National Food and Nutrition policy: evaluating the implementation of programs in municipalities of the state of Bahia, Brazil

Política Nacional de Alimentação e Nutrição: avaliação da implantação de programas em municípios baianos

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Abstract

Introduction: The National Food and Nutrition Policy (PNAN) proposes an interdisciplinary and intersectoral approach of operation in order to integrate several actions that address nutritional problems. PNAN is organized by a set of programs and actions in different areas to be implemented in a decentralized manner by the Brazilian National Health System (SUS). *Objective:* To evaluate the implementation of PNAN programs in municipalities of the state of Bahia (Brazil) and associate them with socio-demographic indicators. *Method:* This study was conducted by three strategies: retrospective documentary research, semi-structured interviews with key informants and online structured questionnaire with local managers via the Survey Monkey platform. PNAN programs in the municipalities were statistically assessed for level of implementation and associated with sociodemographic indicators. *Results and discussion:* It was observed that although PNAN actions are broad and dynamic, they are still complex and difficult to implement. Long-term programs had a higher percentage of satisfactory implementation when compared to short-term programs. The indicators for human development, coverage of the Family Health Strategy and Food Insecurity had a statistically significant association with the existence of political programs. *Conclusions:* In the municipalities in this study, implementation of PNAN continued to prioritize actions for control of nutritional problems, e.g., iron and vitamin A deficiency, to the detriment of actions for promotion of healthy eating and prevention of nutritional problems.

Resumo

Introdução: A Política Nacional de Alimentação e Nutrição (PNAN) propõe uma atuação de caráter interdisciplinar e intersetorial, com o intuito de integrar as diversas ações para enfrentamento dos agravos nutricionais, organizado por uma série de programas e ações em diferentes vertentes, a serem implementados de maneira descentralizada, junto ao Sistema Único de Saúde. *Objetivo:* avaliar a implantação de programas da PNAN em municípios baianos e relacioná-los a indicadores sociodemográficos. *Método:* pesquisa documental retrospectiva, entrevistas semiestruturadas com informantes-chave e questionário estruturado on-line com gestores locais, via plataforma Survey Monkey. As ações do âmbito municipal foram então avaliadas quanto ao grau de implantação e os resultados foram associados com indicadores sociodemográficos, com uso de testes estatísticos. *Resultados e discussão:* A caracterização da PNAN e suas ações revelaram o quanto a política é ampla e dinâmica e por isso também complexa e de difícil implantação. Os programas de maior tempo de existência apresentaram maior porcentual de implantação satisfatória nos municípios com relação às ações/programas mais recentes. Os indicadores de desenvolvimento humano, cobertura da Estratégia de Saúde da Família e de Insegurança Alimentar apresentaram associação estatisticamente significante com a existência de programas da política. *Conclusões:* Pelos resultados obtidos neste estudo, e considerando os municípios pesquisados, permanecem sendo priorizadas na implantação da PNAN ações de controle dos agravos nutricionais, como deficiência de ferro e de vitamina A, em detrimento de ações de promoção da alimentação saudável e prevenção de problemas nutricionais.

Palavras-chave: Política Nutricional. Descentralização. Saúde Pública. Promoção da Saúde.

Introduction

Brazilian government National Food and Nutrition Policy (PNAN, in the Portuguese abbreviation), implemented in 1999 and updated in 2011, represents the proposal of an interdisciplinary and intersectoral policy that aims to integrate various actions to address nutritional diseases as part of Brazilian government National Health Promotion Policy (PNPS, in the Portuguese abbreviation). It is inserted, at the same time, in the context of Food and Nutrition Security and Brazilian government Human Right to Adequate Food (DHAA, in the Portuguese abbreviation).[1-3]

This is a pioneering proposal in the sector, which proposes to deal with a complex scenario of nutritional profile, in which coexist malnutrition, micronutrient deficiency, overweight and chronic non-communicable diseases (NCDs) in the same communities and often in the same household.[4, 5] In this way, it proposes a series of programs and actions in different aspects ranging from health promotion to integral care to nutritional diseases settled.

