ORIGINAL ARTICLE

Adolescent pregnancy trends in the last decade

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SUMMARY

INTRODUCTION: *Teenage pregnancy is a universal phenomenon, with higher prevalence in developing countries. Although there has been a reduction in Brasil since the year 2000, the age-specific fertility rate for this age group remains high.*

OBJECTIVE: *To evaluate the frequency of adolescence pregnancy in in Brasil from 2006 to 2015 and its association with the Human Development Index (HDI).*

METHODS: *A descriptive epidemiological study, conducted by searching the database of the Department of Informatics of the Unified Health System (DATASUS), using information from the Information System on Live Births (SINASC) for the five Brazilian regions.*

RESULTS: *There was a reduction in the percentage of live births (LB) from adolescent mothers (10 to 19 years old) in Brasil by 13.0% over the last ten years. This decline was observed in all Brazilian regions among mothers aged 15 to 19 years. The number of LB increased by 5.0% among mothers aged 10 to 14 years in the North and decreased in the other regions, with higher rates in the South (18.0%). The specific fertility rate for the 15-19-year-old group decreased from 70.9/1,000 to 61.8/1,000 in the period. The proportion of LB is inversely associated with the HDI, except in the Northeast (the lowest HDI in the country), where there was a significant reduction (18.0%) among mothers aged 15-19 and 2% among those aged 10-14 years.*

CONCLUSION: *Teenage pregnancy in Brasil is in slow decline, especially among mothers aged 10-14 years and is inversely associated with the HDI, except in the Northeast.*

KEYWORDS: *Pregnancy in Adolescence. Prevalence. Epidemiology. Adolescent.*

INTRODUCTION

Worldwide, approximately 16 million girls aged between 15 and 19 years and 2 million girls younger than 15 years have children each year, with a higher frequency of live births (LB) from adolescent mothers in developing countries. Over half of the women in Africa and around one third in Latin America and the Caribbean will give birth before they are 20 years old.[1,2] In Brasil, approximately one in every five Brazilian women has their first child before the age of

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20, a proportion that has remained the same in the past ten years, despite the drop in the percentage of LB from adolescent mothers between 2000-2011. This reduction was noticed in all Brazilian regions for women aged between 15 and 19 years, but numbers increased in the North and Northeast region for ages between 10-14 years.[3]

According to the 2018 Report of the Pan American Health Organization/World Health Organization (PAHO/WHO), the United Nations Children's Fund (Unicef) and the United Nations Population Fund (UNFPA), the global rate of teenage pregnancy remains high, estimated at 46 births per 1,000 girls, while in Latin America and the Caribbean the rate remains the second-highest in the world, estimated at 66.5 births/1,000 women aged between 15 and 19 years, behind only Sub-Saharan Africa. The Brazilian rate is estimated at 68.4 births/1,000 adolescents.[4]

Poverty and low formal education levels, which are intrinsically intertwined, constitute the backdrop for of the countries where early pregnancy rates remain high, unlike what is observed in most developed countries.[4,5] Therefore, this should be treated as a public health problem, especially since it affects populations of developing countries. However, in certain cases, this may be the result of a decision by the teenager or of their own local culture, especially in countries of South Asia and Sub-Saharan regions.[5]

The objective of this paper is to determine the frequency of adolescence pregnancy in both age groups (10-14 and 15-19 years), in all five regions of Brasil, and investigate its association with the Human Development Index (HDI) of each region.

METHODS

This is a descriptive study based on data from the Information System on Live Births (SINASC) of the Single Health System Department of Informatics (DATASUS), a system managed by the Secretariat of Health Surveillance, along with state and municipal health secretariats. These institutions collect the Declarations of Live Births (DLB) from health services and notary offices (for home births) and input the data into the SINASC.[6]

The completion of a DLB is mandatory for the civil registry of a newborn. To prepare this study, we used the following variables: birth according to the place of residence of the mother, birth according to the region of Brasil, year of birth, and mother's age.[6]

