

## Malnutrition and associated factors among quilombola children under 60 months of age in two cities of the state of Maranhão, Brazil

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**Abstract** *Objective:* To evaluate the prevalence of malnutrition in children under 60 months of age living in quilombo remnant communities of two municipalities in the state of Maranhão and their associated factors. *Methods:* This is a cross-sectional study conducted with a sample of 372 children in August 2015. Socioeconomic, demographic, maternal and child information were collected. The anthropometry followed the one proposed by the World Health Organization. Height-for-age and weight-for-height rates were calculated using Anthro software version 3.2.2. Poisson regression was performed with a robust variance for the association of malnutrition with the studied variables, using Stata software version 14.0. *Results:* Child malnutrition was high for height-for-age (15.1%) and weight-for-height (7%). Children whose mothers had a short height (< 1.497 m) were more likely to have height-for-age deficits ( $p < 0.05$ ). No variables were statistically associated with low weight-for-height. *Conclusion:* Child malnutrition persists as a public health problem in vulnerable regions, and maternal factors such as low maternal height may explain the short stature of the children. The need for actions to address this nutritional deviation is pointed out.

**Key words** Preschoolers, Child malnutrition, Black people

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## Introduction

The Brazilian black population comprises 8.9% of the population of Brazil and is grouped, especially in the Northeast (11%) and Southeast (9.7%)<sup>1</sup>. A significant part of this population is concentrated in the poorest strata of the country, as a result of social inequities to which the black race has historically been subjected since the slavery period<sup>2,3</sup>.

Within the general black population, there is an African Brazilian social group that descends from Africans slaves and lives in isolated rural areas, which in the enslaved period existed as a symbol of resistance and which maintains strong ties with black African culture, namely, the quilombos<sup>3</sup>. After the end of the slave-holding period, these communities were renamed quilombo remnant communities<sup>2</sup>.

One of the poorest states in the country, Maranhão concentrates the most significant proportion of black residents (74%)<sup>1</sup> and quilombo remnant communities<sup>4</sup>. Because they serve as a refuge, they are isolated, with poor infrastructure and difficult access to essential services such as health and education<sup>5,6</sup>.

Due to the consequences of quilombola ancestry, black people have an unequal insertion in the labor market, usually using informal occupations and, consequently, with lower incomes. When compared to white and yellow, blacks earn an average of 1.8 times less<sup>7</sup>, which reflects on their health and nutrition conditions, especially in more vulnerable segments such as women and children under 60 months.

Among the most significant nutritional deviations in these vulnerable segments is malnutrition. Childhood malnutrition results from the interaction of multiple factors, and their consequences extrapolate adequate growth and development, affecting neurological development and, in extreme cases, result in the early death of the child<sup>5,6</sup>. Malnutrition is responsible for 30% of the deaths of children under 60 months, reaching 50% in developing countries<sup>8</sup>.

In Brazil, the malnutrition rate ranks ninth among the causes of infant mortality and is one of the leading causes of death in all the states of the North and Northeast<sup>9</sup>. In parallel to this scenario, being black is the second major cause of infant death, when based on mortality by color or race<sup>10</sup>.

Research on the nutritional status of children is scarce in the quilombo remnant communities. Studies to date have found a prevalence of

malnutrition ranging from 9.7% in quilombo remnant communities in the State of Alagoas<sup>5</sup> to 31.1% in communities in the state of Pará<sup>6</sup>, showing that child malnutrition still figures as one of the essential nutritional problems in quilombola communities.

Thus, considering the relevance of research of this nature, coupled with the fact that knowing this nutritional scenario of quilombola children can give subsidy for the development of actions and strategies aimed at feeding and nutrition of these communities, this study aims to evaluate the prevalence of malnutrition in children under 60 months of age living in quilombo remnant communities of two municipalities in the state of Maranhão and their associated factors.

## Methods

This is a cross-sectional study integrated with the study "Conditions of Nutrition and Food Safety of Women and Children of Quilombola Communities in Maranhão", developed with the aim of evaluating the health and nutrition conditions of children under five in quilombola communities in Maranhão and, besides nutritional status, evaluated socioeconomic and demographic aspects, family food insecurity and the anemia status of women and children.