These actions and programs should be organized in a decentralized manner, together with Brazilian government Unified Health System (SUS, in the Portuguese abbreviation), with basic health care as a privileged space for its development. With this, some longitudinal and territorial care is assumed, taking into account the social determinants involved in the health-disease process. In this context, it is the responsibility of the three spheres of management – federal, state and municipal – to implement the policy. However, it is in the local context that the proposal becomes effective.

However, the process of policy decentralization is not linear and presents a set of elements such as actors, interests, resources, structure, among others that, as an assumption, modify public policies.[6] Moreover, the evaluative culture of public actions and their institutionalism in Brazil are still incipient, which makes it difficult to read more closely the development of actions in federative expansions.

A macro-structural analysis of PNAN points out to advances and challenges to its effectivity. Among the advances are the configuration and development of food and nutrition surveillance; regular production of information on nutritional status by means of population-based surveys; building a healthy food promotion agenda; and training human resources. Institutional aspects of the area, organization of the work process, financing and social control can be highlighted as main challenges.[7]

Thus, it is important to know in fact which of these innumerable initiatives are implemented at local levels and what their degree of implementation is in order to understand how PNAN is designed in such sites, recognizing its scope and limitations. The intention therefore is to evaluate the implementation of PNAN programs in municipalities in the Brazilian state of Bahia according to the degree of implementation and relating them to sociodemographic indicators.

Methodology

This is a qualitative-quantitative study carried out in municipalities in the Brazilian state of Bahia. The state is made up of 417 municipalities, most of which are small in size, and its capital is the city of Salvador.[8] In Brazilian government National Home Sample Survey (PNAD, in the Portuguese abbreviation)(2009), all northeastern states showed proportions lower than those recorded for the Food and Nutrition Security national average (69.8%). The state of Bahia presented 58% food security, with the remaining 42% at some level of food insecurity.[9] The Human Development Index (HDI) is 0.660, considered average, ranking in the 22nd position in the country.[10]

The methodology was divided into three moments. Moment 1 focused on investigating the programs that integrate PNAN in the sphere of the government Union, as foreseen in the policy documents. Retrospective documentary research on online pages and in institutional documents of the Brazilian Ministry of Health was used as a method, included in the PNAN period and during the study period (1999-2015). The research was conducted between September 2014 and September 2015.

Moment 2 characterized the state sphere performance in policies management. A semi-structured interview was conducted with a key informant from the food and nutrition technical area at the State Department of Health. Moment 3 identified actions and programs implemented in the municipalities of Bahia by means of a structured online questionnaire made available on (online survey development cloud-based software as a service company) SurveyMonkey and semi-structured interviews with key (manager or technical manager) informants of the municipalities benefiting from Brazilian government National Health Fund for Food and Nutrition Actions (FAN, in the Portuguese abbreviation).

The study domain initially consisted of 417 municipalities in Bahia, which were electronically contacted. Of these, a total of 55 answered the questionnaire. All participants accepted to be part of the research by signing or online accepting an Informed Consent Form (ICF). This research received a favorable opinion from the Research Ethics Committee (REC) of the School of Nutrition at Brazilian university *Universidade Federal da Bahia*, document no. 1,231,580 of 2015.

Each program/action were investigated from the following variables: presence/absence of programs, local funding of actions, place of accomplishment (if carried out in all health care units), planning practices and evaluation of actions. In order to evaluate the programs level of implementation, some classification was proposed so that each variable would be scored with 2 points, adding 10 possible points, in order to obtain the following results: Not implemented, 0 (zero) point; insufficient implementation, from 2 to 4 points; satisfactory implementation, from 6 to 8 points; and complete implementation, 10 points. The result obtained refers to each program implementation degree by municipality.

