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Coverage of food intake assessment in the Brazilian Food and Nutrition Surveillance System: 2008 to 2013

Cobertura da avaliação do consumo alimentar no Sistema de Vigilância Alimentar e Nutricional Brasileiro: 2008 a 2013

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ABSTRACT: ***Introduction:*** In Brazil, the Food and Nutrition Surveillance System (*Sistema de Vigilância Alimentar e Nutricional* – SISVAN) provides continuous data on the nutritional status and food intake of the population user of primary health care to elaborate actions, programs, and policies. ***Objective:*** This article describes the percentage of registration in the system, percentage of use, and coverage of food intake monitoring between 2008 and 2013. ***Methods:*** This is an ecological study that characterizes the registered population according to federation units, macro-regions, and/or life stages. The indicators used were percentage of registration and use and coverage. The analysis used descriptive statistics, a linear regression model, and Spearman's correlation. ***Results:*** In 2010, approximately 100.00% of the cities had at least one individual registered in the system while the percentage of use was 22.4%. National coverage ranged from 0.13 to 0.4% between 2008 and 2013, with a statistically significant increasing trend. The Midwest showed the highest regional coverage. All life stages presented increasing coverage trend, especially children and pregnant women. ***Conclusion:*** Despite the continuous data collection, food intake assessment proved to be incipient, and its distribution in the cities was low. Implementation of the National Food and Nutrition Policy can be enhanced by overcoming central issues, such as physical structure and training of professionals, which prevent the progress of system consolidation.

Keywords: Nutrition programs and policies. Nutritional surveillance. Public health care coverage.

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RESUMO: ***Introdução:*** No Brasil, o Sistema de Vigilância Alimentar e Nutricional (SISVAN) fornece dados contínuos sobre o estado nutricional e o consumo alimentar da população usuária da atenção básica à saúde para a formulação de ações, programas e políticas. ***Objetivo:*** Neste artigo, descreve-se o percentual de cadastramento no sistema, o percentual de utilização e a cobertura do acompanhamento de consumo alimentar, entre 2008 e 2013. ***Métodos:*** Trata-se de um estudo ecológico, em que a população registrada é descrita segundo unidades da federação, macrorregiões e/ou fases do curso da vida. Os indicadores utilizados foram: percentual de cadastramento e de utilização e cobertura. A análise foi realizada por meio de estatística descritiva, modelo de regressão linear e correlação de Spearman. ***Resultados:*** Em 2010, cerca de 100,00% dos municípios apresentou indivíduo(s) cadastrado(s) e o percentual de utilização foi de 22,4%. A cobertura nacional variou de 0,13 a 0,4%, entre 2008 e 2013, com tendência estatisticamente significativa de aumento. O Centro-Oeste apresentou as mais altas coberturas regionais. Todas as fases do curso da vida apresentaram tendências de aumento da cobertura, com destaque para crianças e gestantes. ***Conclusão:*** Apesar da continuidade na coleta dos dados, a avaliação do consumo alimentar mostrou-se incipiente e pouco capilarizada nos municípios. A implementação da Política Nacional de Alimentação e Nutrição pode ser potencializada mediante a superação dos problemas centrais, como estrutura física e capacitação dos profissionais, que impedem o avanço da consolidação do sistema.

Palavras-chave: Programas e Políticas de Nutrição e Alimentação. Vigilância alimentar e nutricional. Cobertura de serviços públicos de saúde.

INTRODUCTION

In Brazil, the National Food and Nutrition Surveillance System (*Sistema Nacional de Vigilância Alimentar e Nutricional* – SISVAN) is a Health Information System (HIS), part of the Food and Nutrition Surveillance (*Vigilância Alimentar e Nutricional* – VAN) strategies, whose purpose is to provide continuous data on the nutritional status and food intake (FI) of the population user of primary care (PC) in the public health system (*Sistema Único de Saúde* – SUS) to elaborate actions, programs, and policies that promote proper and healthy eating habits, such as prevention and treatment of nutritional diseases[1,2].

