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ORIGINAL

Food and nutrition actions for the maternal and child population in primary healthcare: comparative analysis of municipalities in the Metropolitan Region of *Baixada Santista*, *São Paulo*, Brazil

Ações de alimentação e nutrição à população maternoinfantil na Atenção Primária à Saúde: análise comparativa em municípios da Região Metropolitana da Baixada Santista, São Paulo, Brasil

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ABSTRACT

Objective

Characterize and comparatively analyse the organization of nutritional attention to prenatal care, the puerperium period and breastfeeding, in primary health care, in two municipalities of *Baixada Santista, São Paulo,* Brazil.

Methods

This was an exploratory-analytical study of family health units and the mixed basic care units of *Cubatão* (n=17) and *Guarujá* (n=14). For this purpose, seven domains of the Nutritional Attention Assessment Instrument in Primary Health Care were used. Descriptive analysis and the Mann–Whitney and Pearson's chi-square tests were performed.

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Results

In the comparison between the municipalities, the best scores were obtained in *Guarujá*. Statistically significant differences were found for the following indicators: support for nutritional attention actions: infrastructure and permanent education (<0.001); food and nutritional surveillance (<0.001); nutritional attention focused on prenatal care (<0.001); and nutritional attention focused on postpartum care and breastfeeding (0.012). Nutritional attention actions for mother-infant groups were more frequent in the city of *Guarujá*, which compared with *Cubatão*, achieved better scores for the nutritional attention evaluation indicators.

Conclusion

The municipality of *Guarujá* had better indicators of infrastructure and permanent education, food and nutrition surveillance, and puerperal and breastfeeding nutritional care. However, weaknesses persist in the organization of nutritional care in the two cities studied, especially regarding the work process.

Keywords: Primary health care. Nutrition policy. Nutritionists. Prenatal care. Postpartum period.

RESUMO

Objetivo

Caracterizar e analisar comparativamente a organização da Atenção Nutricional ao pré-natal, ao puerpério e ao aleitamento, na Atenção Primária à Saúde, em dois municípios da Baixada Santista, São Paulo, Brasil.

Métodos

Realizou-se estudo exploratório-analítico das Unidades de Saúde da Família e Unidades Básicas de Saúde mistas de Cubatão (n=17) e Guarujá (n=14). Para tanto, foram utilizados sete domínios do Instrumento de Avaliação da Organização da Atenção Nutricional na Atenção Primária à Saúde, validado em seu conteúdo. Realizaram-se análise descritiva e os testes de Mann-Whitney e o Qui-quadrado de Pearson.

Resultados

Na comparação entre os municípios, as melhores pontuações foram obtidas em Guarujá. Encontraram-se diferenças estatisticamente significantes para os respectivos indicadores, Apoio às ações de Atenção Nutricional: Infraestrutura e Educação Permanente (<0,001); Vigilância Alimentar e Nutricional (<0,001); Atenção Nutricional ao Pré-Natal (<0,001); e a Atenção Nutricional ao Puerpério e ao Aleitamento (0,012). As ações de Atenção Nutricional ao grupo maternoinfantil foram mais frequentes no município de Guarujá, alcançando melhores pontuações dos indicadores de avaliação da Atenção Nutricional, comparativamente aos alcançados por Cubatão.

Conclusão

O município de Guarujá apresentou melhores indicadores de infraestrutura e educação permanente, vigilância alimentar e nutricional e atenção nutricional puerperal e ao aleitamento. Entretanto, persistem fragilidades na organização da Atenção Nutricional nos dois municípios estudados, principalmente quanto ao processo de trabalho.

***Palavras-chave**: Atenção primária à saúde. Política nutricional. Nutricionista. Cuidado pré-natal. Período pós-parto.*

INTRODUCTION

Primary Health Care (PHC) is the gateway to the Health Care Network (HCN) in Brazil, and through the Family Health Strategy (FHS), the locoregional specificities of the individual, family and community are considered [1]. The expansion of PHC has facilitated a significant reduction in the rates of hospitalization for chronic diseases at this point of care [2]. In addition, health indicators have improved, for example, a reduction in infant mortality rates and avoidable mortality rates due to nutritional deficiencies, diabetes and cardiovascular diseases [3,4].