The research was carried out in quilombo remnant communities of the municipalities of Penalva and Viana, Maranhão State, with or without a collective land tenure certificate issued by official bodies. We visited all households in which at least one child under 60 months lived in 27 communities located in the rural area of the mentioned municipalities.

Municipalities were selected by convenience because they were communities where local leaders were receptive to the study. The sample was of the probabilistic type, calculated with a confidence level of 95% and a sampling error of 5%, with reference the percentage of children with malnutrition in the Northeast region of 5.9%<sup>11</sup> and adding 20% for eventual losses, totalizing 152 individuals.

The study sample consisted of 373 children under 60 months of age, accompanied by the mother or responsible in reproductive age. In this study, one child who refused to participate was excluded, making up a total sample of 372 children. In the case of two or more children in the same household within the age range of the study, the youngest child was chosen. The criteria

for non-inclusion were twin children and those with sickle cell anemia.

Data collection took place in August 2015, after previous contacts with local leaders to request consent and collaboration to carry out the research. Upon reaching the municipality, these leaders intermediated the contact with the Community Health Workers (ACS) of the Family Health Strategy (ESF). From then on, we elaborated the daily scripts in each community, the identification of the families with the desired profile and the orientation of the teams to visit the homes, always accompanied by the ACS responsible for that micro-area and a local community leader.

The Informed Consent Form was signed after the participant agreed to respond to the form. The original copy was retained by the interviewer and a copy was held at the household visited for safekeeping by the respondent. The respondents who were unable to sign their name placed their fingerprint at the signature site.

The interviews were carried out at the child's household through an adapted, validated and pre-codified form<sup>12</sup>, applied with priority to the biological mother and, in her absence thereof, with the legal guardian or caregiver of the child, provided that she lived in the same household, met the age prerequisite and could provide the requested information.

At the same time, anthropometric measures were taken according to WHO recommendations (2006)<sup>13</sup>. The children's weight was gauged using the Omron® brand (Omron Healthcare Inc. U.S.A.), HBF 214 model, with a 150 kg capacity and 100 g scales. Children under two years of age were weighed together with the mother with a subsequent weight reduction calculation<sup>13</sup>.

The length of children under two years of age was measured in a horizontal position by the infantometer Sanny® brand, with 100 cm breadth. The height of children older than two years was gauged by the Altuxata® anthropometer, ranging from 0 to 2.13 m and subdivisions of 0.1 cm. All subjects were weighed and measured without shoes, wearing only light clothing. Two measurements of weight and height were assessed and recorded on the form. The mean of each measurement was used for the analysis. The interviewers worked in pairs in the anthropometric measurements. New measurements were taken when the two measures of weight differed by more than 100 g and those of height by more than 1.0 cm<sup>13</sup>.

The children were evaluated according to the anthropometric indices weight-for-height (W/H) and height-for-age (H/A) calculated in

Z score using the software Anthro version 3.2.2<sup>14</sup> based on the current population of reference<sup>13</sup>. Cut-off points for nutritional status assessment were established according to the WHO (2006)<sup>13</sup>.

