

**ORIGINAL ARTICLE** 

## ADOLESCENT PREGNANCY AND PREMATURITY: IS THERE AN ASSOCIATION?

GRAVIDEZ NA ADOLESCÊNCIA E PREMATURIDADE: EXISTE ASSOCIAÇÃO?

#### EMBARAZO ADOLESCENTE Y PREMATURIDAD: EXISTE UNA ASOCIACIÓN?

Thayna Pinheiro da Silva Santos<sup>1</sup>, Emilia da Silva Pio<sup>2</sup>, Francely de Castro e Sousa<sup>3</sup>

#### ABSTRACT

The objective of this study was to verify the existence of a relationship between premature births and early pregnancies in the municipality of Ponte Nova – MG. For this, secondary data from SINASC was used, consisting of the number of babies born alive to teenage mothers, based on the total records of live births from the years 2008/2018. A total of 2.958 adolescent mothers were observed, analyzing term and preterm births, it was found that most adolescents became pregnant between the ages of 15 and 19, in addition to not having a partner, low education and being predominantly black and brown, demonstrating a family, emotional, economic and social vulnerability. Furthermore, it was observed that the number of prenatal consultations was lower in mothers of premature babies, as for the type of delivery, vaginal was the most common. Using Pearson's correlation coefficient, the existence of a correlation between teenage pregnancy and prematurity was found to be highly significant given 0.82. Therefore, the present study proved to be necessary, since it evidenced the need to evaluate, discuss and propose intervention measures regarding the early pregnancy of adolescents. **Keywords**: *Adolescent, Pregnancy in Adolescence, Infant Premature*.

#### RESUMO

Objetivou-se verificar a existência da relação entre os nascimentos prematuros e as gestações precoces no município de Ponte Nova – MG. Para isso, foram utilizados dados secundários do SINASC, constituídos pelo número de bebês nascidos vivos de mães adolescentes, a partir do total de registros de nascidos vivos dos anos de 2008/2018. Foram verificadas 2.958 mães adolescentes, observando os nascimentos a termo e pré-termo, encontrou-se que a maior parte das adolescentes engravidaram entre 15 e 19 anos de idade, além de apresentarem ausência de companheiro, escolaridade mediana e serem predominantemente pretas e pardas, demonstrando a vulnerabilidade familiar, emocional, econômica e social. Ademais, observou-se que o número de consultas pré-natais esteve menor nas mães de nascidos prematuros, já sobre o tipo de parto, o vaginal apresenta-se em evidência. Por meio do Coeficiente de Correlação de Pearson, constatouse a existência da correlação entre gravidez na adolescência e a prematuridade com alta significância dado por 0,82. Portanto, o presente estudo mostrou-se necessário, uma vez que evidenciou a necessidade de se avaliar, discutir e propor medidas de intervenções no que tange a gravidez precoce de adolescentes.

Palavras-chave: Adolescente; Gravidez na Adolescência; Recém-Nascido Prematuro.

#### RESUMEN

El objetivo fue verificar la existencia de una relación entre partos prematuros y embarazos precoces en el municipio de Ponte Nova - MG. Para ello, se utilizaron datos secundarios del SINASC, que consisten en el número de bebés nacidos vivos de madres adolescentes, con base en los registros totales de nacidos vivos de los años 2008/2018. Se observaron 2.958 madres adolescentes, observando partos a término y pretérmino, se encontró que la mayoría de las adolescentes quedaban embarazadas entre los 15 y 19 años de edad, además de no tener pareja, educación media y ser predominantemente negra y morena, demostrando ser familiar, emocional, económico. y vulnerabilidad social. Además, se observó que el número de consultas prenatales fue menor en las madres de prematuros, en cuanto al tipo de parto, se evidencia el vaginal. Utilizando el coeficiente de correlación de Pearson, se encontró que la existencia de una correlación entre el embarazo en la adolescencia y la prematuridad era altamente significativa dado 0,82. Por lo tanto, el presente estudio resultó ser necesario, ya que resaltó la necesidad de evaluar, discutir y proponer medidas de intervención con respecto al embarazo adolescente precoz.

Palabras clave: Adolescente, Embarazo adolescente, Recién nacido prematuro.





<sup>&</sup>lt;sup>1</sup> Faculdade Dinâmica do Vale do Piranga. Ponte Nova, Minas Gerais, Brasil. (0000-0002-5724-6146)

<sup>&</sup>lt;sup>2</sup> Faculdade Dinâmica do Vale do Piranga. Ponte Nova, Minas Gerais, Brasil. (0000-0001-8130-5196)

<sup>&</sup>lt;sup>3</sup> Faculdade Dinâmica do Vale do Piranga. Ponte Nova, Minas Gerais, Brasil. (0000-0002-1881-6409)

## **INTRODUCTION**

he social assessment of the behavior and development of an individual in your group is part of the social rules that permeate all ages, including childhood, adolescence, adulthood and old age. The person's age is an important sociocultural reference, as it reflects common and significant behaviors for the understanding of society <sup>1</sup>.