Guided by the principles of PHC, the *Política Nacional de Alimentação e Nutrição* (PNAN, National Food and Nutrition Policy) and Nutritional Care (NC) have gained strategic relevance amid demographic, epidemiological and nutritional transitions, aggravated by social inequalities [1,5,6]. Thus, the inclusion of feeding and nutrition actions is justified by the demands resulting from the increased prevalence of food-related diseases, such as the coexistence of micronutrient deficiencies, excess weight and other chronic Noncommunicable Diseases [7,8].

Improvements in multidisciplinary teams, through the inclusion of the support of nutritionists, have advanced the food and nutrition services offered to the population. This has required, however, the adaptation of individual and disciplinary work to shared care. Although nutritional care is not exclusive to the nutrition professional, its absence in a multidisciplinary team can weaken the comprehensiveness of health actions, especially regarding the dietary and nutritional diagnosis of the population and the promotion of Food and Nutrition Education (FNE) actions [5,9,10].

The low supply or insufficient incorporation of NC and the limited number of nutritionists in the HCN limit PHC [11]. It is necessary to expand nutritional care in PHC, given the current difficulties, which permeate team and location characteristics [12-14]. Despite the increased insertion of nutritionists into multidisciplinary teams in recent years, the high demand for services, the short term approaches to care and the lack of infrastructure are examples that interfere with the continuity and quality of care [15-17].

Despite the growing publication of studies on food and nutrition actions in PHC, there is little evidence of contributions related to the set of services, including working conditions and care protocols. Improvements in NC can be facilitated through studies that focus on analysing local, regional and national health programmes and services, in conjunction with food and nutrition health care actions [17].

The objective of this study is to characterize and comparatively analyse the organization of food and nutrition actions in PHC in two municipalities of *Santos*, São Paulo, Brazil, focusing on NC for the prenatal period, the puerperium period and breastfeeding.

METHODS

This was a cross-sectional exploratory and analytical study of the Basic Health Units (BHU) and Family Health Units (FHU) in two municipalities of the *Região Metropolitana da Baixada Santista* (RMBS, Metropolitan Region *Baixada Santista*), *Cubatão* and *Guarujá*, in the second half of 2019.

The RMBS is composed of the municipalities of *Bertioga, Cubatão, Guarujá, Itanhaém, Mongaguá, Peruíbe, Praia Grande, Santos* and *São Vicente*. This region accounts for approximately 3.15% of the Gross Domestic Product (GDP) of *São Paulo* (2016) and 4.05% of the state population (2018) [18,19]. Based on a Gini index of 0.54, there is an imbalance in income concentrations, indicating socioeconomic inequalities [18].

The choice of the municipalities of *Cubatão* and *Guarujá* was justified because of their economic and historical importance and their high infant mortality rates. *Cubatão* is one of the largest industrial centres in Latin America, with the largest GDP *per capita* budget (2016) in the *Santos* Basin. The economic development of *Guarujá* is driven by the port, nautical, hotel, business, real estate and commercial sectors; nevertheless, it has the second highest infant mortality rate in the region [18,19].

Interviews were conducted by the researcher in charge in all FHU and mixed BHU in the municipalities (31), totalling 17 in *Cubatão* and 14 in *Guarujá*. Traditional BHU were not included. One professional was selected per service, seeking to prioritize interviews with nutritionists. In the absence or unavailability of a nutritionist, local managers, members of health teams or other professionals familiar with the topic were interviewed. For this purpose, we used the *Instrumento de Avaliação da Atenção Nutricional* (IAAN, Nutritional Attention Assessment Instrument) in Primary Health Care, whose content was previously validated [20]. The IAAN is composed of ten indicators that assess NC in PHC through questions about food and nutrition actions offered in the units, verifying if there is compliance with the standards recommended by public policies [20].

The indicators are 1) performance of the nutritionist; 2) support for nutritional care actions: infrastructure and permanent education; 3) intersectoriality; 4) social control; 5) food and nutrition surveillance; 6) individual nutritional care; 7) nutritional care for groups; 8) nutritional care focused on prenatal care; 9) nutritional Care focused on the postpartum period/breastfeeding; and 10) nutritional care for child health.