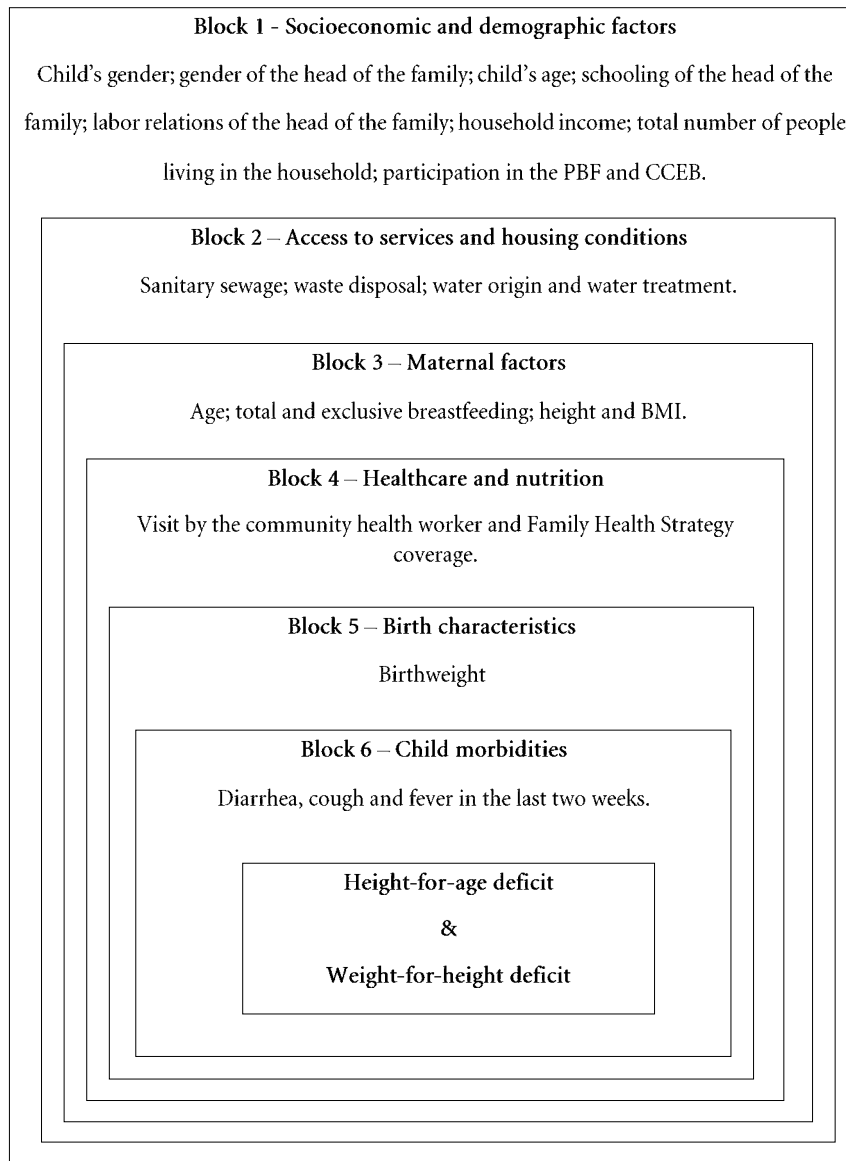
At the end of each workday, the interviewers checked and coded the forms, which were reviewed by the field supervisor, in order to detect fill-in gaps that required an immediate return to the previously visited household. Then the interview control worksheet was filled out to evaluate the coverage of the target for that location and the forms were filed and kept.

After interviewing and collecting the nutritional data, the field team guided the families of the individuals studied regarding adequate and healthy diet. Participants who evidenced a nutritional risk or a positive result for anemia were referred to the Primary Healthcare Facility of that micro-area.

Data were double-entered in the Epi-info program, version 3.5.2, in order to identify entry inconsistencies. For the analysis of the data, the program STATA®, version 14.0 was used. Factors associated with children malnutrition were identified in two stages. In the bivariate analysis, the simple Poisson regression was used to identify the independent variables that showed associations with the nutritional deficits ( $p < 0.20$ ) that were selected to compose the multiple models. In the second step, the factors associated with height-for-age and weight-for-height were identified using a multiple, hierarchical analysis Poisson regression (robust standard error) using an adapted conceptual model<sup>15</sup> (Figure 1):

- Block 1 - Socioeconomic and demographic factors: gender of the child and head of the household, child's age, schooling and labor relationship of the head of the household, household income, total number of people residing in the household, participation in the Family Grant Program and the Economic Classification Criteria Brazil;
- Block 2 - Access to services and housing conditions: Sanitary sewage, waste disposal, origin and treatment of water;
- Block 3 - Maternal factors: age, total and exclusive breastfeeding, height and BMI;
- Block 4 - Healthcare and nutrition: Visit of the community health worker and coverage of the Family Health Strategy;
- Block 5 - Birth characteristics: Birth weight;
- Block 6 - Child morbidities: Diarrhea, cough and fever in the last two weeks

We started the analysis of the multiple model from the distal to the proximal block. The vari-



**Figure 1.** Conceptual model with hierarchical selection for the determination of malnutrition in children under 60 months.

Adapted from Souza et al.<sup>15</sup>.

ables with a p-value < 0.20 by Poisson regression with robust variance were selected as a factor associated with nutritional deficits and remained in the multiple models in subsequent block analyses. In the final model, the one with a p-value < 0.05 was considered as a statistically significant variable after all the adjustments.

The Research Ethics Committee of the Federal University of Maranhão approved the project

under Opinion N° 1.627.919 as per the requirements of the Resolution CNS 466/12 of the National Health Council and its amendments.