Adolescence, in turn, is the stage of development between 10 and 19 years old, essential for human beings to reach their biopsychosocial maturity. In it, there is also the discovery of sexuality, new bodily sensations and the search for interpersonal relationships among young people. Thus, in this context of new and surprising needs, the first sexual contacts occur, often causing unplanned pregnancy  $^2$ .

According to Martins et al.<sup>3</sup>, the young population constitutes more than a third of the total, the largest cohort of adolescents of all times, accounting for one million pregnancies/year. Thus, in our country, teenage pregnancy is recognized as a growing public health problem.

Pregnancy is a phase of natural development for women, however, when it occurs outside the conventional age for reproduction (between 20 and 29 years), there is a need for special attention to this mother, as it is associated with the possibility of complications, including maternal and child mortality <sup>4</sup>.

According to the IBGE (Brazilian Institute of Geography and Statistics) <sup>5</sup>, in 2010, the group of women aged 10 to 19, defined by the WHO (World Health Organization) as the period of adolescence, represented 17.3% of the Brazilian population, and the proportion of pregnancy in this age group was 19.3%, with 0.9% in children under 15 years of age and 18.3% in women aged 15 to 19 years.

An adolescence, pregnancy occurs in an organism that is still in the physical and emotional development stage, and may present growth and development problems, emotional and behavioral, educational and learning disorders, in addition to pregnancy complications, problems inherent to childbirth and possible repercussions also on the newborn, such as the risk of low birth weight and prematurity, thus causing an increase in morbidity and mortality rates for both  $^{6}$ .

Prematurity, a situation in which the child is born with less than 37 weeks of gestation, is a priority in terms of public health, especially because it is the leading cause of neonatal deaths and the second leading cause of mortality in children under 5 years old  $^{7}$ .

The relevance of this study is due to the reflection that infant morbidity and mortality, especially that of children of teenage mothers, is still high in developing countries, such as Brazil. Gomes, Fonseca and Veiga <sup>8</sup> stated that due to low purchasing power and restricted access to health resources, pregnant teenagers do not receive the necessary support to monitor the pregnancy, in addition to not receiving the necessary guidance regarding basic care, in order to ensure the well-being of the child. Linked to this, prematurity becomes an even more difficult factor for early motherhood.

Given the above and the scientific gap related to the theme of this study, the following problem question arises: Is there a relationship between teenage pregnancy and the birth of premature children?

Finally, since there are few studies related to this theme in the microregion of Ponte Nova, Minas Gerais, especially with the focus on teenage pregnancy and its relationship with premature births, to fill this gap in the literature, contributing to preventive actions with regard to the consequences of unwanted motherhood and child prematurity.

This study aims to verify whether there is a relationship between premature births and teenage pregnancies in the city of Ponte Nova - MG, in the period between 2008 and 2018. More specifically, it intends to trace the socioeconomic profile of adolescents who had children, as well. how to

characterize the pregnancies and births of these adolescents.

## **METHODS**

This is a cross-sectional study, descriptive in nature, with a quantitative approach, based on secondary data from SINASC (Information System on Live Births) available on the DATASUS (SUS Department of Informatics) website, through access to the tabs "data on live births, corresponding years and places". The survey was carried out between the 8th and 12th of July 2020.

It is noteworthy that, since 1990, the Ministry of Health (MH) of Brazil implemented the SI-NASC (Information System on Live Births), which uses an individualized and standardized document at the national level: the Live Birth Declaration. It is an official document that must be issued by the Health Unit where the birth took place. This includes obtaining fundamental and extremely useful data, related to the conditions of the child at birth, about pregnancy, childbirth and the special characteristics of the mother, allowing the establishment of the epidemiological profile of this population, as well as the calculation of specific rates of infant mortality essential for planning and policy decision in the area of maternal and child health 9.

The population studied involves data from the city of Ponte Nova – MG, a service center in several cities. The sample consisted of the number of babies born alive to teenage mothers. From the total number of live births from 2008 to 2018, full term and preterm births from teenage mothers were selected. The time interval is justified by the fact that 2018 is the last year with information available in SINASC, thus, in the absence of a specific milestone, the last 10 years were used.