The SISVAN initiative emerged internationally in the second half of the 20th century focusing on fighting food and nutritional deficiencies in underdeveloped countries[3]. In Brazil, after several pilot projects, the extinct National Food and Nutrition Institute (*Instituto Nacional de Alimentação e Nutrição* – INAN), connected to the Ministry of Health (MOH), nationally implemented SISVAN by Directive No. 1,156/90[4], and VAN was established on SUS by Law No. 8,080/90[5]. The National Food and Nutrition Policy (*Política Nacional de Alimentação e Nutrição* – PNAN) provides for VAN in its third guideline as a guiding framework in planning nutritional care on SUS to integrate the assistance[6].

The monitoring of FI markers on VAN is a support tool for nutritional care, which facilitates the identification of gaps and opportunities in promoting proper and healthy eating habits both individually and collectively[2]; and has become increasingly relevant in the current scenario of nutritional transition. In the past decades, child malnutrition progressively

decreased in most of the country, followed by a fast increase in obesity and associated chronic conditions in different life stages, as well as the persistence of specific nutritional deficiencies[7,8].

After the 1974–1975 National Household Income Survey (*Estudo Nacional de Despesa Familiar* – ENDEF), the first to evaluate FI in the country, an increasing number of VAN sources have described the changes in food acquisition and dietary patterns[9-19]. According to the 2008–2009 Household Budget Survey (HBS), the participation of fresh foods, minimally processed foods, and culinary ingredients – characteristic of nutritionally complete meals – in the total of calories consumed by Brazilian families decreased when compared to snacks and fast food – low in fibers and micronutrients and rich in fat, sodium, and sugar –, which increased[14]. Currently, the increase in production, supply, and participation of ultra-processed, highly caloric, palatable, convenient, and cheap products represents the main change in the global food system associated with the rise in obesity[20-22].

One the first local proposals for intake monitoring was the Basic Food Basket by SISVAN, result of the 1994 Eating Habits Survey of Teresina (*Pesquisa de Hábito Alimentar de Teresina* – PHAT), in which a group of foods and culinary items representing the dietary profile of a region had its cost monitored by SISVAN from Piauí (SISVAN/PI)[23]. However, the national registry of FI markers on SISVAN started only after implementation of the online version of the system – SISVAN Web – in 2008. The data collected were recorded in specific forms of FI markers available for children younger than six months, aged six months to two years, two to five years, and five years or older. For children younger than five years, the questions focused on the previous day, and for those older than five years, the preceding seven days. They covered breastfeeding, introduction to complementary feeding, consumption of food markers, and healthy or risk behaviors for deficiency diseases or overweight[24].

The main example of application of intake data from this system to manage national food and nutrition actions is the recommendation of SISVAN indicators for children younger than two years being used as one of the parameters to monitor the National Strategy for Healthy Complementary Feeding (*Estratégia Nacional para Alimentação Complementar Saudável* – ENPACS), currently part of the Breastfeed and Feed Brazil Strategy (*Estratégia Amamenta e Alimenta Brasil* – EAAB)[25-27].

Given the relevance of the topic, the historical prioritization of population surveys as source of VAN information, the recent incorporation of the consumption component to the system, and the lack of studies about the coverage of this indicator, the present study aimed to describe the percentage of registration in SISVAN Web, percentage of use of the FI component, and coverage of FI monitoring, according to years, macro-regions, and life stages, between 2008 and 2013.

METHODS

This work is an epidemiological study of ecological design that describes the population treated in the PC of SUS and registered in SISVAN Web, between 2008 and 2013, according to life stages and/or federation units (FUs) and macro-regions.

The variables used originated from SISVAN Web secondary data, after the request of the database from the General Coordination of Food and Nutrition (*Coordenação Geral de Alimentação e Nutrição* – CGAN) of MOH, and public reports available on the Internet.