## Results

The mean age of the children studied was 23.1 ± 15.7 months. All the characteristics evaluated

are described in Tables 1 and 2. The prevalence of H/A deficit was 15.1% (95% CI: 11.4-18.7) and of W/H deficit was 7.0 % (95% CI: 4.4-9.6).

Table 3 shows the bivariate analyzes that associated with the H/A deficit. The variables associated with the outcome were: the child's age, gender of the head of the household and the social class of the socioeconomic and demographic block, the sanitary sewage of the block of access to services and housing conditions, the tertile of the maternal height of the block of maternal factors, birth weight of the birth characteristics and presence of diarrhea and fever in the last two weeks of the infant's morbidities block ( $p < 0.20$ ).

The variables associated in the bivariate analysis were submitted to a multiple and hierarchical analysis of the H/A deficit. The maternal height tertile was the only factor associated with this outcome (PR: 4.08, 95% CI: 1.95-8.52;  $p < 0.001$ ), showing that the deficit of this rate was more prevalent in the children of women with height below 1,497 m (Table 3).

Table 4 shows the bivariate analyses that were associated with the W/H deficit, namely: the age of the child of the socioeconomic and demographic block; and the tertile of maternal height and BMI of the maternal factors block ( $p < 0.20$ ). No variables were associated with this outcome in the multiple analysis ( $p > 0.05$ ).

## Discussion

This study observed a high prevalence of malnutrition, considered mild severity for the H/A deficit and moderate for the W/H deficit<sup>16</sup>. The factors associated with stunting were the lower maternal height, and, initially, the child's age and maternal height were associated with wasting.

The high prevalence of malnutrition observed here is related to the environmental factors of the families of the children evaluated, which are mostly included in lower economic classes and with lower purchasing power.

Controversially, the mean Z-score of the H/A indicator (-0.74) of the children evaluated was closer to the adequacy value (-2.0), when compared to the national average (-1.32), meanwhile the mean W/H (-0.12) was lower than the national average (0.17)<sup>17</sup>.

The height-for-age deficit is commonly associated with long-term food deprivation and frequent infections<sup>5,6,17-21</sup>. Restrictions on linear growth tend to occur before two years of age with severe effects under the child's psychomotor de-

**Table 1.** Distribution of quilombola children under five years of age by socioeconomic and demographic conditions, access to services and housing and health conditions. Maranhão, 2015.

Variables/categories	n	%
Child's gender		
Male	182	48.92
Female	190	51.08
Head of the household's gender		
Male	180	48.39
Female	192	51.61
Head of household's schooling		
0 – 4 years	191	51.34
> 4 years	160	43.01
No information	21	5.65
Head of household's work relationship		
Not working	74	19.89
Retired	15	4.03
Informal	242	65.05
Formal	40	10.75
No information	01	0.27
Household income		
< 1 minimum wage	266	71.51
≥ 1 minimum wage	102	27.42
No information	04	1.08
Family Grant Program		
Yes	307	85.53
No	07	1.88
No information	58	15.59
Brazil's Economic Classification Criteria		
Class C	32	8.60
Class D	171	45.97
Class E	148	39.78
No information	21	5.65
Sanitary sewage		
Public network / Septic tank	42	11.35
Rudimentary cesspit / Ditch / Open-air	328	88.65
No information	02	0.54
Water origin		
Public network	18	4.84
Well / Water-hole / Claypit / Water truck	354	95.16
Water treatment		
With treatment	178	47.85
Filtered or without treatment	194	52.15
Total number of people living at home		
1 – 5 people	242	65.05
6 or more people	130	34.95
Waste disposal		
Urban collection	01	0.27
Burned / Buried	347	93.28
Open-air dumping	24	6.45
Total	372	100.00

**Table 2.** Distribution of quilombola children under five years of age by maternal factors and child morbidity. Maranhão, 2015.