The variables considered for the selection of data necessary for this study were: duration of pregnancy in preterm (<37 weeks) and term (37 to 42 weeks) weeks; characteristics of the mother: age (10 to 19 years); marital status (single, widow, legally separated, married); educational level; race/color; pregnancy and childbirth (number of prenatal consultations, type of childbirth, place of occurrence and municipality of residence). The dependent variable of this study was the maternal age group.

The data obtained were digitized into a Microsoft Excel spreadsheet (2016) and analyzed using the Pearson correlation coefficient to measure the existence of a correlation between teenage pregnancy and prematurity, checking the intensity of the findings. The determination of the strength of association was calculated by simple linear regression to estimate a function and test its statistical significance on the variables. In order to understand and visualize the general results, they were expressed as a percentage and presented in graphs and tables.

As for ethical aspects, submission to the Research Ethics Committee was not necessary, since the study does not involve human beings; it analyzes secondary, public domain data that does not identify participants.

## **RESULTS AND DISCUSSION**

The results obtained were presented in three steps. In the first stage, the socioeconomic profile of women was evidenced, from the perspective of age, marital status, education and race/color. This is because, according to the literature found, in addition to age, variables related to socioeconomic issues are also considered determinants of prematurity10. In the second stage, the variables directly related to the women's pregnancy were verified and the number of prenatal consultations, the type of childbirth the place of occurrence and the municipality of residence were analyzed. Finally, in the third stage, the results of the general objective of the work were discussed, and the temporal trajectory of the number of records of premature births and children of adolescent women was analyzed.

## *I. SOCIOECONOMIC PROFILE OF TEENAGE MOTHERS*

According to data from SINASC, of the total of 18,669 mothers of live births in Ponte Nova/MG, from 2008 to 2018, both term and preterm, 2,958 were of teenage mothers, among these, 3.27% (97) were aged between 10 and 14 years, while those between 15 and 19 years represented 96.72% (2,861) of the sample. The main socioeconomic characteristics of adolescent mothers from 2008 to 2018 were described in Table 1.

Table 1. Characteristics of teenage mothers in the city ofPonte Nova – MG, from 2008 to 2018.

Characteristics	A- (n)	Term (%)	Pre-Term (n) (%)			
Age	(II)	(70)	(II)	(70)		
10 a 14 years		3,10%	15	4,85%		
-	82			,		
15 a 19 years	2567	96,90%	294	95,15%		
Total	2649	100%	309	100%		
Marital Status						
Single, widow, legally separa-	2145	80,97%	257	83,17%		
Married	497	18,76%	51	16,50%		
Not informed, ignored	7	0,26%	1	0,32%		
Total	2649	100%	309	100%		
Education						
Not education	6	0,23%	0	0,00%		
1 to 3 years of study	172	6,49%	22	7,12%		
From 4 to 7 years of study	879	33,18%	98	31,72%		
From 8 to 11 years of study	1518	57,30%	180	58,25%		
12 years and over	61	2,30%	8	2,59%		
Not informed, ignored	13	0,49%	1	0,32%		
Total	2649	100%	309	100%		
<b>Race/Skin Color</b>						
Yellow	10	0,38%	1	0,32%		
White	747	28,20%	62	20,06%		
Brown	1690	63,80%	203	65,70%		
Black	192	7,25%	43	13,92%		
Not informed, ignored	10	0,38%	0	0,00%		
Total	2649	100%	309	100%		

**Source** – Research Data.

Observing the characteristics of adolescent mothers of live births (Table 1), it is noted that 2649 births were at term, which is equivalent to 89.55%, and 309 preterm, equivalent to 10.45%. Of those who had preterm birth, 4.85% (15) were between 10 and 14 years old and 95.15% (294) were between 15 and 19 years old. Of the mothers of live births at term, 3.10% (82) aged from 10 to 14 years and 96.90% (2,567) aged from 15 to 19 years.

The IBGE 11, in 2009, recorded percentages in the various states of Brazil that are important for the comparison of this study, as the percentage of live births in women under 20 was 21.6% for all of Brazil, that is, the microregion presents data that arouse attention.

There are several aspects involved in this situation, it is not just about health, but also about social, cultural, psychological and economic aspects, given that great loneliness and family distancing are observed in adolescents, in addition to the abandonment and/or postponement of studies, which generates greater attachment to the bond with the parents, due to the impossibility of independence <sup>12</sup>.

Considering the family condition, the marital status was analyzed (Table 1) and, of adolescent mothers of premature births, 83.17% (257) were single, widowed or legally separated, while married women accounted for 16.50% (51). With regard to adolescent mothers of live births at term, 80.97% (2,145) did not have partners, while 18.76% (497) had partners. Thus, it is also observed that mothers of premature babies had lower rates of stable relationships.