The indicators constructed to verify system performance related to FI monitoring were:

1. percentage of registration: percentage of cities that registered individuals in the system, obtained after dividing the number of cities with at least one registry in SISVAN Web by the total of cities, multiplied by 100;
2. percentage of use: percentage of cities that included at least one registry of FI monitoring in the system, calculated after dividing the number of cities that recorded FI monitoring data in SISVAN Web by the total of cities, multiplied by 100;
3. total coverage: percentage of individuals who had their FI monitored by SISVAN Web, resulting from the ratio between the number of individuals with FI registrations and users of SUS, multiplied by 100.

Users of SUS are the population who utilizes public and free health services and do not have health insurance, considering minimal the number of people with insurance that have their nutrition monitored by PC of SUS and those who would pay the costs of private services directly. It was calculated by subtracting the number of people with health insurance (National Regulatory Agency for Private Health Insurance and Plans / *Agência Nacional de Saúde Suplementar* – ANS)[29] from the total resident population (Brazilian Institute of Geography and Statistics / *Instituto Brasileiro de Geografia e Estatística* – IBGE)[28].

Coverage data were also stratified into pre-school children (0 to 4 years), schoolchildren (5 to 9 years), adolescents (10 to 19 years), adults (20 to 59 years), older adults (60 years or older), and pregnant women. This indicator was constructed for 2008 to 2012, due to the lack of data about the reference population stratified by age group available for 2013.

In addition, the Census and ANS databases had no information about pregnant women. For this reason, the estimate of pregnant users of SUS was calculated based on the methodology previously adopted by MOH[30], that is, multiplying the total of pregnant women estimated for the city (number of live births of the previous year + 10% of losses from abortions and under-reporting) by the percentage of fertile women users of SUS (female population aged 10 to 49 years minus female population aged 10 to 49 years with health insurance). We used the database from the Live Birth Information System (*Sistema de Informação sobre Nascidos Vivos* – SINASC) to estimate the number of pregnant women[31].

We assessed the correlation between coverage of FI monitoring and the following sociodemographic and health variables: Human Development Index (HDI) from the Atlas of Human Development in Brazil[32]; per capita Gross Domestic Product (GDP), resident population, and population density from the Technology Department of the public health

system (*Departamento de Informática do Sistema Único de Saúde* – DATASUS)/IBGE[33]; estimates of users of SUS covered by community health agents (*agentes comunitários de saúde* – ACS) and Family Health teams (*equipes Saúde da Família* – eSF) from the Department of Primary Care of the Ministry of Health (*Departamento de Atenção Básica do Ministério da Saúde* – DAB/MS)[34]; and number of nutritionists in PC and Health Care Networks (*Rede de Atenção à Saúde* – RAS) from the National Registry of Health Facilities (*Cadastro Nacional de Estabelecimento de Saúde* – CNES)[35]. Due to the lack of information in all years, we decided to conduct the correlation only for 2010.

Table 1 describes the socioeconomic and demographic variables of FUs used in the correlation.

Among the 43 equipment available on CNES considered as belonging to RAS, eight were classified as PC equipment: Health Academy, Family Health Support Center (*Centro de Apoio à Saúde da Família* – CASF), Health Center/Basic Health Unit (*Unidade Básica de Saúde* – UBS), Community Health Center, Family Health Unit, Mixed Health Unit, Mobile River Unit, and Mobile Land Unit.

We explored the estimates of temporal variation with descriptive statistics (mean and frequency) and a linear regression model, in which the total coverage was the outcome and year was the explanatory variable. We used 95%CI (confidence interval of 95%) to examine the statistical significance of temporal variations.

The relationship between coverage indicators and socioeconomic, demographic, and health variables was determined by Spearman's non-parametric correlation analysis, due to the non-normal data distribution. We adopted a significance level < 0.05. Analyses were calculated on Stata 13.1[36], and the software Tab for Windows – TabWin 3.6 b[37] produced the maps.

