbers obtained in this research, of inadequate supplementation in Brazil.

This study has as a limitation the obtaining of secondary data, registered in government databases, and the numbers worked in this research may be underreported in the system.

CONCLUSION

The present study showed that in Brazil the quality and supply of dietary supplementation for pregnant women are deficient.

The lack of quality in the nutritional supply to pregnant women in the public health network in Brazil has occurred since before the pandemic, with only iron and folic acid being offered for more than fifteen years, contradicting a broader recommendation for supplementation that already exists nationally and worldwide.

Regarding the distribution of supplements in Primary Health Care, inadequacy was evident, with a low distribution of supplements in almost all national states, with the exception of only the state of Pernambuco, in the northeast region.

Dietary supplementation in a peripheral country like Brazil becomes essential, as it is safe and accessible, combined with multidisciplinary care, including consultation with a nutritionist in the low-risk team. Such actions are important from preconception to the entire pregnancy period.

The analysis of the results obtained in comparison with the literature and the socioeconomic reality of Brazil, aims to expand discussions and knowledge, and can also contribute to the implementation of safe and effective practices in promoting maternal and fetal health, stimulating necessary changes in management in health in the country.

This study has as a limitation the obtaining of secondary data, recorded in the database of the Brazilian government system E-gestor, which depends on the inclusion of information in the system.

Financing

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Conflicts of interest

The authors state that there are no conflicts of interest in the preparation of the manuscript.

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Resumo

Objetivo: no Brasil, um país periférico, as mulheres grávidas são uma classe vulnerável. A adequada nutrição e saúde fetal dependem diretamente da nutrição materna, que muitas vezes é precária. Assim o suplemento alimentar, que mudou o cenário da desnutrição de crianças, tem grande importância no melhor Cuidado Pré-Natal. Objetiva-se analisar a qualidade e oferta da suplementação alimentar de gestantes no Brasil, antes e durante a pandemia da COVID-19.

Método: análise de dados de domínio público de gestantes cadastras entre 2019 e 2021.

Resultados: os micronutrientes ofertados no Brasil na política pública de suplementação de gestantes são ferro e ácido fólico, desde 2005. A análise dos dados mostrou que a oferta daqueles tanto no ano pré-pandemia quanto na pandemia foi inadequada, alcançando menos de 20% das gestantes nas cinco regiões do país, tendo apenas um estado na região nordeste tido oferta adequada a 100% das gestantes.

Conclusão: a suplementação rica em micronutrientes, usada preventivamente na gestação, reduz doenças maternas e fetais. Todavia no Brasil a política de suplementação na gravidez encontra-se pobre em qualidade, ofertando há anos apenas ácido fólico e ferro, bem como apresenta inadequada distribuição desses. Tal fato demonstrou não ter relação com a pandemia, pois ocorreu desde a pré pandemia e pior em números antes dela. Portanto identificou-se na suplementação de gestantes no Brasil um conjunto de “má qualidade e baixa oferta”, possivelmente contribuindo com maior morbimortalidade materno-fetal e infantil.

Palavras-chave: Nutrição Materna. Saúde Materno-Infantil. Política de Saúde. Suplementos nutricionais.

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