Five general indicators were used: 1) performance of the nutritionist (only to characterize the study participants); 2) support for nutritional care actions; 3) intersectoriality; 4) social control and surveillance; and 5) food and nutrition. In addition, we selected two indicators specific to the maternal-infant population: 6) prenatal nutritional care; and 7) nutritional care for the postpartum period and breastfeeding (Table 1). Scores were determined for each indicator, obtained from the sum of the number of items for each component, with a score of 1 indicating that the action occurred and a score of 0 indicating that the action did not occur. The maximum score for each indicator is shown in Table 1. Although the IAAN is an evaluation instrument, this study used this tool to comparatively analyse the feeding and nutrition actions for the mother-child population in the two municipalities [20].

Data were entered into the database twice, followed by a descriptive analysis of indicator (1), composed of the following variables: gender, age, education, profession, function, type of unit in which the professional is inserted, working time, location of the unit, administrative management, working time, number of users, and number of families served. The mean, median, standard deviation and mean values were calculated. Interquartile intervals were calculated for the following indicators: (2) support for nutritional care actions: infrastructure and continuing education; (3) intersectoriality; (5) food and nutrition surveillance; (6) prenatal nutritional care; and (7) nutritional care for the puerperium period and breastfeeding.

To analyse the differences between means, medians, standard deviations and interquartile intervals for the municipalities of *Cubatão* and *Guarujá*, the nonparametric Mann–Whitney test was used because the data did not exhibit a normal distribution, as determined using the Shapiro–Wilk test. To verify associations between social control (indicator 4) and the city, Pearson's chi-square test was used $p<0.05$ was considered significant for all analyses.

This study was approved by the ethics committees of the Municipal Health Secretariats of *Guarujá* and *Cubatão* and by the Ethics Committee of the Federal University of *São Paulo* under Opinion nº 3.376.559.

RESULTS

Interviews were conducted with professionals from the 31 BHU/FHU in the two municipalities. In *Cubatão*, 11 professionals were interviewed and in *Guarujá*, five professionals were interviewed because the nutritionists divided their workloads among several units.

In *Cubatão*, of the total (n=11) interviewees, most were nurses (n=5), followed by managers with professional training in public management, law and social work (n=4) and nutritionists (n=2). Notably, nutrition professionals were responsible for covering, on average, eight units (47.1%), staying six hours per week at each location. The mean age of the participants was 45.82 years (standard deviation (SD) = 9.86 years), and the mean length of service was 42.24 months (SD=26.87 months). Of the interviewees, two were men (11.8%), and nine were women (88.2%). Five professionals attended *lato sensu* graduate programmes (45.4%).

In the municipality of *Guarujá*, five professionals were interviewed, including managers with professional training in nursing (n=1), nurses (n=1) and nutritionists (n=3). The latter covered, on average, 85.7% (n=12) of the units, working eight hours per week at each location. Only the nutritionist professionals in this municipality were part of the *Núcleo Ampliado de Saúde da Família e Atenção Básica* (NASF-AB, Extended Family Health and Primary Care Center). The mean age of the participants was 30.64 years (SD=9.05 years), and the mean length of service was 12 months (SD=6.95). All professionals were women, and four had postgraduate degrees (80%).

Infrastructure, equipment and work process

In both municipalities, the lack and/or inadequacy of physical space and equipment for anthropometric assessments were noted by the interviewees, especially by the nutritionists, as challenges related to not performing food and nutrition actions. Device maintenance was performed more frequently in *Cubatão*.

In *Guarujá*, nutritionists were responsible for training other health professionals in nutritional care; this training included the following themes: the *Promoção da Saúde e da Alimentação Adequada e Saudável* (PAAS, Promotion of Adequate and Healthy Eating); exclusive breastfeeding and complementary feeding; and strategies and methods in FNE and anthropometric evaluations. In *Cubatão*, there was no record of these initiatives (Table 1).

Intersectoriality and social control

In *Guarujá*, there was a greater presence of intersectoral NC actions involving the social welfare and education sectors in addition to more social control, unlike in *Cubatão*, where intersectoriality was absent in most services. The presence or absence of social control was not significantly associated with the studied cities (p=0.399). The food and nutrition actions were monitored/evaluated jointly by health teams and representatives of the users (local health council) (Table 1).

Food and nutrition surveillance

Respondents from both municipalities reported an effort to identify regional customs and food traditions and performed home visits. In addition, children and pregnant women from at-risk families and users of the *Bolsa Família* Program were monitored through anthropometric evaluation actions.