The Research Ethics Committee (REC) of *Faculdade de Saúde Pública da Universidade de São Paulo* (FSP/USP) approved this research under the CAAE: 43033415.7.0000.5421, in compliance with the Editorial Policy of MOH, approved by Directive No. 884/2011, which regulates the transfer of data from HIS national bases managed by the Secretariat of Health Care (*Secretaria de Atenção à Saúde* – SAS)[38].

RESULTS

Table 2 describes FUs according to health variables in 2010.

Nationally, approximately 100.00% of the cities had one or more individuals registered in the system in 2010; however, only 22.4% of the cities included at least one FI registry in SISVAN Web in the same year. The Midwest region reached 36.7% of use, while the Northeast, only 16.0% (Table 2).

Considering the period analyzed (2008 to 2013), the percentage of registration remained above 95% in all years, while the percentage of use ranged from 19.4% in 2008 to 32.5% in 2013 (data not shown).

Table 1. Characterization of Brazilian macro-regions and their respective federation units according to demographic and socioeconomic variables in 2010.

Macro-regions/ federation unit	Cities* (n)	Resident population* (inhab.)	Population density* (inhab./km^2)	HDIM FU**	Per capita GDP* (R$)
North	449	15,864,454	4.12	0.67	12,701.05
Rondônia	52	1,562,409	6.58	0.69	15,098.13
Acre	22	733,559	4.47	0.66	11,567.41
Amazonas	62	3,483,985	2.23	0.67	17,173.33
Roraima	15	450,479	2.01	0.71	14,051.91
Pará***	143	7,581,051	6.07	0.65	10,259.20
Amapá	16	669,526	4.69	0.71	12,361.45
Tocantins	139	1,383,445	4.98	0.70	12,461.67
Northeast	1,794	53,081,950	34.15	0.66	9,561.41
Maranhão	217	6,574,789	19.81	0.64	6,888.60
Piauí	224	3,118,360	12.40	0.65	7,072.80
Ceará	184	8,452,381	56.76	0.68	9,216.96
Rio Grande do Norte	167	3,168,027	59.99	0.68	10,207.56
Paraíba	223	3,766,528	66.70	0.66	8,481.14
Pernambuco	185	8,796,448	89.63	0.67	10,821.55
Alagoas	102	3,120,494	112.33	0.63	7,874.21
Sergipe	75	2,068,017	94.35	0.67	11,572.44
Bahia	417	14,016,906	24.82	0.66	11,007.47
Southeast	1,668	80,364,410	86.92	0.77	25,987.86
Minas Gerais	853	19,597,330	33.41	0.73	17,931.89
Espírito Santo	78	3,514,952	76.25	0.74	23,378.74
Rio de Janeiro	92	15,989,929	365.23	0.76	25,455.38
São Paulo	645	41,262,199	166.25	0.78	30,243.17
South	1,188	27,386,891	48.58	0.75	22,722.62
Paraná	399	10,444,526	52.40	0.75	20,813.98
Santa Catarina****	293	6,248,436	65.29	0.77	24,398.42
Rio Grande do Sul***	496	10,693,929	39.79	0.75	23,606.36
Midwest	466	14,058,094	8.75	0.76	24,952.88

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Table 1. Continuation.

Macro-regions/ federation unit	Cities* (n)	Resident population* (inhab.)	Population density* (inhab./km²)	HDIM FU**	Per capita GDP* (R$)
Mato Grosso do Sul***	78	2,449,024	6.86	0.73	17,765.68
Mato Grosso	141	3,035,122	3.36	0.73	19,644.09
Goiás	246	6,003,788	17.65	0.74	16,251.70
Distrito Federal	1	2,570,160	444.07	0.82	58,489.46
Brazil	5,565	190,755,799	22.43	0.73	19,766.33

HDIM FU: Human Development Index for Municipalities in Federation Units; GDP: Gross Domestic Product; *source of variables: Brazilian Institute of Geography and Statistics *(Instituto Brasileiro de Geografia e Estatística* – IBGE); **source of variable: Atlas of Human Development; ***one city built afterward, in 2013; ****two cities built afterward, in 2013.