In Moment 2 these variables were related to indicators of population size, Municipal Human Development Index (MHDI), Food and Nutrition Security (FNS), Brazilian government Family Health Strategy (ESF, in the Portuguese abbreviation) coverage, and nutritional status of children under 5 years of age.[11]

Population size is one of the indicators applied in evaluation studies in the health care area, associated to actions performed in primary health care.[12, 13] For a classification according to population size, the municipalities were organized based on the model presented by Brazilian Institute of Geography and Statistics (IBGE in the Portuguese abbreviation)[14] (Chart 1) and dichotomized for association analysis.

Chart 1. Indicators and classification categories.

Indicators	Categories
Population size	Very small: population of up to 20,000 inhabitants Small: population of 20,001 to 50,000 inhabitants Average: population of 50,001 to 100,000 inhabitants Large: population with more than 100,000 inhabitants
MHDI	Low: 0.00 to 0.49 Average: 0.50 to 0.79 High: 0.80 to 1.0
FNS (the municipality performance percentage in relation to the possible total of points)	Food and Nutrition Security: 75 to 100% Mild Food Insecurity: 50 to 74.9% Moderate Food Insecurity: 25 to 49.9% Serious Food Insecurity: 0 to 24.9%
ESF coverage	High: > 70% Average: 70% – 50% Low: < 50%

Source: [9, 10, 16, 18]

MHDI is an internationally recognized index and follows the three dimensions of human development: longevity, education and income. It has long been used in social studies, since it includes other aspects, besides the economic one. For this reason, it is considered a transparent and simplified indicator.[15] The index ranges from 0 to 1, the closest being 1, an indicator of a higher level of human development. Data from the Atlas of Human Development in Brazil from the United Nations Development Program (UNDP) were used.[10]

FNS is both a guideline and a principle of PNAN, because it is a transversal element in its actions. For this association, the study developed by Pereira[16] was used which, based on the application of an indicators protocol, assessed FNS status in 57 municipalities in Bahia, organized according to population size. This protocol used secondary municipal data available in public access databases and measured FNS in four dimensions – availability, access and consumption of food and biological use of nutrients –, classifying the municipal status in: FNS; Mild Food Insecurity, Moderate Food Insecurity, and Serious Food Insecurity.[16, 17]

Also according to PNAN, Basic Health Care is the privileged locus for the development of actions. In this field of health care, ESF is understood as a reorientation strategy of the service model, which emphasizes community and longitudinal work. The ESF percentage of population coverage was used, with data available on the Department of Basic Care portal,[18] presented in several studies as an indicator for the evaluation of basic health care.[12, 19] The estimation of population coverage of family health care teams in the territory is obtained by calculating the number of ESF x 3,450/IBGE population, with a coverage limiter of 100%.

Data analysis was performed through the 15.0 version IBM SPSS Statistics software package by means of an exploratory or descriptive analysis of the study main variables, which were categorical or numerical. Chi-square test was applied in bivariate analyzes to verify differences in proportions. And the Student's t-test was applied to evaluate the possible associations between the existence of the program and the nutritional profile of children under 5 years. The $p < 0.05$ values were considered as statistically significant results.

Results

The Brazilian government National Food and Nutrition Policy (PNAN, in the Portuguese abbreviation) design

PNAN has emerged after a history of initiatives in the food and nutrition area, including programs that were already being developed, such as Brazilian government Food and Nutrition Surveillance System (SISVAN, in the Portuguese abbreviation), presented in new formats, besides including a series of new initiatives demanded by the population's epidemiological and nutritional profile, with a view to developing and expanding the scope of public actions in the area.

Based on the policy, four PNAN action lines were identified, which encompass a series of programs and actions. The first axis, the Food and Nutrition Surveillance, includes actions aiming to guarantee the information necessary to monitor the population's nutritional and dietary status, such as incentives to research and population surveys. For this line, the program developed by the municipality is SISVAN, together with *Programa Bolsa Família* (Family Allowance Program, a Brazilian government social welfare program; PBF, in the Portuguese abbreviation), which

provides conditionalities in the health sector, including monitoring nutritional status of beneficiary children and women.