In *Guarujá*, users' nutritional status data were collected and analysed, while also observing basic sanitation conditions and listening to the demands of the population. Additionally, the access of the population to points of commercialization/food distribution areas was more frequent, with more active participation by nutritionists in areas at risk for food and nutritional insecurity (Table 1).

NC for the prenatal period, postpartum period and breastfeeding

In both municipalities, NC for pregnant women was offered after a medical referral. The following were offered in medical and nutritional consultations during the prenatal period: PAAS actions, guidance on breastfeeding and lactation, nutritional status assessment and monitoring, and verification of social vulnerability (Table 1). During puerperal home visits, the health status of the puerperal woman and the new-born, breastfeeding status, environmental and hygiene conditions and feeding practices were observed (Table 1).

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Table 1 - Food and nutrition actions carried out in health units in two municipalities in the Metropolitan Region of *Baixada Santista* (SP), Brazil, 2019.

Variables	Municipality			
	Guarujá		*Cubatão*	
	n	%	n	%
Active nutritionist	12	85.7	10	58.8
Nutritional care through a teaching-service partnership	0	0.0	1	5.9
Intersectoral actions for food and nutrition education	13	92.9	8	47.1
Identification of regional customs and food traditions	10	71.4	13	76.5
Mapping of areas at risk of food and nutritional insecurity	12	85.7	8	47.1
Periodic collection of nutritional status data from users	14	100.0	17	100.0
Periodic collection of food consumption data from users	13	92.9	4	23.5
Home visits	14	100.0	17	100.0
Participation of a nutritionist in the identification of nutritional care demands	12	85.7	6	35.3
Nutritional care for families in the *Bolsa Família* Program	1	7.1	0	0.0
Nutritional care for pregnant women by medical referral	12	85.7	9	52.9
Approach to breastfeeding during prenatal care	14	100.0	17	100.0
Guidance on healthy eating during pregnancy	14	100.0	16	94.1
Guidance on micronutrient supplementation during pregnancy	14	100.0	17	100.0
Recording of anthropometric data for the gestational curve	14	100.0	16	94.1
Identification of breastfeeding practices in the postpartum period	14	100.0	16	94.1
Evaluation of the nutritional status of postpartum women	14	100.0	12	70.6
Prescription of iron supplementation up to three months after delivery	13	92.9	14	82.4
Calculation of the daily weight gain of new borns	14	100.0	14	82.4
Incentive to exclusively breastfeed up to six months and complementarily breastfeed until two years of age at the first new-born consultation	14	100.0	17	100.0

In the comparative analysis of NC evaluation indicators in *Cubatão* and *Guarujá*, statistically significant differences were found for support for nutrition care actions: infrastructure and permanent education (<0.001); food and nutrition surveillance (<0.001); prenatal nutritional care (<0.001); and nutritional care for the puerperium period and breastfeeding (0.012). Intersectoriality was the only indicator for which there was not a statistically significant difference (0.117); this result may be related to the fact that relative to the other indicators, this indicator has few aspects included in the analysis (Table 2). Compared with *Cubatão*, the municipality of *Guarujá* achieved better scores for the NC evaluation indicators (Figure 1).

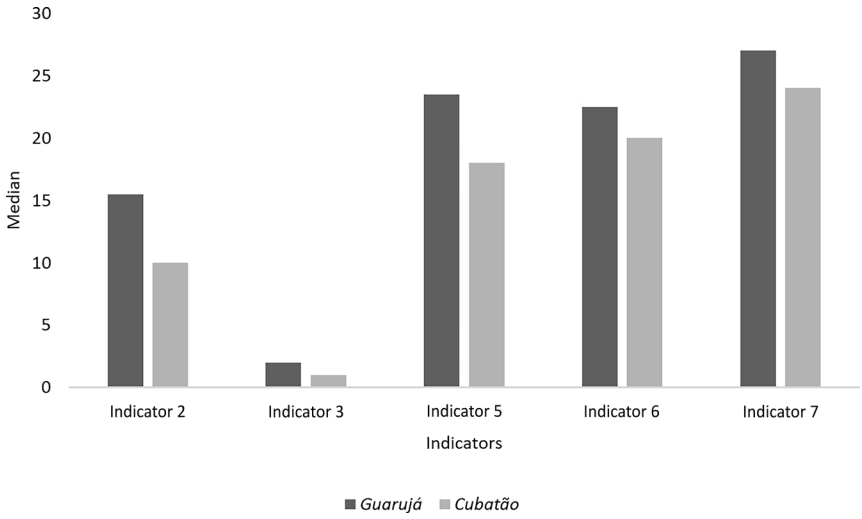

Figure 1 - Comparative analysis of the medians of nutritional care assessment indicators in two municipalities of the Metropolitan Region of *Baixada Santista* (SP), Brazil, 2019.

