Use of iron supplement to prevent anemia in children aged six to 59 months attended at the Family Health Strategy (ESF) units in a city in Minas Gerais, Brazil

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Abstract

Objectives: to evaluate the use of iron supplementation and associated factors in children aged six to 59 months attended at the Family Health Strategy units in a city in Minas Gerais (MG).

Methods: a cross-sectional, analytical-exploratory study, carried out with 252 children aged six to 59 months, attended at ten units, between 2014 and 2016. A structured questionnaire was used to collect data on socioeconomic conditions, maternal health, child's health and the knowledge of those responsible regarding anemia and iron supplementation, in addition to analysis of the child's medical records /booklet to collect test results. Descriptive statistics, bivariate association analysis and logistic regression for multivariate analysis were performed.

Results: only 22.6% of the children aged between six and 24 months were receiving iron supplement at the time of the interview. Considering children aged six to 59 months, 13.1% were supplemented and breastfeeding time (p=0.006) and the participation in childcare (p=0.042), were positively associated with the use of supplementation.

Conclusion: most children aged six to 24 months were not receiving supplementation as recommended by the Ministry of Health, demonstrating the need to implement prevention programs, such as the National Iron Supplementation Program and training of professionals on the importance of health education in preventing childhood anemia.

Key words *Anemia, Iron deficiency, Nutritional supplement, Breastfeeding, Child care*

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Introduction

According to the World Health Organization (WHO), anemia is a multifactorial pathological process in which the hemoglobin (Hb) concentration in the blood is below reference values. These values depend on the physiological need, which is individual and varies according to age, sex, gestational period, altitude (below, above, or at sea level), and lifestyle adopted by the patient, such as smoking.[1] For children aged six to 59 months, a Hb concentration <11g/dL characterizes an anemia framework.[1]

According to the WHO, the global prevalence of anemia among children aged six to 59 months averaged 39.8% in the year 2019.[2] In Brazil, there is a lack of studies with population-based samples to estimate the prevalence of childhood anemia. Systematic reviews such as that of Jordão *et al*.[3] and Vieira *et al*.,[4] indicate prevalence higher than 40%. In 2022, the report of the *Estudo Nacional de Alimentação e Nutrição Infantil* (ENANI-2019) (National Study of Infant Food and Nutrition) showed a prevalence value of 18.9% in infants.[5] Thus, anemia is configured as a national and worldwide public health problem.

Iron deficiency anemia (IDA), identified as the leading cause of anemia in children worldwide, is a late manifestation of the body facing iron deficiency, which results in the depletion of iron reserves and, consequently, low Hb concentration.[1]

During pregnancy, the fetus accumulates iron coming from the mother's diet. Labor and postpartum periods are extremely delicate and therefore susceptible to complications if the care provided by the professionals involved is not adequate. Clamping the umbilical cord within one to three minutes after birth is a strategy recommended by the WHO for allowing the continuous passage of blood from the placenta to the newborn and improving iron storage, reducing iron deficiency after delivery.[6] Exclusive breastfeeding (EBF) for the first six months of life, as recommended by the WHO, the Brazilian Ministry of Health (MH), and the Brazilian Society of Pediatrics (BSP), is also a preventive strategy, since breast milk provides iron and other nutrients with high bioavailability.[1,7] Starting at six months of age, children should receive complementary feeding,[8] which should contain iron-source food such as red meat, dark green leafy vegetables, and beans, while avoiding high consumption of milk and dairy products near mealtime, as a way to help prevent iron deficiency.[8-10]

In the context of the COVID-19 pandemic, concerns about malnutrition are even more relevant. The United Nations estimates that in 2020, 9.9% of the population in the world suffered from malnutrition and 149 million children under the age of five presented a growth delay with negative perspectives in the years to come if actions are not taken.[11]

Early diagnosis of iron depletion is extremely important to prevent the evolution of the condition and to ensure success in the treatment. Observational studies show that anemia, when untreated, has significant consequences and can compromise the child's development. Cognitive and neuropsychomotor development are affected, since iron deficiency can lead to alterations in brain structure and function and can impair the metabolism of important hormones and the immune system.[1,12,13] In this scenario, childcare, which consists of continuous monitoring of children from birth to pre-adolescence (10 years of age), is extremely important.[14] Childcare practices include evaluation of the child's health condition (physical and laboratorial tests), and guidance to guardians on the importance of immunization and prevention programs.[15]