The study included all women who had an LB in the years 2006 to 2015 in Brasil. We sought data on the total number of LB per region, as well as in the age ranges of 10-14 and 15-19 years, to calculate the percentage of LB from adolescent mothers. We excluded from the total of LB those whose mother's age was not reported (1,048 LB between 2006-2011 and 282 LB between 2012-2015). We also analyzed the association between the frequency of adolescence pregnancy and the Human Development Index (HDI) of each region, which is a summarized measurement of progress in the long term, using three basic dimensions: income, education, and health.[7]

Since the census by the Brazilian Institute of Geography and Statistics (IBGE) provides the HDI per state/municipality, we calculated the average HDI of each state weighted by the population to obtain the HDI of each region. We used as a reference the HDI of the IBGE census (2010) because it is the most recent data available.[8] Relative and absolute frequencies of the number of LB according to the mother's age and year of occurrence were calculated. Increases or reductions in the percentages from 2006-2015 were calculated using the formula:

[(% of LB from 2015 – % of LB from 2006) / % of LB from 2006] x 100

The age-specific fertility rate (ASFR) represents the average number of children born alive a woman of a specific age and of a specific area has had in the year considered.[9] The rate may be presented per group of 1,000 women for each age group. The ASFR was calculated by dividing the total number of LB from mothers aged between 10-14 years and 15-19 years by the total resident population of adolescents of this age, multiplied by 1000.[9,10]

Since the database used is of public domain, it was not necessary to submit the project for approval by our institution's Research Ethics Committee.

RESULTS

The percentage of LB from adolescents between 2006-2010 increased from 21.5% to 19.3% (a reduction of 12.7%), with a slight increment between 2010-2014 (an increase of 1.8%) and a drop in 2015 (a reduction of 2.7%). Considering the period studied, there was a decrease from 21.5% (2006) to 18.1% (2015), driven by the proportion of mothers aged between 15 and 19 years. The reduction of births among adolescent mothers in Brasil totaled 13.5% in ten years (Table 1). The ASFR

TABLE 1. DISTRIBUTION OF LIVE BIRTHS (LB) ACCORDING TO THE MOTHER'S AGE AND PERCENTAGE VARIATION IN THE RATE OF ADOLESCENT PREGNANCY (AP) FROM 2006 TO 2015.

Year	10 to 14 years	15 to 19 years	Total of LB from adolescents	Total of LB	Freq % AP
2006	27,610	605,270	632,880	2,944,928	21.5
2007	27,963	582,409	610,372	2,891,328	21.1
2008	28,678	570,560	599,238	2,934,828	20.4
2009	27,807	546,959	574,766	2,881,581	19.9
2010	27,049	525,581	552,630	2,861,868	19.3
2011	27,785	533,103	560,888	2,913,160	19.3
2012	28,236	531,909	560,145	2,905,789	19.3
2013	27,989	532,002	559,991	2,904,027	19.3
2014	28,244	534,364	562,608	2,979,259	18.9
2015	26,700	520,864	547,564	3,017,668	18.1
Total	278,061	5,483,021	5,761,082	29,234,436	

Source: MS/SVS/Dasis - Information System on Live Births - SINASC.

TABLE 2. AGE-SPECIFIC FERTILITY RATE PER AGE GROUP (10-14 AND 15-19 YEARS) TOTAL LB FROM MOTHERS AGED BETWEEN 10-14 YEARS AND 15-19 YEARS/TOTAL POPULATION RESIDENT ADOLESCENTS, FROM THESE GROUPS, MULTIPLIED BY 1,000.

Year	10 to 14 years	Adolescent population	ASFR/1,000 adol	15 to 19 years	Adolescent population	ASFR/1,000 adol
2006	27,610	8,462,615	3.26	605,270	8,537,516	70.90
2007	27,963	8,455,516	3.31	582,409	8,501,358	68.51
2008	28,678	8,451,680	3.39	570,560	8,482,441	67.26
2009	27,807	8,449,676	3.29	546,959	8,469,621	64.58
2010	27,049	8,444,955	3.20	525,581	8,456,048	62.15
2011	27,785	8,453,733	3.29	533,103	8,445,364	63.12
2012	28,236	8,441,389	3.34	531,909	8,438,804	63.03
2013	27,989	8,407,297	3.33	532,002	8,435,542	63.07
2014	28,244	8,351,178	3.38	534,364	8,434,160	63.36
2015	26,700	8,276,054	3.23	520,864	8,430,077	61.79
Total	278,061	84,194,093	3.30	5,483,021	84,630,931	64.79