Note: Indicator 2: support for nutritional care actions: infrastructure and permanent education; Indicator 3: intersectoriality; Indicator 5: food and nutrition surveillance; Indicator 6: prenatal nutritional care; Indicator 7: nutritional care for the puerperium period and breastfeeding.

Table 2 - Differences between means, standard deviations, medians and interquartile intervals for the indicators used to analyse the food and nutrition actions in primary health care in two municipalities of the *Baixada Santista* Metropolitan Region (SP), Brazil, 2019.

Variables	Municipality		Descriptive levels*
	Guarujá	*Cubatão*	
Indicator 2			
Mean	14.71	9.53	
Standard deviation	2.97	1.50	
Median	15.50	10.00	<0.001
1st quartile	12.00	9.00	
3rd quartile	16.00	11.00	
Indicator 3			
Mean	1.57	1.00	
Standard deviation	0.65	1.00	
Median	2,00	1.00	0.117
1st quartile	1,00	0.00	
3rd quartile	2,00	2.00	
Indicator 5			
Mean	23.93	18.59	
Standard deviation	1.94	1.28	
Median	23.50	18.00	<0.001
1st quartile	23.00	18.00	
3rd quartile	25.00	19.00	
Indicator 6			
Mean	22.29	20.00	
Standard deviation	1.27	1.32	
Median	22.50	20.00	<0.001
1st quartile	22.00	19.00	
3rd quartile	23.00	21.00	
Indicator 7			
Mean	25.50	21.18	
Standard deviation	4.49	5.67	
Median	27.00	24.00	0.012
1st quartile	27.00	15.00	
3rd quartile	27.75	26.00	

Note: *Mann–Whitney test. Indicator 2: support for nutritional care actions: infrastructure and continuing education; Indicator 3: intersectoriality; Indicator 5: food and nutrition surveillance; Indicator 6: prenatal nutritional care; Indicator 7: nutritional care for the puerperium period and breastfeeding.

Table 3 - Description of indicators and scores established for the components of the Nutritional Attention Assessment Instrument (IAAN) [26] in Primary Health Care, applied in two municipalities of the Metropolitan Region of *Baixada Santista* (SP), Brazil, 2019.

Indicator	Description	Maximum score
Indicator 2 – Support for nutritional care actions	Infrastructure and permanent education	20
Indicator 3 – Intersectoriality	Development of actions for nutritional care and food and nutrition education through a teaching-service partnership	3
*Indicator 4 – Social control	Participation of a nutritionist or other professional in social control; monitoring and evaluation of food and nutrition actions jointly by a representative of users and health teams	*
Indicator 5 – Food and nutrition surveillance	Strategies and actions used to identify, monitor and address demands for nutritional attention and food and nutritional insecurity in the territory	31
Indicator 6 – Prenatal nutritional care	Individual nutritional care, nutritional monitoring, and breastfeeding	25
Indicator 7 – Nutritional care for the puerperium period and breastfeeding	Procedures performed during home visits, nutritional care for postpartum women and new-borns, and actions to encourage and protect exclusive breastfeeding for up to 6 months	28

Note: *A score was not assigned for Indicator 4 because it was a categorical variable and did not allow the calculation of a score; therefore, a binary result was generated.
Source: Prepared by the authors based on the IAAN in Primary Health Care [20].

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DISCUSSION

In this study, the organization of food and nutrition actions in PHC, with an emphasis on the mother-child stage of the life course, was analysed in two municipalities of *Baixada Santista*. PHC, due to its capillarity and proximity between residents and health services, is an environment conducive to the development of food and nutrition health actions [5].