The second axis is Health Promotion, which includes educational initiatives such as food guides and Food and Nutrition Education (FNE) actions. In addition to these, there is the Brazilian government Healthy Weight Program, an initiative aimed at professionals from the Ministry of Health and for Brazilian government National Health Surveillance Agency (ANVISA, in the Portuguese abbreviation) – provided for in the policy but of a broader scope in various sectors. At the municipal level, actions by FNE and the Brazilian government Health at Schools Program (PSE, in the Portuguese abbreviation) stand out, which aim at an articulation between Schools and the Basic Health Care Network through a series of actions, among which stand out those in the food and nutrition area, guided by PNAN.

The third axis is Brazilian government Prevention and Control of Nutrition Disorders, which include National Iron and Folic Acid Supplementation Program, National Vitamin A Supplementation Program, Fortification Strategy for Infant Feeding with Micronutrient Powders (called NutriSUS) and salt iodination. These programs are developed at municipal levels. Also included in this axis are the Brazilian Ministry of Health *Care Lines*, aimed at organizing the health care network for cases of malnutrition and chronic diseases, as well as nutritional surveillance in cases of beriberi. And more recently actions aimed at individuals with Special Dietary Needs have emerged, aiming to guarantee assistance to this public. This is also an initiative developed locally.

The fourth axis – that of Research, Innovation and Knowledge – includes incentives for research to Brazilian Collaborating Centers in Students' Food and Nutrition (CECANE, in the Portuguese abbreviation) and Brazilian government Unified Health System Nutrition Network (RedeNutri, in the Portuguese abbreviation), a digital information network on food and nutrition. This scope of actions, despite counting on municipal collaborations, does not include activities under municipal management responsibility.

According to the policy, the state scope should provide technical advice and institutional support to municipalities and regional health care centers in the process of management, planning, execution, monitoring and evaluation of food and nutrition programs and actions, in addition to training human resources and allocating state resources to make up the tripartite financing for implementation of the policy in the state.

PNAN was implemented in the state simultaneously at the national level. It was identified, from the interview carried out, that the state management especially takes on the monitoring of programs through coverage and goals indicators, with incentive to their implementation.

> [...] PNAN itself is implemented and has been implemented over time, being strengthened and improved. Now, what we realize is that we still have a lot to do [...] The Vitamin A program, for example... there is the distribution of capsules but there is still a gap regarding the information

system. Many do not record the information in the system. So we still need to qualify and quantify the records in the information system (a state health manager, 2015).

Implementation of programs at the local level

Regarding the development of actions at the municipal level, 80% (44) of the managers/people in charge stated that the policy was implemented in the municipality. And the remaining 20% (11) did not present the PNAN established, even though they mentioned the existence of specific programs. 96.4% (53) of the municipalities would have a technician in charge of the actions, with the main training courses being: nurses (29), nutritionists (19) or other higher education professionals (4). Two of the municipalities would not have it.

The most frequent actions in the cities surveyed were PSE, the National Iron and Folic Acid Supplementation Program, National Vitamin A Supplementation Program and monitoring the *Programa Bolsa Família* health conditionalities. More recent initiatives involving the system health care, such as Brazilian government Nutritional Care for Childhood Malnutrition (ANDI, in the Portuguese abbreviation), the chronic disease Care Line and Attention to Special Dietary Needs, have had fewer mentions. FNE actions were indicated as existing in more than 80% of the cities surveyed. However, the present study has not investigated how these actions were constituted and in which environments. Permanent education activities, such as Brazilian government Strategy for Breastfeeding and Feeding Brazil (EAAB, in the Portuguese abbreviation), were not very present accounting for only 14.5% (8) of the sample.

Results on the programs coverage by health care units have indicated a good distribution of the actions by the territory, developed in more than 50% of the units for all the programs.

Regarding the application of municipal resources in the development of activities, all municipalities reported the use of their own resources in at least one of the actions, varying according to the action. PSE and the National Iron and Folic Acid Supplementation Program are the programs that received the most investments from the municipality, according to the interviewees. Considering only the municipalities that have the programs, planning was reported in approximately 50% of the municipalities. As for the evaluation, it was less mentioned.

