Nutritional status of pregnant adolescents assisted in Primary Care: A time series study with data from the state of Minas Gerais

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ABSTRACT

An ecological and time-series study to analyze trends in the nutritional status of pregnant adolescents assisted in Primary Health Care in Minas Gerais. The data came from the Food and Nutrition Surveillance System, referring to the nutritional status of 140,969 pregnant adolescents between 2010 and 2019, presented in annual percentage change using simple linear regression. Low weight showed a decreasing trend in the South and Northern Triangle macro-regions with annual variations of -0.88% (95% CI: -1.67;-0.09) and -0.79% (95% CI: -1.06;-0.51); in turn, excess weight recorded an increasing trend in the Northeast, Northwest, North, Southern Triangle and Vale do Aço macro-regions, with annual variations of 0.28% (95% CI: 0.04;0.52), 0.37% (95% CI: 0.23;0.51), 0.64% (95% CI: 0.32;0.95), 0.44% (95% CI: 0.18;0.70), and 0.57% (95% CI: 0.26;0.88), respectively. It is concluded that, during the evaluated period, there was an increasing trend in excess weight among pregnant adolescents in the state of Minas Gerais, following the nutritional transition process in the country.

Keywords: Pregnancy in adolescence, Nutritional status, Food and nutritional surveillance, primary health care, Health information systems.

INTRODUCTION

Defined by the World Health Organization (WHO) as the period from 10 to 19 years old, adolescence is a phase marked by constant physiological, psychological, and social changes and adaptations that are initiated by biological maturation and end with adolescents' social, professional, and economic inclusion in adult life[1]. In the last decades, pregnancy in adolescence became an important topic for debate and was the target of public policies around the world due to its biological, psychological, economic, family-related, and educational consequences, which can have repercussions on a country's social, economic, and health indicators[2–4].

In the last 20 years, Brazil presented a reduction in the number of pregnant adolescents. In 2000, teenage mothers accounted for 23.4% of the total live births, whereas the rate dropped to 14.7% in 2019, revealing a 37.2% reduction; despite this, the teenage pregnancy scenario is still worrisome in the country[5]. Data from the SUS Department of Information Technology (DATASUS) of the Brazilian Live Birth Information System (*Sistema de Informações sobre Nascidos Vivos*, SINASC) indicate that there are nearly 1,150 births to adolescent mothers a day and that the number of children born to mothers aged between 10 and 19 years old was 381,651 in 2020[5,6].

Thus, early pregnancy represents a moment marked by greater vulnerability and, at the same time, favorable for the development of preventive and health promotion actions to be implemented by professionals from Primary Health Care (PHC) services[7,8]. In view of this, access to qualified care aimed at preserving, protecting and promoting pregnant women's health and the concept of prenatal care has been incorporated as a PHC performance indicator, with involvement of the entire team being fundamental for providing comprehensive assistance to pregnant women[9,10].

Faced with that, nutritional care during the prenatal period can be considered one of the most

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important goals in terms of public health, essentially because pregnancy is a period that imposes increased nutritional needs, especially in adolescence, when the infant's growth and development process is concomitant to the end of the adolescent mother's one, exemplified by the end of the process of height growth, bone mass increase, maturation of the sexual organs and changes in body composition, which can generate competition for nutrients between mother and foetus and promote a reduction in adolescents' linear growth[11].

Therefore, adequate nutrition is crucial for the health of the mother-child dyad, as deficient maternal nutrition can result in unwanted gestational outcomes such as low birth weight, prematurity, still births, pre-eclampsia, feelings of social isolation, maternal depression, and delays or neglect in maternal education[8].

In this context, the Brazilian National Food and Nutrition Policy National Food and Nutrition Policy (*Política Nacional de Alimentação e Nutrição*, PNAN), includes Food and Nutritional Surveillance (*Vigilância Alimentar e Nutricional*, VAN) as its third guideline, which is put into practice by resorting to the Food and Nutritional Surveillance System (*Sistema de Vigilância Alimentar e Nutricional*, SISVAN), as it allows monitoring the nutritional situation emerging as an essential pregnancy tool because it supports planning, implementation and assessment of health actions, in addition to contributing as a guide in planning nutritional care in PHC, aiming at care integrality[12–17].