Figure 1 presents the coverage maps of FI assessment between 2008 and 2013. During this period, the mean national coverage was minimal, ranging from 0.1 to 0.4% with a statistically significant increasing trend (+0.05; 95%CI 0.01 – 0.09), similarly to the Northeast (+0.04; 95%CI 0.01 – 0.08) and the Southeast (+0.06; 95%CI 0.02 – 0.11) regions (data not shown).

The Midwest and North macro-regions presented the best regional coverages in the period, and Tocantins had the highest state coverage of the country in 2012 (2.1%) The South, Northeast, and Southeast regions had the worst coverages in the period assessed, with Minas Gerais standing out from the other FUs of these regions, reaching 0.9% of coverage in 2013. Rondônia, Amapá, and Pernambuco did not reach even 0.1% of coverage in the last year (data not shown).

Table 3 shows the temporal variation of national FI coverage, according to life stages between 2008 and 2012. All age groups demonstrated statistically significant increasing trends, and, at the same time, low percentages every year. The groups that presented the best results were children (+0.42; 95%CI 0.24 – 0.60) and pregnant women (+0.41; 95%CI 0.26 – 0.57), with the highest frequencies and annual mean changes in percentage points (Table 3).

The correlation analysis between national coverage of FI monitoring by SISVAN Web and demographic, socioeconomic, and health variables, conducted in 2010, showed no statistical significance.

DISCUSSION

This study presents a broad picture of the FI monitoring done by SISVAN Web. In 2010, the percentage of registration was high (99.9%), and the percentage of cities that included at least one FI registry in the system was low (22.4%). Coverage of FI monitoring was minimal between 2008 and 2013 (0.1 to 0.4%)

The fact that more than 99.9% of the cities had at least one registration and the percentage of use was 22.4% (2010) means that, despite being connected to the system, less than

Table 2. Characterization of Brazilian macro-regions and their respective federation units according to health variables in 2010.

Macro-regions/ federation units	Population covered by ACS*	Population covered by ESF*	Percentage of registration** (%)	Percentage of use** (%)
North	12,521,530	7,998,656	100.00	27.17
Rondônia	1,332,063	872,899	100.00	13.46
Acre	605,682	439,928	100.00	13.64
Amazonas	2,342,848	1,682,314	100.00	25.81
Roraima	279,968	280,007	100.00	46.67
Pará***	6,121,656	3,091,470	100.00	47.55
Amapá	559,156	459,166	100.00	18.75
Tocantins	1,280,157	1,172,872	100.00	12.95
Northeast	46,154,929	38,688,017	99.94	16.05
Maranhão	5,829,525	5,158,039	100.00	23.50
Piauí	3,134,445	3,062,448	99.55	18.30
Ceará	7,038,189	5,867,195	100.00	23.91
Rio Grande do Norte	2,536,411	2,404,976	100.00	8.38
Paraíba	3,755,380	3,594,446	100.00	11.66
Pernambuco	7,476,302	6,023,396	100.00	19.46
Alagoas	2,420,454	2,256,794	100.00	20.59
Sergipe	1,924,642	1,741,156	100.00	4.00
Bahia	12,039,581	8,579,567	100.00	12.47
Southeast	36,673,748	32,034,013	100.00	25.60
Minas Gerais	14,031,495	13,370,423	100.00	27.20
Espírito Santo	2,472,947	1,805,690	100.00	25.64
Rio de Janeiro	6,287,126	5,468,358	100.00	21.74
São Paulo	13,882,180	11,389,542	100.00	24.03
South	15,358,816	13,977,014	100.00	20.12
Paraná	6,301,140	5,816,638	100.00	22.81
Santa Catarina****	4,797,481	4,274,250	100.00	17.06
Rio Grande do Sul***	4,260,195	3,886,126	100.00	19.76
Midwest	9,132,781	7,370,961	100.00	36.70

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Table 2. Continuation.