Source: IBGE/Directorate of Research. Coordination of Population and Social Indicators. Management of Studies and Analyses of Demographic Dynamics. Projection of the population of Brasil and Federated Units per age and gender for 2000-2030.

for the age group between 15-19 years had a reduction from 70.9/1,000 in 2006 to 61.8% in 2015 (Table 2). The reduction in the number of LB from mothers aged between 15-19 years was 14.0%, while among those aged between 10-14 years, it was only 3% (Table 3).

After analyzing the regions of the country separately regarding these ten years, we found that the number of LB from mothers aged between 10 and 14 years increased in the Northern Region (5.0%), while in other Brazilian regions, it decreased (2.0% in the Northeast; 8.0% in the Central-West; 3.0% in the Southeast; and 18.0% in the South). The number of LB among mothers aged between 15-19 years decreased in all Brazilian regions (9.0% in the North; 18.0% in the Northeast; 11.0% in the Central-West; 12.0% in the Southeast, and 14.0% in the South) (Table 3).

After analyzing the last HDI record available, we found that the regions that have the highest HDI are the Southeast, South, and Central-West, with HDIs between 0.75 to 0.76, while the North and Northeast have HDIs between 0.65 and 0.66. The regions that have the highest HDI in the country were the ones with the lowest percentage of LB from adolescent mothers, while the regions with the lowest HDI had the highest percentages of LB from adolescent mothers. The Northeast had the lowest percentage of reduc-

TABLE 3. DISTRIBUTION OF LIVE BIRTHS ACCORDING TO THE MOTHER'S AGE AND PERCENTAGE VARIATION IN THE RATE OF ADOLESCENT PREGNANCY (AP) FROM 2006 TO 2015.

Age of mother	Region	2006	2010	2014	2015	Variation 2006-2010	Variation 2010-2014	Variation 2014-2015	10 years
10 to 14 years	Southeast	7,288	7,028	7,700	7,081	-4%	10%	-8%	-3%
	Central-West	2,232	2,100	2,311	2,050	-6%	10%	-11%	-8%
	Northeast	10,287	10,292	10,176	10,064	0	-1%	-1%	-2%
	Norte	4,773	4,864	5,190	5,014	2%	7%	-3%	5%
	South	3,030	2,765	2,867	2,491	-9%	4%	-13%	-18%
	Brasil	27,610	27049	28244	26,700	-2%	4%	-5%	-3%
15 to 19 years	Southeast	196,111	172,266	177,945	172,251	-12%	3%	-3%	-12%
	Central-West	46,284	40,525	43,185	41,319	-12%	7%	-4%	-11%
	Northeast	208,291	174,929	171,784	170,122	-16%	-2%	-1%	-18%
	Norte	84,474	75,829	79,190	77,098	-10%	4%	-3%	-9%
	South	70,110	62,032	62,260	60,074	-12%	0	-4%	-14%
	Brasil	605,270	525,581	534,364	520,864	-13.2%	1.7%	-2.5%	-14%
Total Brasil(10-19 years)		632,880	552,630	562,608	547,564	-12.7%	1.8%	-2.7%	-13.5%

Source: MS/SVS/Dasis - Information System on Live Births - SINASC

tion in the age group between 10-14 years, while in the North there was an increase in the percentage of LB from adolescents aged between 10-14 years (Figure 1).