The *Programa Nacional de Suplementação de Ferro* (PNSF), (National Program of Iron Supplementation), created in 2005, instituted the prophylactic supplementation with iron salts in children aged 6 to 24 months, pregnant women, premature infants, and women after delivery or abortion.[16] The use of oral iron supplements is recognized by the WHO,[1] and their effectiveness in increasing Hb levels has been demonstrated by several studies.[17,18] However, treatment to reverse the more severe consequences of anemia has not been effective,[17,18] and it is very important to prevent, diagnose, and treat IDA early. The BSP also recommends prophylactic iron supplementation from six months to 24 months; however, for children who present risk factors, supplementation should start at three months of life.[19]

This study aimed to evaluate the use of iron supplementation and associated factors in children aged six to 59 months attended at the Family Health Strategy (FHS) units in a city in Minas Gerais (MG).

Methods

This was a cross-sectional analytical-exploratory study conducted between 2014 and 2016. Data were collected in ten FHS units located in Governador Valadares, in the State of Minas Gerais (MG), Brazil. It counted on a sample size of 252 children in the age group of six to 59 months, attended at FHS units that were selected by convenience according to their location in the city, in the urban territory. The sample size calculation was performed considering the number of children in the age group of interest registered at the FHS (1,064 children), the estimated frequency of anemia of 30%, 5% accuracy and 95% confidence interval, with 3% added in preventing losses. The research participants were contacted by means of an invitation carried by the community health agents to their homes and when they were attended at the health unit. The inclusion criterion was the child in the age group of interest and the exclusion criterion was previously diagnosed of diseases that prevented treatment with iron salt (hemoglobinopathies and hemochromatosis).

Data collection was performed using a structured questionnaire applied to the guardians, at the health unit, in a reserved room, where the child's anthropometry was also performed. The child's card and/or family records were also consulted when necessary.

The variables were collected in relation to the child's living and health status (categorical variables: sex; low birth weight; prematurity; complete blood count; breastfeeding; childcare; weight/age ratio; height/age and weight/age; continuous variables: age; birth weight; current weight; current height); the guidance given by the health professionals to the caregivers regarding anemia and preventive treatment (categorical variables: receipt of information about anemia; whether the child presents symptoms of anemia; dosage of the supplement; side effects); the family's socioeconomic conditions (continuous variables: mother's age; categorical variables: family income; maternal schooling) and about maternal health conditions during pregnancy (continuous variables: gestational age and categorical variable: number of prenatal visits).

A chart analysis was performed to collect hemogram results, and Hb levels below 11g/dL established the diagnostic criteria for anemia.

Descriptive statistics were performed, with absolute and relative frequency for categorical variables and calculation of means and standard deviation for continuous variables. The odds ratio (OR) was used as a measure of association between the occurrence of iron supplementation (response variable) and children's living and health conditions (explanatory variables), with the respective 95% confidence intervals (CI95%) estimated by the Mantel-Haenszel method. In the initial logistic model, variables with p values ≤ 0.20 in the bivariate analyses were selected for multivariate analysis. In the final logistic model, the association level remained below 0.05. Data analysis was performed using Stata® version 14.0.

This study was approved by the Ethics Committee at the *Universidade Federal de Juiz de Fora* (CAAE 29174814.3.0000.5147. Opinion number 715.272).

Results

Most of the children were female (53.2%, n=134) and the median age was 28 months (two years and four months). Also, 45.6% (n=115) were in the six to 24 months age group while 54.4% were in the 25 to 59 month age group.

Tables 1 and 2 show the results obtained in the bivariate analysis for children aged six to 24 months, the target age group of the NPIS. In the final logistic regression model, no association obtained a significant p value ($p \leq 0.05$).

Of the 115 children in this age group, only 22.6% (n=26) were receiving supplementation at the time of the interview, and of those with anemia (n=18), only 22.2% (n=4) were supplemented at the time of the interview.

In relation to the group that was supplemented in the six to 24 month age group, 100.0% of the guardians (n=26) said they had received professional orientation regarding dosage and when they mentioned the dosage they used, 88.5% were correct; 15.4% of the guardians (n=4) said they had been oriented regarding possible side effects; 37.5% (n=9) observed improvement in the child and 30.8% (n=8) identified adverse effects, among them, diarrhea, cramps, stained teeth, nausea.

The same analyses were performed for the six to 59 month age group (n=252). Tables 3 and 4show the results obtained in the bivariate analysis for this population. Of the 252 children, 13.1% (n=33) were receiving the supplement at the time of the interview.