Understanding the reality of a specific population group, such as pregnant adolescents, through data provided by SISVAN can be an interesting strategy to lead to a reflection on the situation and, subsequently, ground the elaboration or modification of policies and programs targeted at this population segment with the intention of protecting and caring[15,17]. The objective of the current study was to analyze the trend corresponding to the nutritional status of pregnant adolescents assisted in Primary Health Care in the state of Minas Gerais.

METHODS

This is an ecological and time-series study conducted with secondary data from the public reports on SISVAN Web corresponding to pregnant adolescents between 2010 and 2019 and offering free electronic access, available on the SISVAN website (https://sisaps.saude.gov.br/sisvan/relatoriopublico/index).
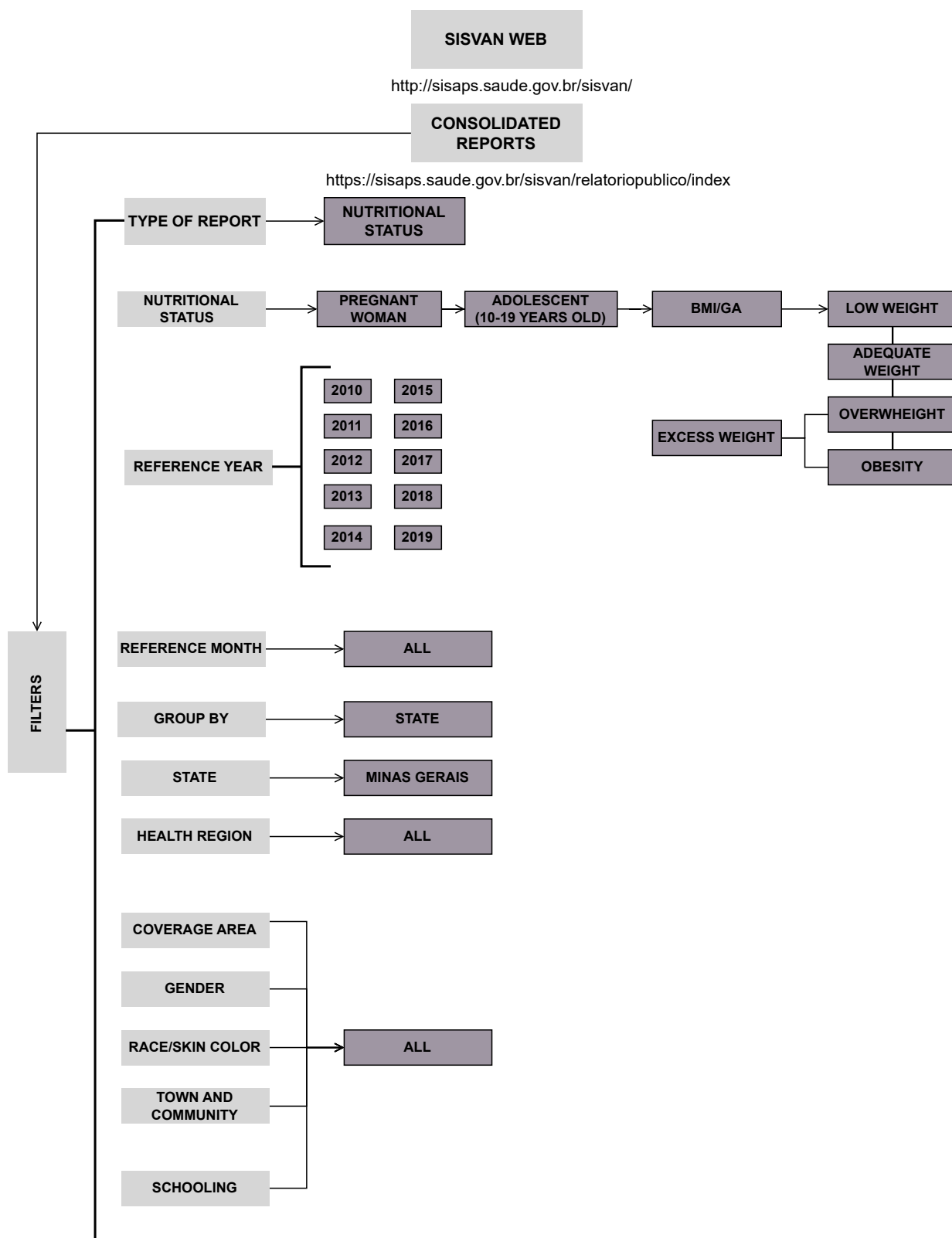
SISVAN Web provides annual public reports and takes into account the following monitoring instances: (i) SISVAN Web; (ii) *Bolsa Família* Program Management System; and (iii) e-SUS AB (Basic Care). The study used the data pertaining to the first monitoring modality, that is, SISVAN Web itself (i). In addition, it considered all races/skin colors, towns/communities, all schooling levels and the data referring to the nutritional status of pregnant adolescents aged from 10 to 19 years old monitored by SISVAN. All the data were obtained from April to June 2022.