The food and nutrition action in PHC include essential factors for the population's FNE, such as food and nutrition, PAAS, strategies for the prevention and treatment of nutritional deficiencies and obesity, and the promotion of adequate and healthy eating practices. The presence of a nutritionist can promote appropriate work processes. The work performed by such professionals is also important in the implementation of continuing education in food and nutrition for interdisciplinary health teams and in the management of NC. The incorporation of these professionals into multidisciplinary teams facilitates responses to the various nutritional demands of the population [21].

Between the cities studied, *Guarujá* presented the best scores for the studied indicators and had a greater number of nutritionists available in health units. Therefore, the participation of these professionals in food and nutrition actions was more frequent, including their participation in FNE. However, their inclusion in interdisciplinary teams was insufficient in the face of the demand for health in the two cities, as demonstrated by the scores for indicator 1.

The two municipalities, especially *Cubatão*, showed weaknesses in the participation of nutritionists in the identification of NC demands, particularly in the mapping of food and nutrition in the coverage areas, which is one of the fundamental precepts of the FHS related to PAAS and FNE [21].

The results of this study reveal the precariousness of the infrastructure in both municipalities. Nevertheless, *Guarujá* exhibited better structural conditions. These characteristics were also reported in other studies, which described inadequacies in services hindering the development of actions [15,16,22].

Differences were found in NC between the municipalities. In the employment contract model, the nutritionists from *Guarujá* composed the NASF-AB and performed admissions at BHU/FHU. Infrastructure support is achieved through the sharing of problems, knowledge and practices among health workers, strengthening interdisciplinary teams [21]. The same did not happen in *Cubatão*, where little multidisciplinary interaction and the lack of action in the NASF-AB made the food and nutrition actions unfeasible. Furthermore, little interaction between the community with multidisciplinary teams through social control actions weakens decentralization, comprehensiveness and community participation with regard to fulfilling the basic principles of the *Sistema Único de Saúde* (SUS, Unified Health System). In the PNAN, infrastructure support is provided for food and nutrition actions and FNE, in the care provided to the population and in the qualification of professionals on interdisciplinary teams, but organizational issues and limited support in the work processes can discourage these professionals [1,11].

An insufficiency of nutritionists, a lack of training among members of interdisciplinary teams, a lack of adequate infrastructure and support for food and nutrition health care actions hinder the implementation of the PNAN guidelines for NC [15,19,17]. A low number of nutritionists was observed in relation to demand, especially in *Cubatão*, where nutrition professionals worked in approximately half of the locations. In *Guarujá*, the presence of an NASF-AB team, which included a nutritionist, allowed a higher frequency of feeding and nutrition actions in addition to more active participation in identifying demand.

Studies have shown that the food system to which individuals are exposed since intrauterine life may predict health and nutrition conditions in adulthood [23]. The presence of professional nutritionists in PHC, especially in the FHS, has the potential to strengthen the qualifications of health teams and the services offered to communities [5]. With the expansion of FHS coverage and income transfer programmes, there has been an increase in maternal and child care, contributing to a reduction in infant mortality rates [24].

In the municipalities studied, prenatal NC and puerperium NC and breastfeeding were more substantial in *Guarujá*, although these actions were provided by doctors and nurses, reinforcing the importance of infrastructure support in the technical-pedagogical dimension. [1]. With NASF-AB admission, the nutritionists in *Guarujá* provided training for health professionals, including the PAAS for maternal-child groups. There is evidence of the positive perception of a multidisciplinary team regarding FNE provided by a nutritionist as a relevant strategy to strengthen the NC offered [7]

Based on the findings, individual NC during prenatal care depended on a medical referral, which was hampered by the lack of a bond among professionals. Studies have shown the benefits of nutritional assessments, diagnosis, intervention and monitoring in prenatal care, essentially because nutritional problems may be associated with risks during this period, for example gestational hypertension and low birth weight [25].

Mixed BHU/FHU have medical care protocols for prenatal care, the puerperium period and the first new-born visit; for example, there are protocols for micronutrient supplementation; the recording of anthropometric data; the evaluation of food consumption; and the encouragement of exclusive breastfeeding up to six months and complementary breastfeeding up to two years of age, used in the praxis of NC. Early weaning remains a reality worthy of attention, given the risks it entails, such as malnutrition and increased child morbidity and mortality. In PHC, the NC performed by nutritionists may favour improvements in this context, with the incorporation of FNE for adequate child development [1].