In the multivariate analysis only the variables breastfeeding time and childcare remained in the final logistic model, as shown in Table 5.

Regarding to the group that was supplemented in the age group of six to 59 months, 93.9% of the guardians said they had been oriented about the dosage and 81.2% reported a correct dosage; 18.2% of the guardians were oriented about the possible side effects; 45.2% observed improvement in the child and 30.3% perceived adverse effects, among them: diarrhea, cramps, stained teeth, nausea, and among others.

Discussion

From the data collected in this study, it was observed that 77.4% of children aged six to 24 months were not receiving iron supplementation, portraying a worrisome scenario, since the NPIS recommends that all children aged six to 24 months should receive it.

These lower-than-expected results corroborate national data on adherence to the NPIS. In 2018, the MH made a document available with results of coverage analysis on Ferrous Sulphate supplementation in 2017.[20] It was possible to observe that in the State of MG, Southeast region of the country, of the 407,146 children who should receive the supplement, only 2,564 received it, which corresponds to only 0.63% coverage of the program.[20] The Brazilian State that registered the highest coverage was Amapá, which reached 23.33% of the children aged six to 24 months, even so, it was still below the recommended coverage. Overall, Brazil had a goal of 4,441,081 children to be supplemented, but in 2017, according to registrations, only 2.69% (n = 119,378) received the proper supplementation, a significantly low number.[20] It is worth noting that these results were made available by each Brazilian State and some cities did not enter the data into the micronutrient system and consequently were not computed.

In the ENANI report, regarding the use of supplements containing iron, the survey results for a sample of 12,598 children under 5 years of age from all the regions of Brazil

Table 1

Socioeconomic evaluation and maternal health conditions of children aged six to 24 months globally and according to the use or not of the supplement. Governador Valadares, MG, 2014-2016.

Variables	Total	Supplementation		OR crude (CI95%)	*p*
		Yes	No		
Children's median age (n)	15 months (115)	11.5 months (26)	16 months (89)	0.941 (0.87-1,02)	0.122*
Sex % (n)				2.301 (0.89-5.93)	0.076*
Male	46.0 (53)	30.8 (8)	50.6 (45)		
Female	54.0 (62)	69.2 (18)	49.4 (44)		
Mother's median age (n)	27 years (109)	27.5 years (24)	27.0 years (85)	1.012 (0.95-1.08)	0.713
Mother's schooling (years) % (n)				1.162 (0.41-3.26)	0.776
<8	25.2 (29)	23.1 (6)	25.8 (23)		
≥8	74.8 (86)	76.9 (20)	74.2 (66)		
Median gestational age (min.-max.)	40 weeks (34 - 41)	39 weeks (34 - 41)	40 weeks (34 - 42)	0.724 (0.54-0.97)	0.030*
Family income % (n)				3.525 (0.42-9.36)	0.214
<1 minimum wage	10.4 (12)	3.8 (1)	12.4 (11)		
≥1 minimum wage	89.6 (103)	96.2 (25)	87.6 (78)		
Median birth weight (n)	3270 grams (112)	3235 grams (26)	3270 grams (86)	0.999 (0.99-1.00)	0.483
Median current weight (n)	10150 grams (109)	9750 grams (25)	10175 grams (84)	0.999 (0.99-.1.00)	0.133*
Low birth weight % (n)				3.608 (0.66-9.61)	0.112*
Ideal weight	94.6 (106)	88.5 (23)	96.5 (83)		
Underweight	5.4 (6)	11.5 (3)	3.5 (3)		
Prematurity % (n)				3.040 (0.92-0.10)	0.055*
Non-premature (>37 weeks)	87.3 (96)	76.0 (19)	90.6 (77)		
Premature (≤37 weeks)	12.7 (14)	24.0 (6)	9.4 (8)		
Median current height (n)	47 centimeters (106)	38 centimeters (25)	49 centimeters (81)	0.976 (0.95-1.01)	0.131*
Pre-natal % (n)				0.890 (0.16-4.99)	0.891
<6 consultations	12.3 (8)	13.3 (2)	12.0 (6)		
≥6 consultations	87.7 (57)	86.7 (13)	88.0 (44)		
Breastfeeding time % (n)				5.08 (1.68-15.37)	0.001*
<6 months	31.6 (36)	15.4 (4)	36.4 (32)		
≥6 months	68.4 (78)	84.6 (22)	63.6 (56)		
Childcare % (n)				2.215 (0.83-5.90)	0.102*
No	40.9 (47)	26.9 (7)	45.0 (40)		
Yes	59.1 (68)	73.1 (19)	55.0 (49)		
Classification weight/age % (n)				0.863 (0.45-1.64)	0.655
Adequate weight for age	93.6 (102)	96.0 (24)	92.9 (78)		
Low weight for age	0.9 (1)	0.0 (0)	1.2 (1)		
Very low weight for age	0.0 (0)	0.0 (0)	0.0 (0)		
Elevated weight	5.5 (6)	4.0 (1)	5.9 (5)		
Height/age classification % (n)				0.557 (0.19-1.60)	0.272
Adequate height for age	91.5 (97)	96.0 (24)	90.2 (73)		
Low height for age	4.7 (5)	4.0 (1)	4.9 (4)		
Very low height for age	3.8 (4)	0.0 (0)	4.9 (4)		
Classification weight/height (n)				1.010 (0.78-1.31)	0.939
Adequate weight for age	70.5 (74)	68.0 (17)	71.3 (57)		
Thinness	0.0 (0)	0.0 (0)	0.0 (0)		
Severely underweight	1.9 (2)	0.0 (0)	2.5 (2)		
Risk of overweight	14.3 (15)	20.0 (5)	12.5 (10)		
Overweight	7.6 (8)	12.0 (3)	6.2 (5)		
Obesity	5.7 (6)	0.0 (0)	7.5 (6)		
Anemia % (n)				1.260 (0.28-5.60)	0.764
No	60.0 (27)	55.6 (5)	61.1 (22)		
Yes	40.0 (18)	44.4 (4)	38.9 (14)		