The period chosen for this study was defined to verify the pregnant adolescents' nutritional situation throughout these years, with 2019 as the last one that had data from all months, possibly, typed and reviewed, available and reflecting the reality of the health services before the COVID-19 pandemic.

The criteria to include data in this study consist of information referring to the pregnant adolescents assisted in PHC in the state of Minas Gerais. The filters selected for data collection in SISVAN Web are presented in Figure 1.

The nutritional monitoring coverage percentage considered the record of the number of pregnant women that had nutritional data included in the information system. The absolute and relative frequencies corresponding to the nutritional status classification were collected by means of the BMI by gestational week[18]. For the analyses, the categories to assess nutritional status were Low weight and Eutrophia, in addition to grouping the pregnant adolescents that presented overweight or obesity by creating the Excess weight variable[13]. Nutritional status was used as a dependent variable; in turn, the macro-regions and the time variables (by years, during the 2010-2019 period) were used as independent ones in data analysis.

As for elaboration of the time series, the macro-regions were grouped into 14 health macro-regions according to the Regionalization Master Plan (*Plano Diretor de Regionalização*, PDR)

Figure 1: Filters selected to collect data from the pregnant adolescents in SISVAN Web
Excess Weight: Overweight and Obesity; **GA:** Gestational Age; **BMI:** Body Mass Index; **SISVAN:** *Food and Nutritional Surveillance System.*
Source: Prepared by the authors.

of the Minas Gerais State Health Department, namely: Centre; Midsouth; Jequitinhonha; East; Southeast; Northeast; Northwest; North; West; Southeast; South; Northern Triangle; Southern Triangle; and Vale do Aço[19].

The data corresponding to the pregnant adolescents' records and nutritional status in SIS-VAN Web, for each year and macro-region, were expressed as absolute (n) and relative (%) values. The time trend analysis corresponding to the evolution of the pregnant adolescents' records in terms of nutritional status prevalence was obtained using linear regression with the identification of the mean annual variation in percentage points (pp), which can be interpreted as increasing (positive variation rate), stationary (when there is no statistical difference), and decreasing (negative variation rate).

Increasing or decreasing variations in the low weight and excess weight frequencies during the period analyzed were considered significant, with regression coefficients statistically different from zero ($p < 0.05$) and 95% confidence intervals (95% CIs). The statistical analyses were performed in the Stata software, version 13.0.

For dealing with diverse information available in a public domain database, the study was not submitted to any Committee of Ethics in Research with Human Beings. Even so, the aspects set forth in National Health Council Resolution No. 466/12 were observed, regulating research studies with human beings.

RESULTS

A total of 140,969 pregnant adolescents were registered in SISVAN between 2010 and 2019. Most of these records were concentrated in the Centre and South health macro-regions, with 24,183 (17.15%) and 26,606 (18.87%), respectively. However, the trend corresponding to pregnant adolescents' records was stationary over the years (Table 1).

The prevalence of low weight had an increasing trend in the Northeast, Northwest, Southern Triangle, and Vale do Aço health macro-regions, with annual variations of 0.39% (95% CI: 0.08;0.71), 0.37% (95% CI: 0.13;0.62), 0.73% (95% CI: 0.46;1.01),

0.45% (95% CI: 0.26;0.64), and 0.52% (95% CI: 0.20;0.83), respectively. In opposition, the South and Northern Triangle macro-regions presented a decreasing trend in the years analyzed, with annual variations of -0.88% (95% CI: -1-67;-0.09) and -0.79% (95% CI: -1.06;-0.51) (Table 2).