The FHS has the potential to provide comprehensive maternal and child care; however, this can be affected by factors such as infrastructure weaknesses, a lack of intersectoriality, low professional qualifications, a lack of workforce and a weak link between professionals and users [26,27].

In this study, there was little NC educational actions aimed at *Bolsa Família* Program families. Attention to vulnerable populations requires broad intersectoral and food and nutrition coordination to ensure the human right to adequate food and reduce inequities, such as poverty. The dispersion of actions in the health field is accentuated by barriers in other points of care or in other sectors [5]. Intersectoriality occurred with social work and school health programmes, but the weak interinstitutional link observed compromises the effectiveness of the principles of PHC [28]. Notably, social control actions were demonstrated by the municipality of *Guarujá,* which showed a greater capacity for intersectoral articulation than did the municipality of *Cubatão*. However, social control is a challenge for both municipalities, which can be overcome by investments in the qualification of professionals through the adoption of permanent education practices. In addition, there are several obstacles inherent to social control and effective popular participation in management, as reported in the scientific literature [29].

The presence of qualified professionals in the FHS, in a number consistent with demand, can aid in the nutritional and dietary diagnosis of the population. However, adversities remain in different territories, in particular, socioeconomic, political and cultural determinants [30]. The recent changes in PHC financing, with the restriction of investments in the NASF-AB, have resulted in new obstacles, threatening the principles of universality, equity and comprehensiveness of the SUS [31].

This study showed similarities and differences in NC in PHC in two municipalities of *Baixada Santista* with different socioeconomic realities. In other analyses of municipalities in the same region, there were similarities with the results presented, demarcating the lack of inclusion of nutritionists and inconsistencies in infrastructure and in the development of actions to promote health and adequate and healthy food. Such impediments were also observed in maternal-child health care [15-17,32]. Despite *Cubatão* having the largest GDP *per capita* budget in the region, the results suggest that *Guarujá* invests more in NC.

This study has limitations. Managers were interviewed, which may have influenced the answers because they may have had knowledge of guidelines related to NC. The noninclusion of traditional BHU, due to the lack of funding, may also have limited the findings. Furthermore, the results do not reflect the totality of the NC in the RMBS, as the findings are restricted to two of the nine municipalities in the region, making it impossible to make statistical inferences.

Nevertheless, based on interviews with professionals, there are barriers related to aspects that may interfere with the analysis of NC, such as the execution of work processes, the operationalization of care protocols, the quality of equipment and available materials and municipal contexts. The absence of this information for each service weakens the knowledge about the reality of the intervention methods. In this case, qualitative studies are necessary to deepen the understanding regarding these aspects.

For indicator (4), social control, it was not possible to establish a score, given the nature of its components. In this case, it would be necessary to complement the information by consulting other sources. [33], such as internal records of the services and the health secretariats of the two municipalities studied.

The innovative nature of this study consists of the novel use of a validated instrument to evaluate the organization of NC in PHC in two municipalities of an important metropolitan region, *Baixada Santista*, encompassing all the FHU and mixed BHU In addition, the creation of scores for the different indicators that composed the original IAAN allowed the analysis of food and nutrition actions, potentially facilitating the development of new research in the area. This study has the potential to support the defence of investments in comprehensive health care, with qualified professionals to perform NC, to contribute to improvements in attention to nutrition.

CONCLUSION

Compared with the municipality of *Cubatão, Guarujá* had better indicators of infrastructure and permanent education, food and nutrition surveillance and puerperal nutritional care and breastfeeding. However, the insertion and performance of nutrition professionals are still incipient and do not meet demand, accentuated by the fragility of teamwork and obstacles in the construction of bonds with residents, hindering the work process. NC in the maternal-child stage of life depends on a minimum infrastructure to meet the needs of comprehensive care; this infrastructure was not found, potentially compromising the organization of actions. Thus, more investments in skilled labour, resources and infrastructure support are needed to improve regional maternal and child health indicators and to improve food and nutrition actions.

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CONTRIBUTORS

Y SATO was responsible for the conception and design of the study, data analysis, discussion of the results and writing the text. MM MATA was responsible for discussing the results and writing the text. MAT MEDEIROS was responsible for the conception and design of the study, data analysis, discussion of the results and critical review of the intellectual content in the text. All authors approved the final version of the manuscript.

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