*p<0.20 in the OR analysis.

Table 2

Association analysis between information received by the mother/caregiver for children aged six to 24 months and the use or not of the supplement. Governador Valadares, MG, 2014-2016.

Variables	Total	Supplementation		OR crude (CI95%)	*p*
		Yes	No		
Reported receiving information from the professional about anemia % (n)				1.122 (0.41-3.03)	0.820
No	74.8 (86)	73.1 (19)	75.3 (67)		
Yes	25.2 (29)	26.9 (7)	24.7 (22)		
Reported having anemia symptoms % (n)				0.732 (0.30-1.78)	0.486
No	47.8 (55)	53.9 (14)	46.1 (41)		
Yes	52.1 (60)	46.1 (12)	53.9 (48)		
Reported that the child had symptoms of anemia % (n)				2.231 (0.59-8.46)	0.225
No	90.4 (103)	84.0 (21)	92.1 (82)		
Yes	9.6 (11)	16.0 (4)	7.9 (7)		
Reported that the child had complete hemogram %				1.115 (0.80-1.55)	0.522
No	60.9 (70)	65.4 (17)	59.5 (53)		
Yes	39.1 (45)	34.6 (9)	40.5 (36)		
Reported in receiving medical diagnosis of anemia in child % (n)				0.933 (0.70-1.25)	0.644
Did not receive	54.7 (35)	35.3 (6)	61.7 (29)		
Received	40.6 (26)	64.7 (11)	31,9 (15)		
Do not know	4.7 (3)	0.0 (0)	6.4 (3)		

showed a prevalence of 21.7%. Regarding the use of supplements containing only iron, they found a prevalence of 14.6%. Interestingly, no significant difference was found between household situation, sex, color, and the child's race and the use of iron supplements.[5]

Other national studies have also evaluated the difficulties in implementing prevention programs. Marques *et al.*[21] conducted a qualitative study with health professionals involved in the practice and observed a certain lack of information about IDA and the importance of prevention programs, as well as a lack of training and education of these professionals regarding health strategies.[21]

In the present study, the analysis of possible factors associated with the use or non-use of iron supplementation by children aged 6 to 59 months indicated a positive association between the use of the supplement with childcare follow-up and the duration of breastfeeding. Most supplemented children in this age group were active in childcare (72.7%) and were breastfed for six months or longer (87.5%).

As previously mentioned, the monitoring of children during childcare is extremely important to avoid complications in their development.[16] The result of the positive association between supplementation and participation in childcare, in other words, the performance of child health monitoring, corroborates the importance of this practice and of primary health care, indicating that strengthening the culture of childcare can collaborate with the implementation of prevention programs, ensuring greater chances of healthy development for children.