On the other hand, the prevalence of low weight recorded an increasing trend in the Northeast, Northwest, Southern Triangle, and Vale do Aço macro-regions, with annual variations of 0.28% (95% CI: 0.04;0.52), 0.37% (95% CI: 0.23;0.51), 0.64% (95% CI: 0.32;0.95), 0.44% (95% CI: 0.18;0.70), and 0.57% (95% CI: 0.26;0.88), respectively. In turn, the Jequitinhonha, West and Northern Triangle macro-regions presented a decreasing trend. The annual variations for the aforementioned macro-regions were -0.09% (95% CI: -0.13;-0.04), -0.34% (95% CI: -0.56;-0.12), and -0.73% (95% CI: -1.05;-0.40), respectively (Table 3).

DISCUSSION

The study evidenced increasing and decreasing time trends for the prevalence of low weight and, at the same time, that the excess weight prevalence presented increasing trends in most of the macro-regions among the pregnant adolescents during the period evaluated in the state of Minas Gerais, thus confirming the ongoing nutritional transition process in the country. In view of that, the importance of implementing and continuing actions targeted at preventing pregnancies among adolescents stands out, in addition to public policies that expand the range of viable futures for adolescents and young people[8,20,21]. On the other hand, the data revealed certain stability in the number of records of pregnant women monitored by PHC in the state of Minas Gerais from 2010 to 2019.

Some strategies have been developed in Brazil with the intention of preventing pregnancy in adolescence, such as lectures in PHC units, programs in schools, conversation circles, and operational groups and home visits with the adolescents and their families, in addition to training for health professionals[22].

Table 1

Distribution of the available records of pregnant adolescents in the Food and Nutritional Surveillance System by macro-regions, in the state of Minas Gerais, 2010-2019.

Years	Macro-region															
	Centre		Midsouth		Jequitinhonha		East		Southeast		Northeast		Northwest		North	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2010	665	2.75	96	1.95	157	4.32	34	0.73	137	2.49	227	2.38	21	0.41	291	1.72
2011	1,123	4.64	65	1.32	123	3.38	60	1.29	137	2.49	294	3.08	36	0.71	428	2.53
2012	1,686	6.97	256	5.21	254	6.98	393	8.46	425	7.71	539	5.65	272	5.34	1,142	6.76
2013	2,957	12.23	650	13.23	533	14.65	663	14.27	689	12.50	1,321	13.84	670	13.16	1,980	11.72
2014	3,687	15.25	839	17.08	565	15.53	659	14.18	905	16.42	1,343	14.07	832	16.34	2,502	14.81
2015	4,201	17.37	931	18.95	629	17.29	978	21.05	984	17.85	1,666	17.46	927	18.21	2,733	16.18
2016	4,003	16.55	997	20.30	589	16.19	1,071	23.05	972	17.63	1,339	14.03	891	17.50	2,785	16.49
2017	3,010	12.45	667	13.58	420	11.54	433	9.32	651	11.81	1218	12.76	694	13.63	2,421	14.33
2018	1,945	8.04	283	5.76	238	6.54	224	4.82	348	6.31	950	9.96	452	8.88	1,566	9.27
2019	906	3.75	128	2.61	130	3.57	131	2.82	264	4.79	645	6.76	297	5.83	1,045	6.19
Total	24,183	100.00	4,912	100.00	3,638	100.00	4,646	100.00	5,512	100.00	9,542	100.00	5,092	100.00	16,893	100.00
Variation[a]		0.45		0.61		0.27		0.49		0.51		0.77		0.98		0.85
95% CI[b]		-0.96 – 1.88		-1.35 – 2.55		-1.22 – 1.76		-1.61 – 2.59		-1.06 – 2.08		-0.49 – 2.03		-0.63 – 2.60		-0.46 – 2.16
p-value		0.482		0.483		0.688		0.606		0.473		0.197		0.199		0.173
Trend		Stationary		Stationary		Stationary		Stationary		Stationary		Stationary		Stationary		Stationary