Macro-regions/ federation units	Population covered by ACS*	Population covered by ESF*	Percentage of registration** (%)	Percentage of use** (%)
Mato Grosso do Sul***	2,220,905	1,446,249	100.00	19.23
Mato Grosso	2,317,066	1,910,276	100.00	46.81
Goiás	4,046,835	3,600,436	100.00	36.18
Distrito Federal	547,975	414,000	100.00	100.00
Brazil	119,841,804	100,068,661	99.98	22.41

ACS (*agentes comunitários de saúde*): community health agents; ESF (*Estratégia Saúde da Família*): Family Health Strategy; *source of variables: Department of Primary Care of the Ministry of Health (*Departamento de Atenção Básica do Ministério da Saúde* – DAB/MS); **source of variables: National Food and Nutrition Surveillance System (*Sistema Nacional de Vigilância Alimentar e Nutricional* – SISVAN); ***one city built afterward, in 2013; ****two cities built afterward, in 2013.

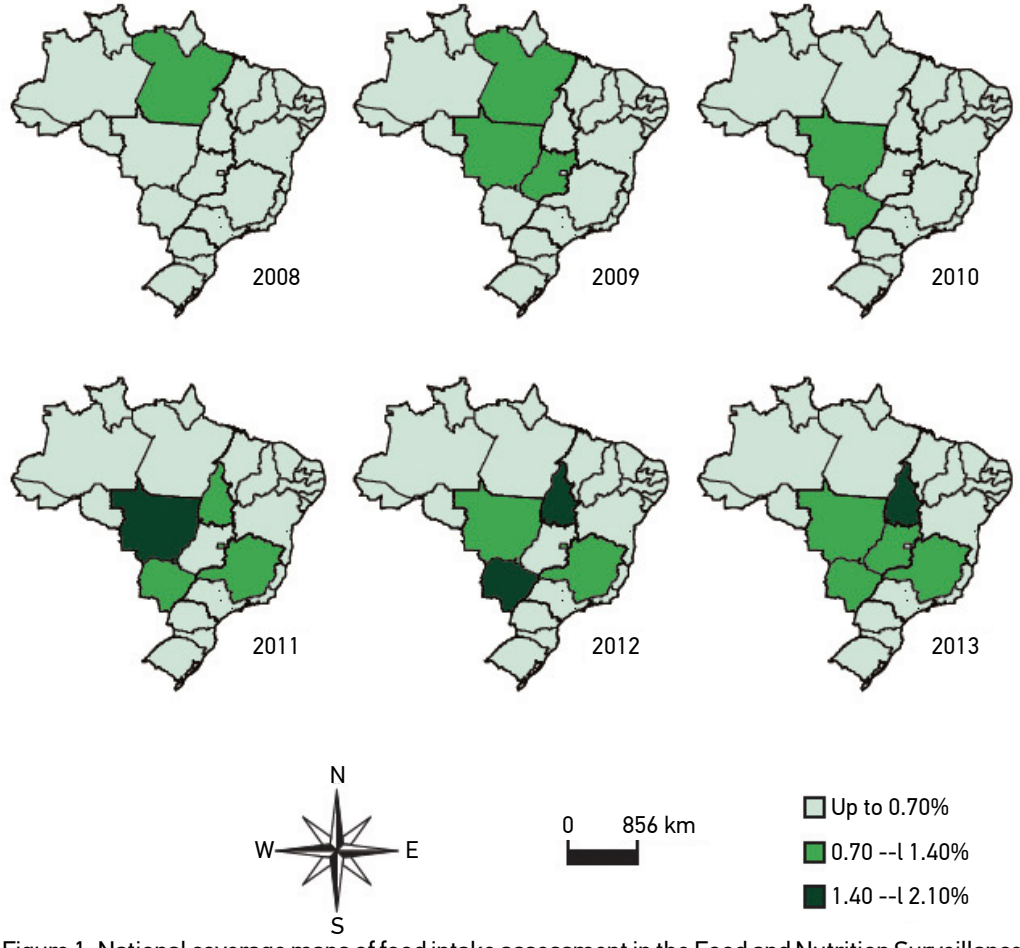

Figure 1. National coverage maps of food intake assessment in the Food and Nutrition Surveillance System – Web, according to federal units. Brazil, 2008 to 2013.

one-fourth of the cities entered FI data in it. Ferreira et al. found that only 10.3 to 17.9% of the 40 cities from the Regional Health Superintendency of Belo Horizonte (*Superintendência Regional de Saúde de Belo Horizonte* – SRS-BH) registered data for the marker "distribution of breastfed infants aged 0 to 6 months" between 2008 and 2011[27].

This wide connection between cities and SISVAN Web without the corresponding FI assessment and the predominance of registration of children and pregnant women could be explained by the history of the system, which was built based on monitoring indicators of nutritional status – implemented for even longer in health services – and conditionalities of child development with the Milk is Health Program (*Programa Leite é Saúde* – PLS), Incentive in Fighting Nutritional Deficiencies (*Incentivo ao Combate às Carências Nutricionais* – ICCN), and Family Allowance Program (*Programa Bolsa Família* – PBF). Coutinho et al. reported that about one-fourth of intake registrations in the system were of children younger than five years in 2008[1].

Among the few studies found in the scientific literature that explored the SISVAN coverage[27,39-41], most of them were strictly based on monitoring nutritional status. The authors revealed low coverages for this indicator in the states of São Paulo (2010) and Rio Grande do Sul (2006 and 2010), and in the city of Belo Horizonte (2008 to 2011).

