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Repeated adolescent pregnancy in Brazil from 2015 to 2019

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SUMMARY

OBJECTIVE: The aim of this study was to assess the rate of repeated pregnancy in adolescence and its association with early marriage and education level.

METHODS: This is a cross-sectional study conducted by searching the Live Births Data System. The study included all adolescents in the age group 10–19 years with live births from 2015 to 2019 (n=2,405,248), divided into three groups: G1: primiparas; G2: with 1 previous pregnancy; and G3: with two or more previous pregnancies.

RESULTS: Total repeated pregnancies remained stable, along the years. In the age group 10–14 years, the decrease in the period was from 5.0 to 4.7%, whereas in the age group 15–19 years, it was from 27.8 to 27.3%. Being married or in a stable union increases by 96% the chance of repeated pregnancy in the age group 10–14 years (p<0.001; OR=1.96; 95% confidence interval [CI] 1.85–2.09). In the age group 15–19 years, the chance of repeated pregnancy among the married or in stable union increased 40% (p<0.001; OR=1.40; 95%CI 1.39–1.41)). Girls aged 10–14 years with an education level of<8 years had a 64% higher chance of repeated pregnancy (p<0.001; OR=1.64; 95%CI 1.53–1.75), and among those aged 15–19 years, there was a 137% higher chance of repeated pregnancy (p<0.001; OR=2.37; 95%CI 2.35–2.38).

CONCLUSION: Repeated pregnancy in adolescence in Brazil remains very high over the years. There is an association between low education level and early marriage with repeated pregnancies in adolescence.

KEYWORDS: Pregnancy. Adolescent. Recurrence. Maternal age.

INTRODUCTION

Repeated pregnancy in adolescence is defined as a new pregnancy in the age group 10–19 years, being considered fast when a second delivery or a new pregnancy occurs within 2 years from the last pregnancy[1]. This is a matter of concern because it increases the risk for materno-fetal health[2].

In the United States of America (USA), approximately 12–49% of adolescent repeated pregnancies occur within 1 year of the previous pregnancy[3], reaching 63% within 18 months. Among girls with repeated pregnancy, two-third reported that it was a unplanned pregnancy[4-6].

The younger the adolescent mother is, the greater the socioeconomic vulnerability and the materno-fetal complications[2,6,7]. Experiencing another delivery before the age of 20 years may lead to unfavorable perinatal outcomes in a higher proportion than in the first childbirth. Repeated pregnancy in adolescence is more common in contexts of poverty, low education level, sexual initiation before the age of 15 years, early union, no use of effective contraceptive methods, and previous abortion or dead fetus birth[8-10].

As a single event, pregnancy in adolescence causes an important impact in the life of the adolescent and her family. Comparing with the first pregnancy, repetition leads to a greater risk of preterm birth, low-weight birth, greater perinatal and neonatal mortality, and child developmental disorders[5-7]. This reflects the lack of capacity of health systems to supply the basic needs of health education and social well-being of adolescents following the first pregnancy. Because of the effects throughout life, it is essential to identify the causes of repeated pregnancy in adolescence in order to develop appropriate prevention strategies to reduce its occurrence[9].

The aim of this study was to assess repeated pregnancy among Brazilian adolescents in the period from 2015 to 2019 and its association with marital status and educational level.

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METHODS

This is a cross-sectional study conducted with data obtained from the Live Births Data System (SINASC), through the server of the Informatics Department of the Unified Health System (DATASUS) with the purpose of gathering epidemiological data on informed births in the national territory[11]. The following variables were used to perform this study: birth according to the mother's place of residence, birth according to region of the country, year of birth, maternal age, and number of pregnancies.

The variable that assesses the number of previous pregnancies is named QTDGESTANT in the DATASUS database. The download of data from SINASC was performed from the DATASUS page for the years from 2015 to 2019 (Brazil, DATASUS). For each year and Federative Unity, there is a file in dBase File Compacted (*.dbc) format, which was converted into dBase File (*.dbf) via batch script (.bat) using the application TabWin developed by DATASUS (Brazil, DATASUS). Since the database comprises millions of registers, it was necessary to use the Database Management System (DBMS) to analyze and manipulate such a large amount of data. The option was for DBMS open source PostgreSQL, version 11.8. Data were imported into PostgreSQL from DBF files by means of scripts developed in Python language, version 3.8.