When simultaneously considering all the variables to evaluate the programs implementation degree, it was observed that initiatives of greater longevity reached a higher percentage in the degree of satisfactory implementation in the municipalities, especially when compared to the most recent initiatives (Table 1). The complete implementation is still small, and *Bolsa Família* and PSE programs have the highest percentages. The Strategy for Breastfeeding and Feeding Brazil (EAAB) and the Care Lines for chronic diseases were the ones with the lowest percentage of complete implementation, with 5.44% (3) of presence of these activities.

Table 1. Degree of implementation of PNAN programs at municipal levels (Bahia, 2015).

Programs/Actions	Not implemented	Insufficient implementation	Satisfactory implementation	Complete implementation	Total
			N %		
National Vitamin A Supplementation Program	1	14	32	8	55
	1.82	25.45	58.18	14.54	100
National Iron and Folic Acid Supplementation Program	2	9	30	14	55
	3.64	16.35	54.54	25.45	100
Brazilian government Health at Schools Program	0	5	30	20	55
	0.0	9.08	54.54	36.35	100
Nutritional Care for Child Malnutrition	45	3	3	4	55
	81.82	5.44	5.44	7.26	100
Strategy for Breastfeeding and Feeding Brazil (EAAB)	47	4	1	3	55
	85.44	7.26	1.82	5.44	100
Brazilian government Food and Nutrition Surveillance System	9	9	25	12	55
	16.35	16.35	45.44	21.82	100
Food and Nutrition Education	8	17	17	13	55
	14.54	30.91	30.91	23.64	100
Follow-up of the *Programa Bolsa Família* health conditionalities	2	7	28	18	55
	3.64	12.73	50.91	32.73	100
Fortification Strategy for Infant Feeding with Micronutrient Powders	20	12	19	4	55
	36.35	21.81	34.54	7.26	100
Attention to Special Dietary Needs	40	5	6	4	55
	72.73	9.08	10.9	7.26	100
Chronic Disease Care Line – Obesity	41	4	7	3	55
	74.55	7.26	12.73	5.44	100

Source: Online research.

Programs and association with sociodemographic indicators

Of the municipalities investigated, 63.3% (35) have low MHDI, followed by 34.5% (19) with a average MHDI and 1.8% (1) with high MHDI.[10] According to the population size, 50.9% (29) were classified as small urban I and 38.2% (22) as small urban II. Two others were identified as medium-sized and four as large-sized.[9]

Regarding ESF estimated population coverage, the area where most of PNAN programs are developed, 87.3% (50) of the municipalities presented coverage above 70%, classified as high. The other 9.1% (5), average coverage, and 3.6% (2), low coverage.[18] Regarding Food and Nutrition Insecurity (FNI) status in the municipalities, 74.5% (43) indicated Moderate FNI; 20.0% (11), Mild FNI; and 5.5% (3), Serious FNI.[16] None of the municipalities presented any situation of Food and Nutrition Security.

The high MHDI pointed out significant association with the programs NutriSUS and Attention to Special Dietary Needs (p = 0.013 and p = 0.026) (Table 2). The presence of the NutriSUS program, the monitoring of the PBF health conditionalities and the Attention to Special Dietary Needs presented an expressive association in municipalities with greater Family Health Strategy coverage (p = 0.032; p = 0.029; p = 0.000).

Table 2. Association between PNAN programs and social indicators. Bahia, 2015.