Despite FI monitoring being possible in SISVAN since 2008, coverage remained incipient in all life stages and FUs. Some of the reasons for this scenario are related to system management as a whole, including the monitoring of nutritional status, as a physical structure; lack of credibility of the information generated; communication and collaboration between government branches; and low system interactivity and intelligence[42]. However, there are other reasons for intake coverage, specifically, being so poor. Education and training of health professionals for surveillance of FI indicators and increase in incentive for data

Table 3. Temporal variation of coverage of food intake monitoring in the Food and Nutrition Surveillance System – Web, according to life stages. Brazil, 2008 to 2012.

Life stages	Coverage of food intake (%)						
	2008	2009	2010	2011	2012	Average annual change (in percentage points)*	95%CI
< 5 years	0.37	0.83	0.85	1.56	2.11	0.42	0.24 – 0.60
5 to 9 years	0.21	0.37	0.29	0.49	0.66	0.10	0.04 – 0.16
10 to 19 years	0.12	0.25	0.15	0.29	0.43	0.07	0.03 – 0.11
20 to 59 years	0.10	0.22	0.15	0.25	0.25	0.03	0.01 – 0.06
60 years or older	0.10	0.28	0.20	0.31	0.33	0.05	0.01 – 0.09
Pregnant women**	0.29	0.90	0.94	1.48	2.05	0.41	0.26 – 0.57

95%CI: confidence interval of 95%; *linear regression coefficient; **specific estimate for pregnant women users of the public health system (*Sistema Único de Saúde* – SUS) (number of live births in the previous year + 10% of losses for abortions and under-reporting) versus percentage of fertile women users of SUS

collection – corresponding only to the first stage of the production cycle and care management – are characteristics indicated in the scientific literature.

In Minas Gerais, the FU with the best coverage of the Southeast region, two studies evaluated the system. In one of them, almost all interviewees responsible for SISVAN (n = 836) reported collecting weight and height data, but only 1/3 registered FI information[43]. The lack of spaces for training and update of professionals in data collection and use of information was related to this low percentage, given that the existing training courses are more aimed at assessment of nutritional status.