Variables / categories	N	%
Maternal age		
> 19 years	319	85.75
≤ 19 years	53	14.25
Self-referred maternal skin color		
White	16	4.30
Brown / Black	354	95.16
No information	02	0.54
Maternal height (n=248)		
1° (1.415 – 1.497m)	127	34.14
2° (1.497 – 1.533m)	121	32.53
3° (1.533 – 1.67m)	124	33.33
Maternal BMI		
Underweight	20	5.38
Eutrophy	191	51.34
Overweight	83	22.31
Obesity	49	13.17
No information*	29	7.80
Family Health Strategy		
Yes	60	16.13
No	309	83.06
No information	03	0.81
Community Health Worker's visit		
Yes	334	89.78
No	38	10.22
Total breastfeeding		
Yes	365	98.12
No	06	1.61
No information	01	0.27
Exclusive breastfeeding		
Did not receive food before 6 months	228	61.29
Received food before 6 months	115	30.91
No information	29	7.80
Birth weight (n = 317)		
< 2500 g	36	9.68
≥ 2500 g	281	75.54
No information	55	14.78
Diarrhea in the last two weeks		
Yes	327	87.90
No	45	12.10
Cough		
Yes	190	51.08
No	182	48.92
Total	372	100.00

velopment, especially in school performance<sup>22-25</sup>. However, in this study, the prevalence of height deficit was evenly distributed among all the children's age groups.

The prevalence of height deficit found exceeded that of other studies with Brazilian children with or without black ancestry<sup>2,5,6,11,15,18,19-23,26</sup>. The highest prevalence of global stunting is in South Asia (46%) and Sub-Saharan Africa (38%)<sup>25</sup>. The value found here neared that found for Latin America and East Asia (16%)<sup>25</sup>, while it was almost half the prevalence of developing countries (32%)<sup>25</sup>, in which Brazil ranks.

The height deficit prevalence of 15.1%, observed in this study is five times that of the reference population (2-3%)<sup>27</sup>, evidencing the level of nutritional risk to which quilombola children are exposed. It is observed that residents of traditional communities such as these still live with limitations regarding improving their nutritional status, such as low income and schooling, informality in labor relationships and difficult access to goods and services, factors partially overcome by the rest of the Brazilian child population<sup>1,7</sup>.

In this study, low maternal height was the only variable associated with height deficit in children younger than 60 months. Admittedly, women with lower heights tend to generate concepts with equally low length and likely limited growth in comparison with the children of women with normal or high height<sup>15,24,27</sup>. This relationship may be associated with restricted development and growth in the maternal uterus, as well as perpetuating the cycle of chronic malnutrition due to the maintenance of low height through subsequent generations<sup>28,32</sup>.

Although maternal height is also known for its cause-effect relationship with low birth weight, this study did not evidence any association of birth weight with restrictions on children's linear growth<sup>22,29,30</sup>.

Low weight-for-height is one of the strongest indicators of infant mortality for the under-five age group<sup>25</sup>. It is commonly associated with more acute forms of food deprivation or infectious episodes<sup>25</sup>, unlike H/A. The prevalence of deficit in this indicator was higher than the one reported in the scientific literature<sup>5,6,15,18,19,21,23,25,31,32</sup>.

A systematic review of the nutritional status of Brazilian children revealed that the wasting breadth ranged from 0-5%<sup>29</sup>, classified as a problem of mild severity<sup>16</sup>. The overall prevalence of this disease is 7.7%<sup>31</sup>, and the highest prevalence levels in the world are in South Asia (16%) and Sub-Saharan Africa (7.8%)<sup>31</sup>. The value found in

**Table 3.** Prevalence (%) and crude and adjusted prevalence ratios (PR) of height deficit in children under 60 months by socioeconomic and demographic factors, access to services and housing conditions, maternal factors, birth characteristics and morbidity of children. Maranhão, 2015.

Variables / categories	Height-for-age deficit				
	%	Crude PR	p	Adjusted PR	p
<b>Socioeconomic and demographic factors</b>					
Child's gender					
Male	50.0	0.95	0.844		
Female	50.0	1			
Child's age					
< 24 months	51.8	0.68	0.111	0.65	0.080
≥ 24 months	48.2	1		1	
Head of the household's gender					
Male	39.3	1	0.150	1	0.276
Female	60.7	1.44		1.35	
Household income					
<1 minimum wage	73.2	1.05	0.866		
≥1 minimum wage	26.8	1			
Social Class					
Class C	1.9	0.16	0.071	0.20	0.115
Class D	45.3	0.73	0.231	0.66	0.101
Class E	52.8	1		1	
Maternal schooling					
0-4 years	41.1	0.74	0.235		
> 4 years	58.9	1			
<b>Access to services and housing conditions</b>					
Sanitary sewage					
Public network/Septic tank	3.6	1	0.077	1	
Rudimentary cesspit/Ditch	96.4	3.46		2.49	0.201
Water supply					
Public network	3.6	1	0.638		
Well/water-hole/clay pit/water truck	96.4	1.37			
Drinking water treatment					
Treated	41.1	1	0.265		
Filtered or untreated	58.9	1.37			
Total number of people in the residence					
1-5 people	60.7	1	0.432		
6 or more people	39.3	1.22			