Some authors found similar results, pointing out that most adolescents did not have a partner (being single, widows or legally separated), and in the present study, married women presented more premature births than full-term births. However, most of the adolescents were single, which shows the lack of family planning, leading to an increase in possible family disorders <sup>13</sup>.

Analyzing the level of education of adolescent mothers (Table 1), among those who had premature births, there was no lack of education, and 7.12% (22) studied from 1 to 3 years; 31.72% (98) from 4 to 7 years; 58.25% (180) from 8 to 11 years and 2.59% (8) 12 years or more of education. Of the mothers who gave birth at term, 0.23% (6) had no schooling; 6.49% (172) studied from 1 to 3 years; 33.18% (879) from 4 to 7 years, 57.30% (1518) from 8 to 11 years and 2.30% (6) 12 or more years of education. Analyzing the above, it is noted that, both in term and in preterm births, adolescent mothers had an average level of education, bringing a reflection on the need for adequate training for safe sexuality even in schools.

Interviews conducted by a study in Rio de Janeiro, in 2003, showed that the abandonment of studies did not occur because of the school's rejection of the condition of pregnant women, but because of feelings of shame on the part of the adolescents themselves, a feeling of denial for exercising sexuality or dissatisfaction with pregnancy. It is noted that these emotional factors are associated with the lack of encouragement from the parents, who, in turn, value work more, through which the young woman can help with the family income, than their daughters' studies. Failure to complete schooling leads to difficulties in achieving financial and professional independence <sup>12</sup>.

An approach to teenage motherhood highlighted that the Beijing Conference found that premature motherhood remains an obstacle to the educational, economic and social evolution of women around the world and can drastically reduce education and employment opportunities for teenagers, possibly impairing, in the long term, their quality of life and that of their children <sup>14</sup>.

As for the ethnic characteristics of these adolescent mothers (Table 1), it was observed that, in relation to mothers of premature babies, 0.32% (1) were yellow, 20.06% (62) were white, 65.70% ( 203) brown and 13.92% (43) black. As for the mothers of full-term births, 0.38% (10) were yellow, 28.20% (747) white, 63.80% (1690) mixed and 7.5% (192) black. Thus, it appears that most mothers are of mixed race/color, as shown in

studies in the United States, where the association between race and infant mortality is constantly observed, with high rates of neonatal mortality among newborns. -born black, which result in an excess of premature births and fetal growth restriction <sup>15</sup>.

According to the analysis of the profile and characteristics of adolescent mothers in Ponte Nova - MG, from 2008 to 2018, the need for health promotion and for the approximation of knowledge by health professionals is evident. This will result in better meeting the needs of pregnant teenagers. In addition, it is important for pregnant women to also promote educational activities about sexuality, with holistic knowledge, clear, objective and safe information that can address all the demands of these women in their biopsychosocial form <sup>19</sup>.

## II. CARACTERÍSTICAS DA GESTAÇÃO

It is important to characterize the pregnancy of those born to adolescent mothers, given that it promotes the analysis of good mother-child development, through adequate prenatal care, as shown in Table 2.

Table 2. Characteristics of pregnancies of live births in the city of Ponte Nova - MG, from 2008 to 2018.

Characteristics	A-	Term	Pré-Term			
Characteristics	<b>(n)</b>	(%)	( <b>n</b> )	(%)		
Prenatal Consultations						
None	14	0,53%	0	0,00%		
From 1 to 3 appointments	115	4,34%	39	12,62%		
From 4 to 6 appontments	758	28,61%	142	45,95%		
7 and more	1759	66,40%	128	41,42%		
Not informed, ignored	3	0,11%	0	0,00%		
Total	2649	100%	309	100%		
Type of Childbirth						
Vaginal	1691	63,84%	200	64,72%		
Cesarean	956	36,09%	109	35,28%		
Not informed, ignored	2	0,08%	0	0,00%		
Total	2649	100%	309	100%		
Local of Occurence						
Hospital	2640	99,66%	308	99,68%		
Residence	2	0,08%	0	0,00%		
Other establishment	7	0,26%	1	0,32%		
Not informed, ignored	0	0,00%	0	0,00%		
Total	2649	100%	309	100%		
Municipality of Residence						
Acaiaca	79	2,98%	12	3,88%		
Alvinópolis	86	3,25%	9	2,91%		
Amparo do Serra	111	4,19%	10	3,24%		
Barra Longa	84	3,17%	8	2,59%		
Diogo de Vasconcelos	72	2,72%	5	1,62%		
Dom Silvério	30	1,13%		0,00%		

#### ADOLESCENT PREGNANCY AND PREMATURITY

Pinheiro T, Pio da Silva E, de Castro e Sousa F.