DISCUSSION

The present study shows a tendency of reduction of teenage pregnancy over the decade studied. Its prevalence decreased between 2006-2010 and remained stable until 2014. A new reduction in 2015 may have been driven by the expansion of the Family Health Program and tan increased access to contraceptive methods.[11] Another explanation may be related to the country's demographic transition, with the reduction of the adolescent population and increase of the population over 60 years old or older.[12]

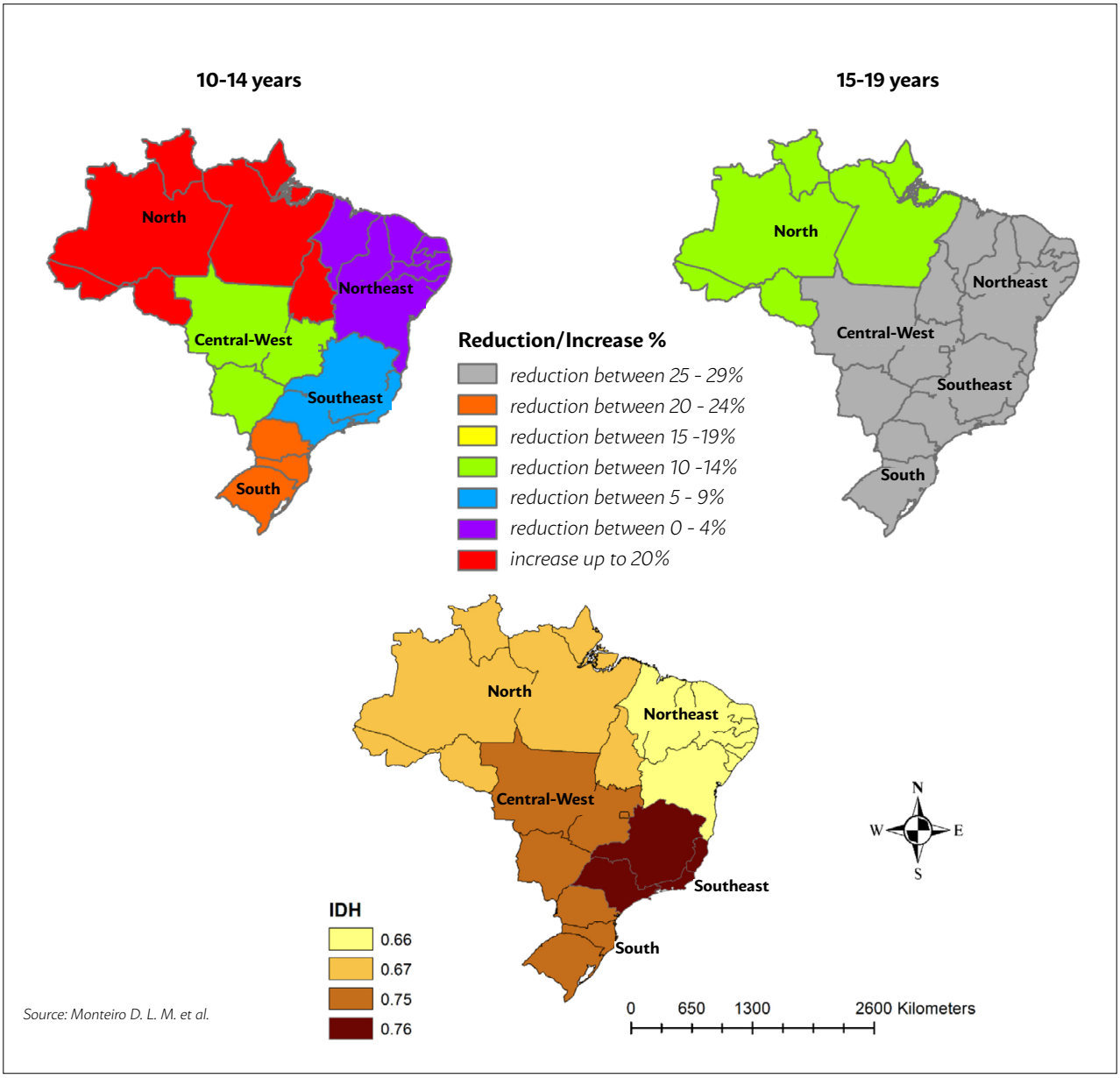
The study found a decrease of LB from adolescent mothers in Brasil caused by a reduction in the number of LB from mothers aged between 15 and 19 years old. However, it also found a slight increase in births in the age group younger than 15 years old, over the period studied.