The importance of guidance, monitoring, and support from the health professionals was evidenced in Rodrigues *et al.* study,[22] whose results showed an association between adherence to supplementation and the frequency of childcare. Furthermore, another study pointed out the necessity to seek new partners, such as daycare centers, since children meet 70.0% of their nutritional needs in these institutions.[23]

Still regarding to childcare and IDA prevention, it is necessary to pay attention to actions for the diagnosis of iron deficiency and IDA. Most of those responsible for the children included in this study reported that they had not had a complete hemogram (HG). According to the MH, screening for anemia through complete hemogram is recommended in situations where the child has not received adequate iron supplementation and for premature infants and those with short gestational age.[24] The BSP suggests that diagnostic tests for iron deficiency (complete hemogram, serum ferritin, and C-reactive protein) should be performed from 12 months of age onward, regardless of the child's condition.[8,19] However, most health professionals involved in childcare have difficulty identifying which tests should be performed and the ideal time to request them for asymptomatic children.[8,19]

The main national policies to prevent iron deficiency also encourage the use of iron supplements and EBF up to six months of age. The orientation and awareness of parents about the importance of breastfeeding is also an attribution of health professionals involved in child care.[25] As previously mentioned, breastfeeding is extremely important for the supply of micronutrients and macronutrients that are indispensable in the process of children's development and growth.[7] In this study, the positive association between the use of supplements and the length of breastfeeding may be due to guidance and awareness, actions of those responsible for taking the children for childcare monitoring, reinforcing the importance of these actions.

Table 3w

Socioeconomic evaluation and maternal health conditions of children aged six to 59 months globally and regarding the use or not of supplementation. Governador Valadares, MG, 2014-2016.

Variables	Total	Supplementation		OR crude (CI95%)	*p*
		Yes	No		
Median age children (n)	28 months (252)	15 months (33)	30 months (219)	-	-
Sex% (n)				2.062 (0.80-5.28)	0.124*
Male	46.8 (118)	30.3 (10)	49,3 (108)		
Female	53.2 (134)	69.7 (23)	50,7 (111)		
Median age of mother (n)	28 years (240)	28 years (31)	28 years (209)	1.034 (0.97-1.10)	0.287
Mother's education % (n)				0.656 (0.24-1.78)	0.407
<8 years	23.9 (60)	27.3 (9)	23.4 (51)		
≥8 years	76.1 (191)	72.7 (24)	76.6 (167)		
Gestional median age (min-max.)	39 weeks (28-42)	39 weeks (34-41)	39 weeks (28-42)	0.875 (0.69-1.10)	0.253
Family income % (n)**				5.171 (0.45-60.02)	0.143*
<1 minimum wage	13.9 (35)	3.0 (1)	15.5 (34)		
≥1 minimum wage	86.1 (217)	97.0 (32)	84.5 (185)		
Median birth weight (n)	3270 grams (236)	3270 grams (33)	3270 grams (203)	1.000 (0.99-1.00)	0.951
Median current weight (n)	12605 grams (236)	10585 grams (31)	13000 grams (205)	0.999 (0.99-1.00)	0.399
Low birth weight % (n)				1.200 (0.39-3.79)	0.744
Ideal weight	90.0 (211)	87.9 (29)	90.1 (182)		
Underweight	10.0 (24)	12.1 (4)	9.9 (20)		
Prematurity % (n)				1.624 (0.56-4.69)	0.366
Not premature (>37 weeks)	83.1 (192)	77.4 (24)	84.0 (168)		
Premature (≤37 weeks)	16.9 (39)	22.6 (7)	16.0 (32)		
Median height (min-max.)	89.9 centimeters (63-114)	76.0 centimeters (65-106)	91.0 centimeters (63-115)	0.931 (0.84-1.04)	0.189*
Prenatal % (n)				0.324 (0.06-1.75)	0.168*
<6 consultations	0.8 (2)	0.0 (0)	1.0 (2)		
≥6 consultations	99.1 (243)	100.0 (32)	99.0 (211)		
Breastfeeding time				3.720 (1.21-11.42)	0.013*
<6 months	37.7 (94)	12.5(4)	41.5 (90)		
≥6 months	62.3 (155)	87.5 (28)	58.5 (127)		
Childcare % (n)				2.780 (1.16-6.66)	0.016*
No	53.4 (134)	27.3 (9)	57.3 (125)		
Yes	46.6 (117)	72.7 (24)	42.7 (93)		
Classification for weight/age % (n)				0.820 (0.44-1.54)	0.534
Adequate weight for age	92.0 (218)	96.8 (30)	91.7 (188)		
Low weight for age	3.0 (7)	0.0 (0)	3.4 (7)		
Very low weight for age	0.0 (0)	0.0 (0)	0.0 (0)		
Above the weight	5.0 (11)	3.2 (1)	4.9 (10)		
Classification for height/age % (n)				0.480 (0.12-1.95)	0.303
Adequate height for age	94.0 (217)	96.8 (30)	93.5 (187)		
Short height for age	3.9 (9)	3.2 (1)	4.0 (8)		
Very short height for age	2.1 (5)	0.0 (0)	2.5 (5)		
Classification for weight/height % (n)				1.010 (0.78-1.31)	0.923
Adequate weight for age	68.0 (156)	67.7 (21)	68.2 (135)		
Thinness	2.0 (5)	0.0 (0)	2.5 (5)		
Severely underweight	3.0 (6)	0.0 (0)	3.0 (6)		
Risk of overweight	8.0 (41)	19.4 (6)	17.7 (35)		
Overweight	6.0 (13)	12,9 (4)	4.6 (9)		
Obesity	3.0 (8)	0,0 (0)	4.0 (8)		
Anemia % (n)				0.833 (0.12-5.72)	0.853
No	73.6 (67)	63.6 (7)	75.0 (60)		
Yes	26.4 (24)	36.4 (4)	25.0 (20)		