Guaraciaba	123	4,64%	14	4,53%
Jequeri	166	6,27%	20	6,47%
Oratórios	84	3,17%	9	2,91%
Piedade de Ponte Nova	109	4,11%	5	1,62%
Ponte Nova	966	36,47%	127	41,10%
Raul Soares	4	0,15%		0,00%
Rio Casca	147	5,55%	21	6,80%
Rio Doce	43	1,62%	1	0,32%
Santa Cruz do Escalvado	72	2,72%	7	2,27%
Santo Antônio do Grama	88	3,32%	7	2,27%
São José do Goiabal	53	2,00%	9	2,91%
São Pedro dos Ferros	30	1,13%	2	0,65%
Sem Peixe	16	0,60%	2	0,65%
Urucânia	154	5,81%	15	4,85%
Others	132	4,98%	26	8,41%
Not informed, ignored	0	0,00%	0	0,00%
Total	2649	100%	309	100%

**Source** – Research Data.

According to Table 2, it can be seen that there was no lack of prenatal consultations in the mothers of preterm infants, with 12.62% (39) having 1 to 3 consultations, 45.95% (142) from 4 to 6 appointments and 41.42% (128) 7 or more appointments. As for full-term live births, 0.53% (14) of mothers had no prenatal consultation, 4.34% (115) had 1 to 3 consultations, 28.61% (758) had 4 to 6 consultations and 66.40% (1,759) 7 or more consultations. From this analysis, it is observed that there was a difference between the follow-up of term and preterm births, as mothers of preterm live births had fewer prenatal consultations.

Opposing the results of the present study, the World Health Organization (WHO) recommends that prenatal care should start early and that an adequate number of consultations be carried out, which is why the Ministry of Health of Brazil established a minimum of six consultations during the pregnancy. The information available, however, refers to seven or more appointments with a doctor or nurse <sup>16</sup>.

A study carried out in Espírito Santo, in 2007, found that teenagers with preterm births had prenatal consultations, often in insufficient numbers, this fact being less evident in mothers with term births. The authors also considered that a justification for the result found is that the reduced number of prenatal consultations of adolescent mothers with preterm births may be due to the shorter gestational time. Thus, corroborating the present study, the need to implement actions that improve these mothers' access to health services is evident <sup>13</sup>.

Regarding the type of delivery of adolescent mothers (Table 2), it was observed that 64.72% (200) of premature births were in vaginal deliveries, while 35.28% (128) were in cesarean deliveries. Of the live births at term, 63.84% (1,691) were in vaginal deliveries and 36.09% (956) in cesarean deliveries.

The study by Nascimento et al.<sup>17</sup> points out that, despite the mode of delivery, taking into account the maternal age, there is a prejudice that adolescents were not "ready" to give birth by vaginal delivery, with immature uterine musculoskeletal structures for parturition and emotional unpreparedness , data from the literature show exactly the opposite, with the obstetric performance of adolescents being equal or even better than that of adult women regarding the mode of delivery.

Observing the place of occurrence of births (Table 2), it was found that 99.68% (308) of births of preterm newborns were hospitalized, none at home and 0.32% (1) in another establishment. As for term live births, 99.66% (2,640) were hospitalized, 0.08% (2) in households and 0.26% (7) in another establishment.

Note the importance of these births in hospitals, given that there is a need for assistance to the mother and especially the child, who may need a NICU (Neonatal Intensive Care Unit), where there is an increase in the rate of survival of premature babies due to changes in health care, in particular, with advances in the neonatal area <sup>17</sup>.

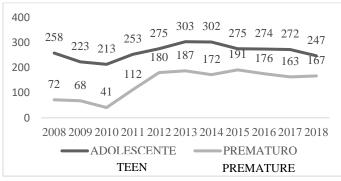
The municipalities of residence of adolescent mothers of live births (Table 2) were observed according to the Microregion of Ponte Nova – MG. Of the preterm live births, 41.10% (127) reside in the main municipality, Ponte Nova, while 50.49% (156) reside in the other municipalities of the Microregion of Ponte Nova and 8.41% (26) reside in municipalities outside the microregion of Ponte Nova. As for term births, 36.47% (966) reside in the main municipality, Ponte Nova, 58.53% (1551) reside in the other municipalities of the Microregion and 4.98% (132) reside in municipalities outside the Microregion of Ponte New.