According to the IBGE, Brasil had a sharp drop in the total number of live births between 2000-2001, 2005-2006, 2008-2009, and 2015-2016. Between 2009 and 2013, births remained at the same level, with an increase of 2.5% and 1.5%, on average, in 2014 and 2015, respectively. The behavior of the total number of LB followed a reduction trend similar to that of the group of adolescent mothers, except in 2015. The North and Northeast had the greatest drop in the Total Fertility Rate (TFR) between 2000-2015. The drop was caused by the reduction of the TEF among women aged between 15-29 years old. It is estimated that the average TFR of the Northern region reached, in 2015, 2.1 children per woman, which corresponds to the limit that ensures the population replacement level. This same figure was reached in the Northeast in 2004, and at the beginning of the 2000s in other regions. In the Northeast, there was aging in the fertility pattern because, in recent years, it has become evident the increased participation in fertility by women aged 30-34 years and a reduction by the age group between 15-24 years in the total fecundity. The Southeast and South regions had fewer variations in the TFR, with slight drops or increases over the period, characterizing a postponement of pregnancy from 15-24 years to 30-39 years.[10]

Although the Brazilian TFR is already low, teenage pregnancy is still quite high. In Brasil, in 2015, the TFR was 1.72 children per woman, placing the country at the 158th position among countries with the highest fertility rate.[9] In the United States of America (USA), in 2015, the fertility rate was 62.5/1,000 women aged between 15 and 44 years, and the TFR was 1.84 births/1,000 women.[2,4]

This study shows that, in Brasil, in 2015, there were 547,564 LB from adolescent mothers. In the US, in the same year, the overall rate of LB reached a historic low of 22.3 births for every 1,000 adolescents aged between 15-19 years old, a reduction of more than 60% since 1991, totaling 229,715 LB from adoles-

FIGURE. RATIO BETWEEN THE PERCENTAGE OF LIVE BIRTHS AND MOTHERS IN THE AGE GROUP OF 10-14 YEARS AND 15-19 YEARS BETWEEN 2006-2015, PER MACROREGION



cent mothers.[2,4] According to the WHO, in Brasil, that figure is 68.4/1,000 adolescents aged between 15-19 years old, higher than the Latin American average. Venezuela occupies the first position, with 80.9/1,000, followed by Ecuador with 77.3/1,000, Bolivia with 72.6/1,000, and then the United States.[4,13] France has the lowest rates, with seven pregnancies per thousand teenagers.[4] The results of this study indicate that, in Brasil, the ASFR for the age group between 15-19 years old dropped to 61.8/1,000 teenagers in 2015. The global rate of births among adolescents decreased from 65 births per 1,000 in 1990 to 47 in 2015.[14] In Brasil, it remains high even with the reduction of births among adolescents aged between 15 and 19 years. What is most worrying is the stabilization tendency among the age group between 10-14 years old.[3,6]

The data presented represent only the total number of births among adolescent mothers, not the totality of teenage pregnancy cases, since it is not possible to quantify the number of abortions and stillbirths, which is a limitation of the study. Another limitation was the proportion of mothers whose age was not recorded because it could include adolescents. Therefore, the data may be underestimated and might not reflect the actual frequency of teenage pregnancy in Brasil. However, the reduction in the number of mothers whose age was not reported indicates an improvement in the quality of data collection by SINASC.[12]

Despite the reduction in fertility rates in Latin America and the Caribbean in recent years, among ad-

olescents, that drop has been minimal over the last 30 years, and a tendency of increase has remained among women younger than 15 years old. West Africa has the highest rate of teenage pregnancy in the world, with a birth rate of 115 births per 1,000 adolescents.[1,15]

In Brasil, over the past ten years, the fertility of adolescents aged between 15 and 19 years dropped about 18.6%.[16] Nevertheless, the participation of this group in total fertility remained high[16]. In Rio Grande do Sul, in 1999, the fertility rate was 20.2% and 17.4% in 2008, with a reduction of 50 thousand births over this period.[17] However, this is not the reality of the entire country, considering the results of this study in relation to mothers aged between 10-14 years.