The study encompassed all women in the age group 10–19 years who had live births (LB) in Brazil in the period 2015–2019, with data available in the SINASC database (n=2,405,248). Data obtained included the total number of LB in age groups 10–14 and 15–19 years, to calculate LB rate of repeated pregnancies among adolescent mothers. The adolescents were placed in three groups: group 1: primiparas; group 2: with one previous pregnancy (second pregnancy); and group 3: with two or more previous pregnancies. There was also the assessment of sociodemographic data referring to marital status and education level of adolescent mothers, with the purpose of relating them to the prevalence of repeated pregnancy. Data were analyzed by the Epi-Info 3.5.4 software.

The research project that resulted in this article was sent to Plataforma Brasil, received the number CAAE 04209418.1.0000.5259, and was approved by the Research Ethics Committee of Pedro Ernesto University Hospital of Rio de Janeiro State University (UERJ).

RESULTS

The total of repeated pregnancies remained stable along the years. In the age group 10–14 years, the decrease in the period was from 5.0 to 4.7%, whereas in the age group 15–19 years, there was a decrease from 27.8 to 27.3% (Table 1). Repeated pregnancy two or more times among all adolescents presented a slight decrease (from 5.9% in 2015 to 5.5% in 2019) with higher frequency in the age group 15–19 years (Table 2).

Among adolescents aged from 10 to 14 years, in group 1 (primiparas), 19.1% were married or in a consensual union, and 63.6% had an education level lower than 8 years. In group 2 (second pregnancy), the rates were 31.1 and 73.3%, and in group 3 (two or more previous pregnancies), the rates were 35 and 70.1%, respectively. Among adolescents aged from 15 to 19 years, in group 1, 31.6% were married or in a consensual union, and 22.7% had an education level<8 years. In group 2, these rates were 38.4 and 38.0%, and in group 3, 42 and 51.7%, respectively (Table 3). It was observed that as the number of pregnancies increases, the same occurs with the rates of early marriage and low education level.

Being married or in a stable union increases the chance of repeated pregnancy by 96% in the age group 10–14 years (p<0.001; OR=1.96; 95% confidence interval [CI] 1.85–2.09) and by 40% (p<0.001; OR=1.40; 95%CI 1.39–1.41) in the age group 15–19 years.

Girls aged 10–14 years with an education level <8 years had a 64% higher chance of repeated pregnancy (p<0.001; OR=1.64; 95%CI 1.53–1.75), whereas in the age group 15–19 years, there was a 137% higher chance of repeated pregnancy (p<0.001; OR=2.37; 95%CI 2.35–2.38) (Table 3).

DISCUSSION

This is the first study to present data on repeated pregnancy in adolescence in the entire country, using official current data obtained from the full SINASC database of the Ministry of Health[11]. The available studies conducted until the present time are punctual and focused on the reality of the researchers' own states.

Despite the decrease of 37.2% in the frequency of adolescent pregnancy in the past years[12], repeated pregnancy does not occur in the same way. It can be verified that in Brazil, between 2015 and 2019, there was no significant decrease in repeated pregnancy.

It is observed that the occurrence of repeated pregnancy remains a great challenge in Brazil, as well as in several other countries.

In Uruguay, despite a 50% decrease in the rate of adolescent pregnancy (from 72 to 36‰)[13], repeated pregnancy in adolescents aged<15 years is maintained at 20%, and as the age raises, there is an increase in the number of planned pregnancies[14]. In Chile, there was a decrease from 57.5‰ in 2010 to 26.5‰ in 2017[13]; however, repeated pregnancy is an issue

Table 1. Distribution of repeated pregnancy among adolescents in the period 2015 to 2019 in Brazil.