Years	Macro-region													
	Centre		Southeast		South		Northern Triangle		Southern Triangle		Vale do Aço		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2010	301	2.98	274	3.05	1,074	4.04	371	4.20	52	0.97	47	0.70	3,747	2.66
2011	329	3.26	278	3.09	1,090	4.10	513	5.81	50	0.93	77	1.15	4,603	3.27
2012	769	7.62	698	7.77	1,957	7.36	676	7.65	320	5.97	199	2.98	9,586	6.80
2013	1,083	10.74	1,354	15.07	3,573	13.43	1,316	14.89	531	9.91	615	9.21	17,935	12.72
2014	1,705	16.90	1,285	14.30	3,822	14.37	1,263	14.29	660	12.32	1,167	17.48	21,234	15.06
2015	1,790	17.74	1465	16.31	3,953	14.86	1,533	17.35	911	17.00	1,352	20.25	24,053	17.06
2016	1,653	16.39	1,421	15.82	4,122	15.49	1,485	16.81	953	17.78	1,144	17.13	23,425	16.62
2017	1,360	13.48	1215	13.52	3,621	13.61	1,003	11.35	810	15.11	978	14.65	18,501	13.12
2018	656	6.50	576	6.41	2,204	8.28	482	5.45	750	14.00	807	12.08	11,481	8.14
2019	442	4.38	418	4.65	1,190	4.47	194	2.20	322	6.01	292	4.37	6,404	4.54
Total	10,088	100.00	8,984	100.00	26,606	100.00	8,836	100.00	5,359	100.00	6,678	100.00	140,969	100.00
Variation[i]		0.49		0.42		0.43		0.04		1.27		1.17		
95% CI[ii]		-1.01 – 2.01		-1.01 – 1.86		-0.81 – 1.67		-1.46 – 1.55		-0.04 – 2.60		-0.54 – 2.90		
p-value		0.469		0.512		0.448		0.951		0.057		0.154		
Trend		Stationary		Stationary		Stationary		Stationary		Stationary		Stationary		

[i]Mean Annual Variation; [ii]95% CI: 95% Confidence Interval.

Table 2

Time trend corresponding to the prevalence of low weight among the pregnant adolescents registered in the Food and Nutritional Surveillance System by macro-regions, in the state of Minas Gerais, 2010-2019.

	Prevalence of low weight (%)													
Years	Centre	Mid-south	Jequitin-honha	East	South-east	North-east	North-west	North	West	South-east	South	Northern Triangle	Southern Triangle	Vale do Aço
2010	18.87	2.99	4.22	1.00	3.45	5.75	0.69	8.74	6.60	8.21	28.14	8.97	1.07	1.30
2011	25.70	1.47	2.30	1.53	3.70	6.57	0.64	10.20	6.38	5.04	22.26	11.29	1.08	1.85
2012	17.35	3.04	2.22	4.43	5.16	6.74	3.28	12.91	7.14	7.02	17.74	7.53	3.16	2.28
2013	16.03	3.84	3.14	3.81	3.78	7.57	4.08	12.58	5.76	7.35	17.91	6.79	3.47	3.86
2014	18.13	3.70	2.79	3.16	4.14	6.79	4.02	12.72	7.65	6.03	15.70	5.82	3.28	6.06
2015	18.29	3.47	3.05	4.10	4.24	7.77	4.32	12.08	6.80	5.47	14.64	5.86	3.99	5.92
2016	17.25	4.25	2.61	4.91	4.16	6.04	3.95	13.06	7.12	5.61	16.19	6.04	3.81	5.01
2017	15.90	3.68	2.38	2.73	3.85	6.88	3.76	14.42	6.96	6.22	18.29	5.12	4.18	5.62
2018	17.33	2.72	2.27	1.83	3.01	9.02	4.18	14.93	6.22	4.55	17.02	3.58	6.27	7.06
2019	15.32	1.74	2.01	2.24	4.30	11.48	4.62	17.70	6.45	6.45	16.38	2.06	4.67	4.57
Variation[i]	-0.57	0.01	-0.12	0.05	-0.15	0.39	0.37	0.73	-0.0003	-0.17	-0.88	-0.79	0.45	0.52
95% CI[ii]	-1.20 – -0.06	-0.23 – -0.025	-0.26 – -0.01	-0.17 – -0.13	-0.17 – -0.13	0.08 – 0.63	0.13 – 0.62	0.46 – 1.01	-0.14 – 0.14	-0.43 – 0.08	-1.67 – -0.09	-1.06 – -0.51	0.26 – 0.64	0.20 – 0.83
p-value	0.073	0.925	0.079	0.731	0.825	0.02	0.007	<0.001	0.996	0.161	0.033	<0.001	0.001	0.005
Trend	Stationary	Stationary	Stationary	Stationary	Stationary	Increasing	Increasing	Increasing	Stationary	Stationary	Decreasing	Decreasing	Increasing	Increasing

[i]Mean Annual Variation; [ii]95% CI: 95% Confidence Interval.