It is observed that there was a great variation in the number of births in the cities of the micro-region of Ponte Nova in the period of 10 years (2008 to 2018), being observed that in some municipalities - such as Guaraciaba - the number of children of teenagers increased; in other municipalities - such as Santa Cruz do Escalvado - there was a decrease in the number of children born to teenage mothers, which may mean that in some municipalities the dissemination of information about teenage pregnancy has a greater reach than in other municipalities in the microregion.

# III. PREGNANCY IN ADOLESCENCE AND PREMATURITY

From the data analysis, it was found that there is a correlation between the number of premature births and the number of preterm pregnancies in adolescence of 0.82 (Graph 1), given that both the growth and the decrease in the number of preterm infants , tracks the growth and decrease of pregnancies in adolescence, respectively.

#### **Graph 1.** Temporal trajectory of the number of premature births and the number of pregnancies in adolescence in the micro-region of Ponte Nova.



**Source** – Research Data.

It is noted that, in 2008, the number of pregnant teenagers was 258 and the number of premature births was 72. It is important to highlight that, while in 2013 there was an increase in both records to 303 and 187, in 2018 there was a decrease in both to 247 and 167, a fact that can again be explained by the greater dissemination of information to adolescents about contraceptive methods and the importance of women's health care.

Confirming the results found in this study, an analysis carried out through the SINASC in Montes Claros - MG, in 2005, also observed adolescent mothers, differentiating them as precocious from 10 to 14 years old, late from 15 to 19 years old and adults above 20 years. The authors found significantly worse results in early adolescents, related to inadequate prenatal care, greater prematurity, greater risk for low birth weight and Apgar 5th below seven <sup>18</sup>.

Through a temporal analysis of births that occurred from 2008 to 2018, it is noted (Graph 2) the difference in the number of births in different age groups. Among adolescents aged 10 to 14 and 14 to 19 years old, it can be observed that the number of births stands out, being higher in the range of 14 to 19 years old.

Graph 2.	Number	of	births	in	different	age	groups	of
women.								

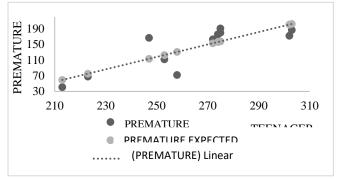
	20	000											
	16	600											
	12	200											
	8	800											
	4	00	_										
		0		_					_				_
						201					201		
			8	9	0	1	2	3	4	5	6	7	8
—	Under 14	os	1	1	1	1	1	2	2	3	2	3	2
	14 to 19		262	226	215	257	285	314	320	298	302	294	26
	Over 19	s	1148	1108	1151	1218	1464	1361	1525	1573	1655	1702	170

#### **Source** – Research Data.

It is observed in Graph 3 the regression statistics performed to assess the correlation of the analyzed data, that the "R-Square" measures the explanatory power of the regression, that is, how much in percentages the variation of each explanatory variable impacts the variation of the explained variable. In other words, about 62% of the variation in the number of premature babies is explained by variations in the number of children born to teenage mothers. As for the variable, it is given by the Pinheiro T, Pio da Silva E, de Castro e Sousa F.

representation of the number of years analyzed, being 11 years (2008 to 2018).

**Graph 3.** Plot of line adjustment of premature births as a function of the number of children born to teenage mothers.





Analyzing the significance of the variables, the "P-Value" shows that both the intersection and the variable (number of children born to teenage mothers) were significant at 1% significance. Thus, it can be concluded that the estimated equation is statistically significant.

Namely, the equation of the estimated straight line shown in Graph 3 is:

Np=-278.72+1.59Na+e (1),

In which:

Np = Number of premature births;

Na= Number of children born to teenage mothers;

e= Error term.

It should be noted that the sign of the angular coefficient (+1.59) captures whether the explanatory variable increases or decreases the explained variable and, given that the sign found was positive, it can be stated that variations in the number of children born to teenage mothers generate positive variations in the number of preterms  $^{20}$ .

Through the analysis of correlation statistics, based on the Person coefficient, the closer to 1 (or -1) the more correlated the variables are, therefore, the value found of 0.82 shows the high significance of value found on the correlation of the number of premature births with the number of teenage mothers. Other studies obtained similar findings regarding the association of teenage pregnancy and prematurity, as in São Luís in 2011, where an incidence of 21.4% of prematurity was identified among children of teenage mothers and a chance of 1.43

Also in São Luís, in 2020, the influence of maternal age on perinatal conditions was analyzed, finding that maternal age influences the occurrence of preterm birth, (OR=1.37; p<0.001), indicating that the teenage pregnancy is associated with a greater chance of preterm birth <sup>4</sup>.