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this study is also close to the prevalence observed in developing countries (7.7%)<sup>31</sup>. In this study, the deficit found was also higher than expected for the reference population (2-3%)<sup>27</sup>, more than twice the upper limit.

Weight-for-height was homogeneous when distributed by children's gender. However, when classified by age, we observed that children younger than 24 months had a higher propensity to develop low weight, corroborating data

from the literature that indicate the population of under two years of age as the most affected in delayed weight gain<sup>5,32,33</sup>.

The emaciation caused by the deficit in this indicator portrays a rupture in the child's physical harmony<sup>13,15</sup>, possibly caused by inadequate weight gain, despite normal growth or temporary weight loss due to common childhood morbidities, such as cough and diarrhea<sup>34</sup>. However, this study did not find an association of morbidity

**Table 3.** Prevalence (%) and crude and adjusted prevalence ratios (PR) of height deficit in children under 60 months by socioeconomic and demographic factors, access to services and housing conditions, maternal factors, birth characteristics and morbidity of children. Maranhão, 2015.

Variables / categories	Height-for-age deficit				
	%	Crude PR	p	Adjusted PR	p
<b>Maternal factors</b>					
Maternal age					
≤ 19 years	8.9	0.59	0.217		
> 19 years	91.1	1			
Maternal height (tertile)					
1° (1.415 – 1.497m)	60.7	4.18	<0.001	4.08	<0.001
2° (1.497 – 1.533m)	25.1	1.78		1.73	
3° (1.533 – 1.67m)	14.3	1		1	
Maternal BMI					
Underweight	7.8	2.45	0.418		
Eutrophy	54.9	1.80			
Overweight	29.4	2.21			
Obesity	7.8	1			
<b>Healthcare and nutrition</b>					
Family Health Strategy – ESF					
Yes	16.1	1	0.985		
No	83.9	1.00			
Community Health Worker's visit					
Yes	92.9	1	0.410		
No	7.1	0.68			
Breastfeeding					
Yes	98.2	1	0.898		
No	1.8	1.13			
Exclusive breastfeeding					
Yes	66.7	1	0.974		
No	33.3	1.00			
<b>Characteristics of birth</b>					
Birth weight					
< 2500 g	18.2	1.74	0.124	0.94	0.937
≥ 2500 g	81.8	1		1	
<b>Child's morbidity</b>					
Diarrhea in the last two weeks					
Yes	17.9	1.58	0.151	1.49	0.193
No	82.1	1		1	
Cough in the last two weeks					
Yes	46.4	0.92	0.717		
No	51	1			
Fever in the last two weeks					
Yes	46.2	1.72	0.130	1.42	0.396
No	53.8	1		1	

episodes with the deficit in this indicator, probably attributing to the W/H deficit the reduced weight gain, which could not be evaluated due to the cross-cutting nature of this study.

The prevalence of weight and height deficits suggests that quilombola children under 60

months of Penalva and Viana still live with inaccessibility to essential services. The prevalence levels closest to those found in this study were in poorer geographic regions, mainly on the African continent, where the ancestors of quilombo remnants originate<sup>2,5,6,11,15,18,19-23,25,26,31,32</sup>.



**Table 4.** Prevalence (%) and crude and adjusted prevalence ratios (PR) of the weight-for-height deficit in children under 60 months by socioeconomic and demographic factors, access to services and housing conditions, maternal factors, birth characteristics and morbidity of children. Maranhão, 2015.