Table 3

Time trend corresponding to the prevalence of excess weight among the pregnant adolescents registered in the Food and Nutritional Surveillance System by macro-regions, in the state of Minas Gerais, 2010-2019.

	Prevalence of excess weight (%)													
Years	Centre	Mid-south	Jequitin-honha	East	South-east	North-east	North-west	North	West	South-east	South	Northern Triangle	Southern Triangle	Vale do Aço
2010	16.47	1.87	2.54	1.07	4.15	4.02	0.54	4.95	10.04	8.57	31.06	11.91	1.74	1.07
2011	23.59	1.81	2.24	0.75	3.09	5.55	1.49	7.68	8.86	6.83	24.44	11.74	0.75	1.17
2012	16.84	2.56	2.56	3.48	4.26	4.21	2.18	10.55	9.34	7.40	23.27	7.55	3.97	1.84
2013	16.02	3.79	2.66	2.99	3.79	6.29	3.38	8.98	6.76	8.01	23.00	8.16	3.10	3.07
2014	16.65	3.94	2.14	3.22	3.90	5.14	3.48	10.33	8.19	6.35	21.88	6.02	3.14	5.64
2015	16.65	3.77	1.99	4.00	4.06	5.48	3.19	9.61	8.22	7.11	19.24	7.69	3.54	5.45
2016	16.47	4.25	2.18	4.47	3.89	4.71	3.40	10.48	7.10	5.99	20.07	7.41	4.51	5.08
2017	16.41	3.76	1.89	2.11	3.16	5.25	3.45	10.94	7.99	7.27	21.35	6.57	4.28	5.58
2018	16.88	2.31	1.82	2.17	2.97	6.96	3.91	11.05	5.63	5.56	22.02	5.00	6.78	6.96
2019	12.83	2.37	1.76	1.58	4.62	8.02	4.86	13.50	6.81	7.54	22.86	4.38	4.50	4.38
Variation[i]	-0.48	0.09	-0.09	0.07	-0.01	0.28	0.37	0.64	-0.34	-0.14	-0.67	-0.73	0.44	0.57
95% CI[ii]	-1.07 – 0.10	-0.15 – 0.33	-0.13 – -0.04	-0.25 – 0.40	-0.15 – 0.13	0.04 – 0.52	0.23 – 0.51	0.32 – 0.95	-0.56 – -0.12	-0.36 – 0.06	-1.35 – -0.01	-1.05 – -0.40	0.18 – 0.70	0.26 – 0.88
p-value	0.093	0.408	0.036	0.601	0.878	0.026	<0.001	0.002	0.007	0.156	0.050	0.001	0.004	0.003
Trend	Stationary	Stationary	Decreasing	Stationary	Stationary	Increasing	Increasing	Increasing	Decreasing	Stationary	Stationary	Decreasing	Increasing	Increasing

[i]Mean Annual Variation; [ii]95% CI: 95% Confidence Interval.

Pregnant women's nutritional status, especially the nutritional extremes (low and excess weight), is an important factor because it is related to positive or negative pregnancy outcomes, directly collaborating with fetal growth and development, as well as with birth weight[8]. Low gestational weight is related to fetal growth restrictions and prematurity; in turn, excess weight is associated with diabetes, gestational hypertension, pre-eclampsia, fetal macrosomia, and an increased number of C-sections[13,21,23].

The increase in the prevalence of excess weight among pregnant adolescents in some macro-regions from Minas Gerais (Northeast, Northwest, North, Southern Triangle, and Vale do Aço) corroborates data disclosed in the "Food and nutritional situation of pregnant women in Primary Health Care in Brazil" report[24]. This report pointed out that 51.8% of the pregnant women monitored in PHC presented excess weight and that 28.8% of the pregnant adolescents had excess weight. In addition to this, it is noted that in the Southeast region of the country and in the state of Minas Gerais, the prevalence of excess weight was similar to the national frequency: 55.2% and 51.9%, respectively[24].