Variables	MHDI					ESF coverage				
	High MHDI		Low MHDI			Coverage ≥ 70%		Coverage < 70%		
Policies/ Programs	Yes N (%)	No N %	Yes N %	No N %	p	Yes N %	No N %	Yes N %	No N %	p
PNAN	18 40.9	2 18.2	26 59.1	9 81.8	0.161	37 84.1	11 100	7 15.9	0 0	0.157
Iron / Folic Acid	20 37.7	0 0.0	33 66.3	2 100	0.276	46 86.8	2 100	7 13.2	0 0	1
VIT A	20 37	0 0.0	34 63	1 100	0.446	47 87	1 100	7 13	0.0	0.700
ANDI	4 36.4	16 37.2	7 63.8	27 62.8	0.747	9 81.8	38 88.4	2 18.2	5 11.6	2
EAAB	4 50	15 32.6	4 50	31 67.4	0.263	5 62.5	42 91.3	3 37.5	4 8.7	0.073
SISVAN	18 39.1	2 22.2	28 60.9	7 77.8	0.335	39 84.8	9 100	7 15.2	0 0	1
FNE	19 41.3	1 12.5	27 58.7	7 87.5	0.220	39 84.8	7 15.2	8 100	0 0	2
PBF	18 34	1 100	35 66	0 0	0.163	47 88.7	1 100	6 11.3	0 0	0.029*
NutriSUS	17 48.6	3 15	18 51.4	17 85	0.013*	28 80	20 100	7 20	0 0	0.032*
ANAE	9 60	10 25.6	6 40	29 74.4	0.026*	10 66.7	38 97.4	5 33.3	1 2.6	0.00 *
Lc Obesity	6 42.9	14 34.1	8 57.1	27 65.9	1	11 78.6	37 90.2	3 21.4	4 9.8	0.258

Table 2 (continuation)

Variables	FNI status					Population size				
	Mild FNI		Moderate or serious FNI			> 100,000 inhabitants		< 100,000 inhabitants		
Policies/ Programs	Yes N %	No N %	Yes N %	No N %	p	Yes N %	No N %	Yes N %	No N %	p
PNAN	9 20.5	2 18.2	35 79.5	9 81.9	0.666					
Iron / Folic Acid	11 20.8	0 0	42 79.2	2 100	0.471	4 7.5	0 0.0	49 92.5	2 100	0.687
VIT A	11 20.4	0 0.0	43 79.6	1 100	0.614	4 7.4	0 0.0	50 92.6	1 100	0.777
ANDI	6 54.5	5 11.6	5 45.5	38 88.4	0.006*	2 18.2	2 4.5	9 81.8	42 95.5	0.119
EAAB	3 37.5	8 17.4	5 62.5	38 82.6	0.372	2 25	2 4.3	6 75	44 95.7	0.111
SISVAN	10 21.7	1 11.1	36 78.3	8 88.9	0.466	4 8.7	0 0.0	42 91.3	9 100	0.358
FNE	11 23.9	0 0	35 76.1	8 100	0.261	4 8.7	0 0.0	42 91.3	8 100	0.656
PBF	11 20.8	0 0	42 79.2	1 100	0.771	6 5.7	0 0.0	50 94.3	1 100	0.001 *
NutriSUS	8 22.9	3 15	27 77.1	17 85	1	4 11.4	0 0.0	31 88.6	20 100	0.116
ANAE	5 33.3	6 15.4	10 66.7	33 84.6	0.296	3 20.0	0 0.0	12 80	39 100	0.000 *
Lc Obesity	4 28.6	7 17.1	10 71.4	34 82.9	0.353	2 14.3	2 4.9	12 85.7	39 95.1	0.242

Source: Online research. [9, 10, 16, 18]

Caption:
Iron / Folic Acid: National Iron and Folic Acid Supplementation Program; VIT A: National Vitamin A Supplementation Program; ANDI: Nutritional Care for Child Malnutrition; EAAB: Strategy for Breastfeeding and Feeding Brazil (EAAB); SISVAN: Brazilian government Food and Nutrition Surveillance System; FNE: Food and Nutrition Education; PBF: *Programa Bolsa Família* (Family Allowance Program, a Brazilian government social welfare program); NutriSUS: Fortification Strategy for Infant Feeding with Micronutrient Powders; ANAE: Attention to Special Dietary Needs; Lc Obesity: Care Line for prevalence of obesity in people

Municipalities with Serious FNI presented a statistically significant association with the low presence of the Nutritional Care for Child Malnutrition program ($p = 0.006$). The other variables did not show statistically significant associations. Regarding PSE, it was not possible to verify an association since it was present in 100% of the municipalities.