*p<0.20 in OR analysis, included in multivariate analysis; **Current minimum wage equal R$ 724.00 (2014), R$ 788.00 (2015) and R$ 880.00 (2016).

Table 4

Association analysis between information received by the mother/guardian for children aged six to 59 months and the use or not of the supplement. Governador Valadares, MG, 2014-2016

Variables	Total	Supplementation		OR crude (CI95%)	*p*
		Yes	No		
Reported to receive information from professional about anemia % (n)				0.975 (0.40-2.36)	0.955
No	70.6 (178)	69.7 (23)	70.8 (155)		
Yes	29.4 (74)	30.3 (10)	29.2 (64)		
Reported to know anemia symptoms % (n)				0.630 (0.27-1.44)	0.272
No	44.8 (113)	54.5 (18)	43.4 (95)		
Yes	55.1 (139)	45.5 (15)	56.6 (124)		
Reported that the child had symptoms of anemia % (n)				3,819 (1.11-13.15)	0.022*
No	80.5 (202)	78.1 (25)	80.8 (177)		
Yes	19.5 (49)	21.9 (7)	19.2 (42)		
Reported that child had complete hemograma % (n)				1.947 (0.77-4.95)	0.162
No	27.0 (68)	27.3 (9)	26.9 (59)		
Yes	73.0 (184)	72.7 (24)	73.1 (160)		
Reported to receive medical diagnosis of anemia in the child % (n)				1.002 (0.70-1.44)	0.993
Did not receive	58.7 (108)	29.2 (9)	63.1 (101)		
Received	38.6 (71)	70.8 (17)	33.8 (54)		
Do not know	2.7 (5)	0,0 (0)	3.1 (5)		

*p<0.20 in OR analysis, included in multivariate analysis.

Table 5

Variables shown to be associated with iron supplement use in multivariate analysis for age range six to 59 months. Governador Valadares, MG, 2014-2016.

Variables	*Odds ratio (adjusted)*	P>I Z I	CI95%
Age	0.957	0.006	0.93-0.99
Breastfeeding time	4.695	0.006	1.55-14.20
Childcare	2.476	0.042	1.03-5.92
Constant	0.079	0.001	0.02-0.34

CI95% = 95% confidence interval.

It is worth pointing out that the present study had limitations related to the type of research and data collection. Regarding the type of research, because it is a cross-sectional study (timeless), it is only possible to identify associations between exposure and outcome and not causality. In relation to data collection, it was about the difficulty of access to the children's guardians and the low number of hemogram results, even when schedules were made for the exam.

Thus, it was concluded that the supplementation was not occurring as recommended by prevention policies and that the factors of breastfeeding time and participation in childcare were associated with the use of the supplement, emphasizing the need to implement prevention programs, such as the *Programa Nacional de Suplementação de Ferro* (National Program for Iron Supplementation) and training of professionals on the importance of health education for preventing infant anemia.

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Authors' contribution

Ferreira ACRM: data analysis, discussion of results, and writing of the manuscript. Ferreira MCP and Caetano GC: data collection and critical review of the manuscript. Silva CLA and Ribeiro TR: project conception, study design, data collection and analysis, and writing the manuscript. All authors approved the final version of the article and declare no conflict of interest.

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