VAN training spaces are essential to qualify the performance of health managers and professionals in the early identification of nutritional issues and intervention. Currently, training courses are scarce and focused on anthropometric data collection, similarly to the macro-regional training held in 2005. Regarding periodicity, anthropometry training should happen once every semester, and more frequently in units where professional turnover is higher[44], but we found no recommendations for other cases.

Another study mentioned that the process of implementing ENPACS stimulated intake data collection and almost half of the technical references of the cities declared collecting data from PC users; however, only 28.9% typed the data in the system, and 13.2% analyzed the reports[27]. At this point, we highlight the potential that certain actions have in boosting monitoring, despite not ensuring other stages of use of the data generated.

At present, the main example that the connection between actions or programs and monitoring could stimulate the implementation of SISVAN is the monitoring of health conditionalities of PBF participants, given that most of the data on nutritional status of SISVAN come from the program[45].

Coelho et al. assessed eating habits of children younger than two years users of UBS in Diadema, São Paulo, with old intake forms from SISVAN Web, and indicated the validity of the instrument for VAN in PC, despite previous limitations[46].

In 2015, FI assessment was reviewed, and new forms became available for infants younger than six months, children aged six months to two years, and those older than two years. After the review, all questions covered the previous day to avoid memory bias; questions about food consistency and color and eating habits were included; and formatting and language were improved to facilitate understanding and application of the instrument by any health professional[47].

The recent restructuring of FI assessment forms in the system and the update of the Dietary Guidelines for the Brazilian Population and the Dietary Guidelines for Children Younger than Two Years were initiatives aimed at enhancing FI monitoring and promoting proper and healthy eating habits among the Brazilian population. However, the period assessed in the present study was prior to these initiatives, preventing their evaluation.

A hypothesis proposed that FUs with nutritionists had greater coverage since the difficulty in filling the previous intake form led to dependency on a specialized professional to use the instrument. Nevertheless, this supposition was not confirmed by the correlation

analysis. We expect that the new form available facilitates intake data collection by any health professional responsible for managing food and nutrition in the territories.

Among the aspects that could influence the interpretation of the findings, we emphasize that the present results do not allow inferences for individuals, as this is an aggregate study with totally ecological analyses. The use of secondary data, including under-registration or errors in the information generation process, is a possible limitation. We took the precaution of obtaining information from national databases and conducting a thorough consistency analysis to minimize this issue. Other potential limitations are the lack of information about pregnant women from the reference population and of data stratified by life stages in 2013 to calculate the indicators. Estimating the number of pregnant women was an attempt to circumvent this issue partially. Regarding the percentage of registration and use, we underline that the study included cities with at least one record in the system, allowing us to find locations with a high percentage of use and low coverage.

CONCLUSION

Unprecedentedly, this study presented national coverage data on FI assessment of users of public health services registered in SISVAN Web in the five years after implementation of the markers of interest. Despite the continuous process of data collection of these indicators, confirmed by their increasing trend, this activity proved to be incipient, and its distribution in Brazilian cities was low in 2013.

Among the difficulties described in the literature, the lack of structure in populating the system and of training in the FI component, and the use of the data collected to support nutritional care are prominent. Further studies are necessary to analyze the difficulties involved in this process and create ways to overcome them. However, efforts and investments are being made in several areas to develop different VAN strategies, given its historical importance in the public health nutrition field and the scenario of food and nutritional transition.

Over its path, SISVAN has been a promise to support the work developed by health professionals and managers in the three branches of SUS management. In this regard, its use along the years indicates how this system can assist health care and management.

The implementation of PNAN — especially the VAN guideline — can be enhanced by overcoming issues that prevent the progress of system consolidation, including those that go beyond problems related to SISVAN development, such as the constant changes in technical staff, both in management and local care, and the insufficient connectivity between PC services in the country.

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