For the National Iron Supplementation Program, it was observed that the municipalities that have such action had a higher average percentage of prevalence of thinness in children (Excess weight $p = 0.435$; Thinness $p = 0.000$; Eutrophy $p = 0.795$), as it was found in municipalities where no actions of Food and Nutrition Education are carried out (Excess weight $p = 0.382$; Thinness $p = 0.031$; Eutrophy $p = 0.657$).

Municipalities that did not carry out the monitoring of the health conditionality of the *Bolsa Família* program had a higher average percentage of thinness (Excess weight $p = 0.575$; Thinness $p = 0.006$; Eutrophy $p = 0.406$); while municipalities in which there was no NutriSUS they presented a higher average percentage of excess weight (Excess weight $p = 0.034$; Thinness $p = 0.544$; Eutrophy $p = 0.301$).

Discussion

Characterization of PNAN and its actions reveals how wide and dynamic the policy is, which makes it complex and difficult to implement. This evaluation has sampling limitations, which is a particularity of this type of investigation, since it involves managers' availability in generating information. However, it presents significant and relevant results for the area.

Survey of the initiatives proposed by the policy and the implementation of programs at local levels, a sphere in which actions reach or not their destination, the user, revealed considerable discrepancies. Proposing an individualized performance on different fronts is a differential in PNAN after a series of low effectiveness and selective experiences in the area, previous to this perspective. However, the gap between federal and local management is still an obstacle in the public sphere.

The longest-lived programs had a higher percentage of satisfactory implementation in the municipalities in relation to the most recent actions/programs, which indicates a positive movement in consolidating the actions. However, considering this same criterion, longer actions should indicate a higher percentage of complete implementation, which was not observed. On the other hand, given the nutritional transition and recent focus on health promotion and healthy eating, this result may suggest difficulties in introducing differentiated strategies.

Studies on the current health care model mention some crisis in the health system characterized by a mismatch between epidemiological demands marked by chronic conditions and an organization aimed at responding to acute conditions.[20] This seems to be reflected also in food and nutrition actions, which have prioritized actions for conditions of nutritional disorders already established to the detriment of those that promote healthy lifestyle and diet.

Taking into account elements used to classify implementation, planning and evaluation are presented as obstacles or poorly incorporated practices. In Brazil, planning and evaluation are still scarce in public administration. Planning, when it happens, is still seen as a bureaucratic step away from reality[21]. And evaluation, as a tool to support management in improving decision-making processes, is little used. As highlighted by Henrique et al.,[22] there is a lack of an "evaluation culture," which may compromise results expected in implementing programs.

Proposals of shorter creation time have had high non-implementation values, indicating low adherence to new initiatives. The effort under federal management is fundamental in the development of PNAN and food and nutrition actions over the years, but it does not guarantee that actions are implemented at local levels, since these are endowed with autonomy in the administration of programs. Arretche[23] problematizes the interpretation given to decentralized management in Brazil, pointed as a democratic configuration, which would enable the realization of progressive ideals such as equity, social justice, reduction of clientelism and increase of social control over the State. She does not deny that such objectives can be achieved, but argues that several of the expectations resting on this set of positive associations are not some necessary and automatic result of decentralization.

It is not within the scope of this study to analyze decentralization but it is possible to contribute to the discussion by detecting the distance between a central policy proposal and its expression in local instances – where they are executed – as in the care lines for cases of malnutrition and obesity. And when it comes to care lines, other demands emerge, such as the reduced use of these strategies in health services and the difficulty of articulating the network in a continuous flow of serving the user.[24, 25]

The positive association found between higher MHDI and higher average percentage of overweight, with the existence of programs NutriSUS and Attention to Special Dietary Needs in the municipalities, can be related to a better economic condition of the municipalities, since they are actions that demand local investments. NutriSUS provides for the creation of full-time day care centers as well as actions to attend to needs and provides for the purchase or financing of food for special publics, such as those with food intolerances.