An ecological study that analyzed the trend corresponding to the nutritional status of pregnant adolescents receiving benefits from the *Bolsa Família* Program between 2008 and 2018 noticed that the overweight and obesity prevalence values increased throughout Brazil[15]. Another research study, which analyzed the overweight and obesity trends in the state of Espírito Santo between 2009 and 2018, also verified an increase in the occurrence of both nutritional diagnoses[25]. In Acre, Campos et al.[21] found a higher prevalence of pregnant women with excessive weekly weight gain, with more than half of those participating in the study presenting excessive weight gain (59.1%). In addition, excess weight was associated with higher pressure levels. In opposition, the low weight findings that indicated an increasing trend in the Northeast, Northwest, North, Southern Triangle and Vale do Aço macro-regions of the state were antagonistic to the study conducted from 2008 to 2018, which verified a decreasing trend in the prevalence of low weight among pregnant adolescents in Brazil[15]. On the other hand,

the South and Northern Triangle macro-regions followed the overall decreasing trend.

Although studies that highlight low weight in pregnant women are scarce, it is important to analyze it because it is a nutritional extreme and due to the possible negative impacts on the fetus, with higher neonatal morbidity and mortality rates, low birth weight, low Apgar indices, neonatal infections, prematurity, and higher C-section rates[21,26]. The study by Oliveira et al.[27] found that 19.7% of the pregnant women presented low weight and that, although having identified higher eutrophy and excess weight percentages, it represents a considerable number of pregnant women that need adequate approaches in prenatal care. Campos et al.[21] and Santos et al.[20] found similar results, with 18.2% and 14.0% of the pregnant women presenting insufficient weight gain, respectively. In this latter study, the low weight percentage rose to 34.2% when only the data referring to pregnant adolescents were isolated.

The low SISVAN coverage and the deficient quality of the information can be considered limiting factors for the decision-making power of public policies in cities and states. Silva[28] argues that the system complexity and non-normalization of the procedures and lack of training of the professionals favor this low coverage. The aforementioned study, conducted based on SISVAN secondary data referring to Triângulo Mineiro and Alto Paranaíba in Minas Gerais in 2015, revealed low coverage in all municipalities and life phases.

It is also noted that the low number of professionals is a further factor that limits SISVAN coverage, with a need to sensitize health managers and all professionals about the importance of performing VAN, as it is from its effective implementation that all care measures inherent to food and nutrition will be organized in PHC[29,30].

The limitations of the current study pertain to the characteristics corresponding to the origin of secondary data, which, despite being a health information system that offers lower costs and a higher sense of opportunity in acquiring information, generates doubts regarding data quality due to non-standardization in data collection. The absence of data and variables from each gestational phase assessed and registered in SISVAN is also a limitation, as it was not possible to stratify the

pregnant women by gestational phase or diverse information about other characteristics of the incidence of pregnancy in adolescence, such as the causes of the pregnancies and the socioeconomic factors involved.

Nutritional monitoring of pregnant adolescents is a relevant instrument for planning public health actions. In this sense, the current study highlights the relevance of SISVAN, which, despite its limitations and difficulties, is the main source system for research studies about nutritional status monitoring in all life phases, undergoing evolutions over time, especially in relation to its coverage; consequently, proper functioning of the information system renders it indispensable to agree upon actions in health and for the elaboration of public policies.

CONCLUSION

The decreasing trend for nutritional deficit (low weight) and increased excess weight prevalence among pregnant adolescents in the state of Minas Gerais define one of the marking characteristics of the country's nutritional transition process; although the number of records and monitoring of the pregnant adolescents' nutritional status revealed a stationary trend and beyond the reach potential of the SISVAN tool. Therefore, the data analysis allowed knowing the trend corresponding to nutritional status in teenage pregnancy, suggesting risk situations that can result in this event. Despite being a regional study, it enabled surveying diverse information that can be used to propose, ground and/or improve health strategies for adolescents, teenage mothers, and newborns.

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