Year	Repeated pregnancy age 10–14	%	Total births age 10–14	Repeated pregnancy age 15–19	%	Total births age 15–19
2015	1,146	5.0	23,016	129,969	27.8	467,583
2016	1,144	5.4	21,272	121,922	28.0	436,010
2017	1,064	5.3	19,988	118,698	27.9	426,104
2018	920	4.7	19,472	112,882	27.5	410,616
2019	849	4.7	17,942	103,495	27.3	379,723
Year	Age 10 to 14 years					
	Primiparas		1 previous pregnancy		2 or more previous pregnancies	
	Freq. (%)		Freq. (%)		Freq. (%)	
2015	21,870 (95.0)		1,058 (4.6)		88 (0.4)	
2016	20,128 (94.6)		1,058 (5.0)		86 (0.4)	
2017	18,924 (94.7)		980 (4.9)		84 (0.4)	
2018	18,552 (95.3)		847 (4.3)		73 (0.4)	
2019	17,093 (95.3)		786 (4.4)		63 (0.4)	
	Age 15 to 19 years					
2015	337,614 (72.2)		104,466 (22.3)		25,503 (5.5)	
2016	314,088 (72.0)		98,141 (22.5)		23,781(5.5)	
2017	307,406 (72.1)		95,627 (22.4)		23,071(5.4)	
2018	297,734 (72.5)		91,315 (22.2)		21,567 (5.3)	
2019	276,228 (72.7)		84,034 (22.1)		19,461(5.1)	

Source: The authors.

Table 2. Distribution of marital status in adolescence per age group and association of marital status with repeated pregnancy in adolescence in Brazil (2015–2019).

Frequency of marital status			
Marital status	Age 10 to 14 years		
	Primiparas	1 previous pregnancy	2 or more previous pregnancies
	Freq. (%)	Freq. (%)	Freq. (%)
Single/widow/separated	76,916 (79.6)	3.172 (70.1)	250 (63.5)
Married/consensual union	18,416 (19.1)	1,470 (31.1)	138 (35.0)
Ignored	1,235 (1.3)	87 (1.8)	6 (1.5)
	Age 15 to 19 years		
Single/widow/separated	1,033,401 (67.4)	285,680 (60.4)	64,176 (56.6)
Married/consensual union	484,865 (31.6)	182,068 (38.4)	47,640 (42.0)
Ignored	14,804 (1.0)	5,835 (1.2)	1,614 (1.4)
Association of marital status with repeated pregnancy			
	Repeated pregnancy – age 10 to 14 years		
Marital status		**Yes**	**No**
Single/widow/separated		1,608	18,416
Married/consensual union		3,422	76,916
Total		5,030	95,332
p<0.001; OR=1.96; 95%CI (1.85–2.09)			
	Repeated pregnancy – age 15 to 19 years		
Marital status		**Yes**	**No**
Single/widow/separated		229,708	484,865
Married/consensual union		349,856	1,033,401
Total		579,564	1,518,266
p<0.001; OR=1.40; 95%CI (1.39–1.41)			

Source: The authors

Table 3. Distribution of education level in adolescence per age group and association of education level with repeated pregnancy in adolescence in Brazil (2015–2019).

Frequency of education level			
Education level	Age 10 to 14 years		
	Primiparas	1 previous pregnancy	2 or more previous pregnancies
	Freq. (%)	Freq. (%)	Freq. (%)
<8 years	61,394 (63.6)	3,465 (73.3)	276 (70.1)
8 years or more	33,841 (35.0)	1,155 (24.4)	105 (26.6)
ignored	1,332 (1.4)	109 (2.3)	13 (3.3)
	Age 15 to 19 years		
<8 years	347,632 (22.7)	180,162 (38.0)	58,628 (51.7)
8 years or more	1,166,350 (76.1)	285,855 (60.4)	52,641 (46.4)
ignored	19,088 (1.2)	7,566 (1.6)	2,161 (1.9)
Association of education level with repeated pregnancy			
		Repeated pregnancy – age 10 to 14 years	
Education level		Yes	No
<8 years		3,741	61,394
8 years or more		1,260	33,841
Total		5,001	95,235
p<0.001; OR=1.64; 95%CI (1.53–1.75)			
		Repeated pregnancy – age 15 to 19 years	
< 8 years		238,790	347,632
8 years or more		338,496	1,166,350
Total		577,286	1,513,982
p<0.001; OR= 2.37; 95%CI (2.35–2.38)			

Source: The authors.

that has not yet been resolved and is a challenge for public policies for adolescent health[15].