There was also a greater presence of monitoring the *Bolsa Família* program health conditionalities in municipalities with greater ESF coverage. In this sense, it is possible to consider that primary care is the environment where this action happens. Taking into account the prerogative of municipalities to take responsibility for offering services related to conditionalities, the different municipal administrative capacities may reflect different degrees of assistance offered[26] as well as serving the users of the program presupposes the organization of some Basic Care to guarantee the services offer, which can take place in some greater or smaller proportion.[27]

The association between the low presence of the Nutritional Care for Child Malnutrition Program and the municipalities with severe FNI may indicate some low investment in social policies and/or economic incapacity, which has had repercussions on the municipalities' FNI situation, as well as on the very prevalence of malnutrition among children, an indicator and result of FNI. It is shown that the measure of Food Security has been directly related to the families' socioeconomic conditions.[28, 29] Vieira et al.,[30] from a study carried out in the Brazilian city of São Paulo, have stated that categories of food insecurity have been considered potential determinants of child malnutrition.

The National Iron Supplementation Program was related to the highest average percentage of prevalence of thinness in children. Contrary to what may seem, this result may be associated with greater implementation of the program in municipalities where there is greater social vulnerability. In a specific study, anemia and iron deficiency correlated with a number of social determinants,[31] which are related to low rates of child development, such as thinness in children.

Regarding Food and Nutrition Education actions, this association was contrary, being less present the higher the average percentage of prevalence of thinness in children. It should be noted that FNE is some means for achieving Food and Nutrition Security, encompassing actions aimed at reducing the various manifestations of food insecurity.[32] In this sense, the absence of these actions, along with other determinants, may be related to the greater percentage of prevalence of thinness in children.

Considering the Brazilian experience of decentralization, the absence of induction and incentives from the federal sphere may be a factor related to the failure of the actions to be implemented. Based on the results obtained in this study, and considering the municipalities participating in the research, priority is given to actions to control injuries as a result of actions aimed at intervention in causal factors and related to nutritional disorders. Therefore, it is challenging to develop, foster and articulate actions for care in a scenario of extreme social inequality.

Conclusion

PNAN is a pioneering policy resulting from successful and unsuccessful experiences prior to it, as well as mobilizations that have raised the idea of expanding its perspective. It has thus taken on a strategic role in the health sector, taking into account the population's nutritional profile and aiming at Brazilians' Food and Nutrition Security through actions on several fronts, which have required the development of programs with different approaches. This amplitude enriches policies but also increases their complexity, considering the (physical, economic and human resources) structure necessary for their development.

Such complexity is little explored in studies in the area. By raising factors that influence deployment and draw a panorama of policies in the state, one collaborates to some greater understanding of how PNAN is designed for users in municipal scopes. More than this, results discussed here reveal important advances and limits to the implementation of PNAN actions. Among the limits are the diversification of actions due to reproduction of old care strategies, modifications in traditional health care work formats to include new proposals, low encouragement for more recent initiatives, management oriented to problems with planning and evaluation, financing and institutionalization of the food and nutrition area in primary care. Among the facilitators are federal encouragement and investment of actions by some fund to fund transfer and expansion of basic health care.

The social determination of nutritional disorders is reaffirmed when verifying the relationship between indicators and the existence of programs. Ensuring the implementation of all PNAN programs is like strengthening social rights. Taking into account these elements, strategies should be devised to disseminate more recent policy initiatives, especially those that propose non-traditional forms of work, such as the care lines, Food and Nutrition Education actions and professional training in networks, and rethinking the limits of actions that have been in place for the longest time.

Gaps were observed in the production of knowledge from the empirical field on the implementation of PNAN programs with which it was difficult to compare with similar results. The present paper opens, however, to a series of new research demands in relation to policies, indicating theoretical vacuums that merit further investigation.

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