A previous study by our research group has confirmed the decrease in the percentage of live births from mothers aged between 10-19 years old in Brasil, from 23.5% in 2000 to 19.3% in 2011, and the reduction of the number of mothers whose aged is ignored, especially after 2005. The reduction in the number of LB was observed in all Brazilian macroregions among mothers aged between 15-19 years old, but there was an increase among mothers younger than 15 years old in the North and Northeast regions (12.5% and 13.4%, respectively).[3] The present study shows that in the North, the situation is now changing since there was a slight reduction in the rate of births from younger mothers. This is the first study to show this important result. The literature, when describing data on teenage pregnancy, most often refers to the age range between 15-19 years old. The relationship between adolescence pregnancy and social, educational, economic, and cultural factors indicate a decision to postpone the age of the pregnancy. Income inequality, underemployment, and low levels of formal education contribute to the increase in its incidence.[18] This study confirms that Brazilian regions with higher HDI (South, Southeast, and Central-West) have lower rates of LB from adolescent mothers, which could be considered as a possible marker of development.[3] The exception was the Northeast, where births from women aged 15-19 years had a greater reduction than expected since this is the region with the lowest HDI. Duarte et al.[18] compared adolescents who lived in four areas with different degrees of social exclusion in Santo André (SP). Formal education had a statistically significant relationship with poorer areas, which accounted for a higher number of adolescents with less schooling. In addition, 76.8% of babies with low birth weight and a higher rate of fertility were found in poorer areas of the city.[18]

Pregnancy can take different meanings from the teenager's perspective. Therefore, it is important to emphasize that intentional pregnancy at a young age can be seen as a life project by the adolescent. Pregnancy at a young age may represent a search for autonomy and responsibility, as well as a source of satisfaction and a new identity with the role of a mother. Pregnancy can be seen as a way to mark their space in the family and be acknowledged by friends and family.[19] When there is support by the family and partner, proper prenatal care, and continuation of the studies, a planned pregnancy at a young age can be a positive event.

Thus, although the statistics show a slight decline in their frequency, it is important to highlight the strategies for addressing the problem, so that the adolescence pregnancy can be a decision and not the consequence of the lack of public policies targeted at adolescents.

RESUMO

INTRODUÇÃO: *A gravidez na adolescência é fenômeno universal, com maior prevalência nos países em desenvolvimento. Embora venha apresentando redução desde 2000 no Brasil, a taxa de fecundidade específica para essa faixa etária permanece elevada.*

OBJETIVO: *Avaliar a frequência da gravidez na adolescência no Brasil, no período de 2006 a 2015, e a associação com o Índice de Desenvolvimento Humano (IDH).*

MÉTODO: *Estudo epidemiológico, descritivo, realizado por busca no banco de dados no Departamento de Informática do Sistema Único de Saúde (Datasus), utilizando informações do Sistema de Informação sobre Nascidos Vivos (Sinasc) sobre as cinco regiões brasileiras.*

RESULTADOS: *Ocorreu queda do percentual de nascidos vivos (NV) de mães adolescentes (10 a 19 anos) no Brasil de 13,5% nos últimos dez anos. Essa redução foi notada em todas as regiões brasileiras, entre mães de 15 e 19 anos. O número de NV aumentou 5,0% entre aquelas de 10 a 14 anos na Região Norte e foi reduzido nas demais regiões, sendo maior no Sul (18,0%). A taxa de fecundidade específica de 15-19 anos diminiu de 70,9/1.000 para 61,8/1.000 no período. A proporção de NV se associa inversamente ao IDH, exceto no Nordeste, onde ocorreu importante redução (18,0%) entre as mães de 15-19 anos e de 2% entre 10-14 anos.*

CONCLUSÃO: *A gravidez na adolescência no Brasil encontra-se em lento declínio, especialmente entre 10-14 anos, e está inversamente associada ao IDH, exceto no Nordeste.*

PALAVRAS-CHAVE: *Gravidez na adolescência. Prevalência. Epidemiologia. Adolescente.*

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