Some results analyzed in each topic presented unknown data, which made a broader assessment impossible, and could even hide information relevant to the study. However, fundamental data were found for the understanding of this population, which offered knowledge that can positively contribute to the development of public health policies with an emphasis on the comprehensive health of pregnant adolescents, preventing not only teenage pregnancy per se, but also complications of health for mothers and their babies, the consequences in the social, cultural, economic and emotional spheres.

## FINAL CONSIDERATIONS

The issue of teenage pregnancy is one of the factors responsible for prematurity, and is therefore a public health problem, given its strong connection with the socioeconomic factors of mothers.

Through data analysis, it was possible to map the socioeconomic profile of teenage mothers, highlighting that most teenagers become pregnant between 15 to 19 years of age, in addition to presenting themselves without a stable relationship, with average education , demonstrating family, emotional, economic and social vulnerability.

It can also be inferred, on the ethnic characteristics, that the highest percentage is found for mixed races and blacks, referring to racial inequalities still present in today's society.

Regarding the analysis of the characteristics of pregnancy, it was observed that the number of

prenatal consultations was lower for mothers of preterm infants. As for the type of childbirth, the vaginal one is in evidence.

It is important to highlight that births mostly take place in hospitals, and it is important to emphasize that the care offered to the mother and, especially, to the premature child is essential for the survival of both.

Through the Pearson Correlation Coefficient, we sought to measure the existence of the correlation between teenage pregnancy and prematurity, checking the intensity of the findings. The result found showed a high significance of the Pearson Coefficient on the correlation between the number of premature births and the number of teenage mothers, given by 0.82.

Thus, it was possible to obtain results capable of promoting discussions on the application of public policies for groups of women in greater socioeconomic vulnerability. It can also be inferred that the government must provide the adolescent public with useful and safe information about teenage pregnancy.

The findings of this study can also be useful for planning and promoting health policies that promote the necessary monitoring for pregnant women, in addition to alerting to the importance of preventing teenage pregnancy and preventing early motherhood and prematurity in the region.



#### EDITORIAL INFORMATION

Corresponding Author Thayna Pinheiro E-mail thaynajbm@hotmail.com

> Submitted 31/05/2021 Accepted 10/09/2021

Pinheiro T, Pio da Silva E, de Castro e Sousa F.

#### REFERENCES

Gonçalves H, Knauth DV. Aproveitar a vida, juventude e gravidez. Rev Antropol. São Paulo, USP, 2006, vol. 49. n.2.
626-643. Disponível em: http://www.scielo.br/scielo.php?pid=S0034-77012006000200004&script=sci\_arttext&tlng=pt.
Spindola T, Silva LFF. Perfil epidemiológico de adolescentes atendidas no pré-natal de um hospital universitário. Rev

Enferm. 2009 jan/mar; 13(1): 99-107. Disponível em: http://www.scielo.br/scielo.php?script=sci\_arttext&pid=S1414-81452009000100014.

3. Martins MG, Santos GHN, Sousa MS, Costa JEFB, Simões VMF. Associação de gravidez na adolescência e prematuridade. Rev Bras Ginecol Obstet. Vol.33 no.11 Rio de Janeiro Nov. 2011. Disponível em:

https://www.scielo.br/scielo.php?pid=S0100-72032011001100006&script=sci\_arttext&tlng=pt.

4. Silva JLCP, Surita FGC. Idade materna: resultados perinatais e via de parto. Rev Bras Ginecol Obstet. 2009; 31(7):321-5. Disponível em: https://www.scielo.br/pdf/rbgo/v31n7/v31n7a01.pdf.

5. Instituto Brasileiro de Geografia e Estatística. Estatísticas de Gênero. Disponível em:

<https://www.ibge.gov.br/apps/snig/v1/?loc=0&cat=2,-2,63,64,128&ind=4707.

6. Gallo JHS. Gravidez na adolescência: a idade materna, consequências e repercussões. Rev Bioética. 2011, 19(1): 179-95. Disponível em: https://revistabioetica.cfm.org.br/index.php/revista\_bioetica/issue/view/38

7. Guimarães EAA, Vieira CS, Nunes FDD, Januário GC, Oliveira VC, Tibúrcio JD. Prevalência e fatores associados à prematuridade em Divinópolis, Minas Gerais, 2008-2011: análise do Sistema de Informações sobre Nascidos Vivos. Rev Epidemiol. Serv. Saúde. Brasília, 26, (1):91-98, jan-mar 2017. Disponível em:

http://www.scielo.br/scielo.php?script=sci\_arttext&pid=S2237-96222017000100091

8. Gomes R, Fonseca EMGO, Veiga AJMO. A visão da pediatria acerca da gravidez na adolescência: um estudo bibliográfico. Rev Latino-am Enfermagem. 2002; 10: 408-14. Disponível em:

http://www.scielo.br/scielo.php?script=sci\_arttext&pid=S0104-11692002000300015.