Variables / categories	Weight-for-height deficit				
	%	Crude PR	p	Adjusted PR	p
<b>Socioeconomic and demographic factors</b>					
Child's gender					
Male	53.9	0.81	0.594		
Female	46.1	1			
Child's age					
< 24 months	23.1	1		1	
≥ 24 months	76.9	2.41	0.052	2.34	0.090
Head of the household's gender					
Male	50	1			
Female	50	0.93	0.853		
Household income					
<1 minimum wage	76.9	1.28	0.581		
≥1 minimum wage	23.1	1			
Social Class					
Class C	3.8	0.35	0.308		
Class D	46.2	0.79	0.548		
Class E	50	1			
Maternal schooling					
≤ 4 years	53.8	0.91	0.825		
> 4 years	46.2	1			
<b>Access to services and housing conditions</b>					
Sanitary sewage					
Public network/Septic tank	3.8	1			
Rudimentary cesspit/Ditch	96.2	3.2	0.247		
Water supply					
Public network	3.8	1	0.807		
Well/water-hole/clay pit/water truck	96.2	1.27			
Treated	46.2	1			
Filtered or untreated	53.8	1.07	0.847		
Total number of people in the residence					
1-5 people	57.7	1			
6 or more people	42.3	1.38	0.398		
Maternal factors	42.3	1.38	0.398		

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This work's design was limited regarding data collection in two municipalities of the same geographic region, without taking into account the distribution of the quilombola population in other municipalities in Maranhão, which does not allow to infer these results for all quilombola communities in the state. Also, the lack of food intake assessment of this population restricted the verification of inadequacies in the children's diet, which could explain the malnutrition found.

The survey of information in a representative sample in the quilombo remnant communities in the state of Maranhão is a pioneer initiative to analyze the nutritional situation of this population, which can improve understanding of malnutrition in specific populations in one of the poorest states of the country and, therefore, to direct increases in the public policies for this specific population group.

**Table 4.** Prevalence (%) and crude and adjusted prevalence ratios (PR) of the weight-for-height deficit in children under 60 months by socioeconomic and demographic factors, access to services and housing conditions, maternal factors, birth characteristics and morbidity of children. Maranhão, 2015.

Variables / categories	Weight-for-height deficit				
	%	Crude PR	p	Adjusted PR	p
<b>Maternal factors</b>					
Maternal age					
≤ 19 years	88.5	0.78	0.681		
> 19 years	11.5	1			
Maternal height (tertile)					
1° (1.415 – 1.497m)	53.9	1.39	0.045	2.33	0.102
2° (1.497 – 1.533m)	26.9	0.82	0.528	0.78	0.707
3° (1.533 – 1.67m)	19.2	1		1	
Maternal BMI					
Underweight	18.2	2.45	0.172	1.61	0.469
Eutrophy	50	0.71	0.541	0.64	0.438
Overweight	13.6	0.44	0.273	0.39	0.195
Obesity	18.2	1		1	
<b>Healthcare and nutrition</b>					
Family Health Strategy – ESF					
Yes	24	1			
No	76	0.60	0.260		
Community Health Worker's visit					
Yes	88.4	1			
No	11.6	1.14	0.821		
Aleitamento materno exclusivo					
Sim	66.7	1			
Não	33.3	0.98	0.975		
<b>Characteristics of birth</b>					
Birth weight					
< 2500 g	15	1.37	0.599		
≥ 2500 g	85	1			
Child's morbidity					
Diarrhea in the last two weeks					
Yes	19.2	1			
No	80.8	1.72	0.248		
Cough in the last two weeks					
Yes	42.3	1			
No	57.7	0.77	0.495		
Fever in the last two weeks					
Yes	27.3	1			
No	72.7	0.75	0.672		

## Conclusion

This study observed a high prevalence of height deficit and low weight-for-height in the sample of quilombola children in two municipalities in the state of Maranhão. The lower maternal height

was related to infant height deficit. The results expose the situation of social inequity and invisibility to which this population is submitted and point to the need for public policies that aim to compensate for the historical neglect of the State towards this population segment.

## Collaborations

VNC Silveira worked on the interpretation of the data writing of the article and approval of the version to be published. MTBA Frota worked on the design, critical review of the work and approval of the version to be published. LL Padilha worked on data analysis, critical review of the work and approval of the version to be published.

## Acknowledgments

We are grateful to the State Health Secretariat of Maranhão and the Secretariat for the Promotion of Racial Equality Policies for the logistical and financial support. We are also grateful to the Santo Antônio dos Pretos Association for their support and permission to conduct the research, as well as all who have contributed directly or indirectly to this work.

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Article submitted 15/11/2017

Approved 25/09/2018

Final version submitted 27/09/2018