In the USA, repeated pregnancy in adolescence decreased from 53.8 to 16.9% between 2004 and 2015[16]. In 2017, 16.3% of North-American girls in the age group 15–19 years became pregnant again during adolescence[17].

In Australia and Canada, the prevalence of repeated pregnancy in adolescence is of 33 and 15.2%, respectively[18].

In Uganda, repeated childbirth in adolescence has not decreased in the past 30 years, and the average number of live births among women aged<20 years remains at 2.2[7].

Available specific data for some states of Brazil reveal that in Piauí, the prevalence of repeated pregnancy within the period of 2 years after the end of a pregnancy was 25.9% in the capital and 35.4% in the hinterland[19]. A study conducted in Ceará presented 61% of adolescent pregnancy 5 years after the first pregnancy, and 40% of them had become pregnant more than once within this period[20].

Early marriage is an important cause of a new pregnancy, because it provides family structure, which in many cases leads to nonregular use of contraception methods, hence the occurrence of a new pregnancy. Brazil is ranked fourth worldwide in absolute numbers, with more child marriages. In the country, 26% of the female population marries before the age of 18 years[21]. The Federal Government published Law No. 13.811/2019, which prohibits the marriage of adolescents younger than 16 years, aiming to minimize this problem, but it is not possible to avoid consensual unions[22].

Often, marriage and maternity are the way in which those adolescents are inserted in adult life and have a more important role in their families, thus creating a vicious circle of poverty and repeated pregnancy.

According to the World Health Organization, the problem of pregnancy in adolescence becomes greater as the adolescent's age decreases. The United Nations Population Fund showed that of 7.3 million pregnant adolescents worldwide,

2 million are aged less than 14 years. This situation may induce the aforementioned vicious circle of poverty and low education level, with a decrease of three times in the opportunity of achieving a university degree, and an income that is on average 24% lower than that of women who are the same age without children[23].

Confirming the findings of this research, Maravilla et al., in a meta-analysis, showed that continuing at school and having more years of education are protective factors for the prevention of repeated pregnancy in adolescence[9].

This situation was even more aggravated with the COVID-19 pandemic. It has been highlighted that schools were closed in 194 countries due to pandemic restrictions, thus increasing social inequality. In sub-Saharan Africa, approximately 1 million girls did not return to school due to pregnancy during the period of COVID-19 restriction measures[24].

Systematic reviews suggest that the most efficient strategies to prevent repeated pregnancy in adolescence are the promotion of access to highly effective methods, especially long-acting reversible contraceptives (LARC), which include hormonal intrauterine devices (IUD), copper IUD, and etonogestrel implants. This should be followed up by means of motivational interviewing conducted by skilled nurses, who provide individualized education on birth control options based on the adolescents' preferences, besides guiding them toward effective contraception[9,25]. The offer of LARC in the immediate postpartum results in a higher rate of permanence of its use at 3, 6, and 12 months, and the supply of LARC before hospital discharge increases the chances of effective contraception in the postpartum, significantly reducing repeated pregnancy in adolescence[3].

As limitations of this study, we point out the fact that it was conducted using SINASC data, which made it impossible to assess the interval between pregnancies, if it was a planned or unplanned pregnancy, if the new pregnancy was from the same partner, and previous abortion history. However, the finding of a high rate of repeated pregnancy in adolescence in Brazil highlights the dimension of the problem and the need for effective public policies for its reduction.

CHECKLIST

STROBE.

AUTHORS' CONTRIBUTIONS

DLMM: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. **NCPR:** Conceptualization, Data curation, Formal Analysis, Investigation, Methodology. **FRDM:** Data curation, Formal Analysis, Investigation, Writing – original draft, Writing – review & editing. **IMSL:** Data curation, Formal Analysis, Writing – original draft, Writing – review & editing. **MBC:** Data curation, Formal Analysis, Writing – original draft, Writing – review & editing. **ZVB:** Data curation, Formal Analysis, Investigation, Writing – original draft, Writing – review & editing. **JASR:** Data curation, Formal Analysis, Writing – original draft, Writing – review & editing.

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