9. Costa, CE, Gotlieb SLA. Estudo epidemiológico do peso ao nascer a partir da Declaração de Nascido Vivo. Rev Saúde Pública. 1998 ago; 32(4): 328-334. Disponível em:

http://www.scielo.br/scielo.php?pid=S003489101998000400004&script=sci\_abstract&tlng=pt.

10. Silveira MF, Victora CG, Barros AJD, Santos IS, Matijasevich A, Barros FC. Determinantes de nascimento pré-termo na coorte de nascimentos de 2004. Pelotas, Rio Grande do Sul, Brasil. Cad Saúde Publica. 2010 jan;26(1):185-94. Disponível em: http://www.scielo.br/scielo.php?pid=S0102311X2010000100019&script=sci\_abstract&tlng=pt.

11. Instituto Brasileiro de Geografia e Estatística. Indicadores e informações da população. Disponível em:

http://www.ibge.gov.br/home/presidencia/noticias/noticia\_visualiza.php?id\_noticia=1445&id\_pagina=1.

12. Dadoorian D. Gravidez na adolescência: um novo olhar. Psicol Cienc. 2003, vol 23, n.1, 84-91. Disponível em: https://www.scielo.br/scielo.php?pid=S1414-98932003000100012&script=sci\_abstract&tlng=pg.

13. Nader PRA, Cosme LA. Parto prematuro de adolescentes: influência de fatores sociodemográficos e reprodutivos, Espírito Santo, 2007. Rev Enferm. 2010. abr-jun; 14 (2): 338-345. Disponível em: https://www.scielo.br/pdf/ean/v14n2/17.pdf.

14. Rocha RCL, Souza E, Guazzelli CAF, Filho AC, Soares EP, Nogueira ES. Prematuridade e baixo peso entre recémnascidos de adolescentes primíparas. Rev Bras Ginecol Obstet. 2006; 28(9): 530-5. Disponível em:

https://www.scielo.br/scielo.php?script=sci\_arttext&pid=S0100-72032006000900005

15. Nascimento RM, Leite AJM, Almeida NMGS, Almeida PC, Silva CF. Determinantes da mortalidade neonatal: estudo caso-controle em Fortaleza, Ceará, Brasil. Cad. Saúde Pública, Rio de Janeiro, 28(3):559-572, mar, 2012. Disponível em: https://www.scielo.br/pdf/csp/v28n3/16.pdf.

16. Barbosa RVA, Abreu LDP, Alencar OM, Moreira FJF. Pré-natal realizado por equipe multiprofissional da atenção primária à saúde. Cadernos ESP. Ceará. 2020. Jan.jun;14(1):63-70. Disponível em:

https://cadernos.esp.ce.gov.br/index.php/cadernos/article/view/247/197.

17. Ministério da Saúde do Brasil. Pré-Natal - Informações sobre a importância do acompanhamento no pré-natal. Disponível em: http://bvsms.saude.gov.br/bvs/saudelegis/gm/2000/prt0570\_01\_06\_2000\_rep.html.

18. Nascimento CAD, Cartaxo CMB, Monteiro EMLM, Silva LMP, Souto CC, Leão ENC. Percepção de enfermeiros sobre os pais de prematuros em Unidade de Terapia Intensiva Neonatal. Rev Rene. 2013, 14(4):811-20. Disponível em: http://www.repositorio.ufc.br/bitstream/riufc/7838/1/2013\_art\_emlmmonteiro1.pdf.

19. Goldenberg P, Figueiredo MCT, Silva RS. Gravidez na adolescência, pré-natal e resultados perinatais em Montes Claros, Minas Gerais, Brasil. Cad. Saúde Pública, Rio de Janeiro, 21(4):1077-1086, ju-ago, 2005. Disponível em:

http://www.scielosp.org/article/csp/2005.v21n4/1077-1086/.

20. Instituto Brasileiro de Geografia e Estatística. Informações biopsicossociais. Disponível em:

https://www.ibge.gov.br/apps/populacao/projecao/index.html?utm\_source=portal&utm\_medium=popclock&utm\_campaign=novo \_popclock.

21. Filho DPF, Junior JAS. Desvendando os mistérios do Coeficiente de Correlação de Pearson (r). Revista Política Hoje. Vol. 18. N.1. 2009. 115-146. Disponível em: https://periodicos.ufpe.br/revistas/politicahoje/article/view/3852/3156.