# Risk factors for obstetric and neonatal outcomes of adolescent mothers

Fatores de risco aos desfechos obstétricos e neonatais de mães adolescentes

Factores de riesgo para los resultados obstétricos y neonatales de las madres adolescentes

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**Abstract: Objective**: to compare obstetric and neonatal outcomes among adolescent and adult mothers. **Method**: cross-sectional study based on data from the Sistema de Informações de Nascidos Vivos (Live Birth Information System) comparing socio-demographic, obstetric, and neonatal variables of adolescent and adult mothers from Rio Grande do Sul in the period 2010-2016. The Chi-square test evaluated statistical association and the prevalence ratio was estimated. **Results**: there were significant differences between mothers aged 10-14 and those from other strata: prevalence of black or brown-skinned race/color (PR=1.53; CI95% 1.46-1.60), inadequate prenatal care (PR=1.89; IC95% 1.84-1.94), prematurity (PR=1.35; CI95% 1.27-1.43), low birth weight (PR=1.34; IC95% 1.25-1.43) and lower performance in the 1st minute Apgar score (PR=5.68; IC95% 5.49-5.88). **Conclusion**: prevalence of risk factors for obstetric and neonatal outcomes of adolescents aged 10-14 requires careful health evaluation. Early pregnancy in adolescence requires the activation of interdisciplinary teams, and family, social assistance and socio-legal protection networks.

**Descriptors:** Pregnancy in adolescence; Adolescent; Infant, Newborn; Social vulnerability; Adolescent health services

**Resumo: Objetivo**: comparar os desfechos obstétricos e neonatais entre mães adolescentes e adultas. **Método**: estudo transversal desenvolvido com base nos dados do Sistema de Informações de Nascidos Vivos, comparando

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variáveis sociodemográficas, obstétricas e neonatais de mães adolescentes e adultas do Rio Grande do Sul, no período de 2010-2016. O teste Qui-quadrado avaliou associação estatística e foi estimada a razão de prevalência. **Resultados**: houve diferenças significativas entre mães de 10-14 anos e as dos demais estratos: prevalência de raça/cor preta ou parda (RP=1,53; IC95% 1,46-1,60), pré-natal inadequado (RP=1,89; IC95% 1,84-1,94), prematuridade (RP=1,35; IC95% 1,27-1,43), baixo peso ao nascer (RP=1,34; IC95% 1,25-1,43) e desempenho inferior no Apgar do 1º minuto (RP=5,68; IC95% 5,49-5,88). **Conclusão**: a prevalência de fatores de risco aos desfechos obstétricos e neonatais de adolescentes de 10-14 anos demanda avaliação criteriosa da saúde. A gravidez precoce na adolescência requer o acionamento de equipes interdisciplinares, redes familiares, socioassistenciais e de proteção sociojurídica.
**Descritores:** Gravidez na adolescência; Adolescente; Recém-nascido; Vulnerabilidade social; Serviços de saúde do adolescente

**Resumen**: **Objetivo**: comparar los resultados obstétricos y neonatales entre las madres adolescentes y adultas. **Método**: estudio transversal basado en datos del Sistema de Información de Nacimientos Vivos comparando las variables sociodemográficas, obstétricas y neonatales de madres adolescentes y adultas de Rio Grande do Sul en el período 2010-2016. Se estimó la prueba de Chi-cuadrado la asociación estadística y la relación de prevalencia. **Resultados**: hubo diferencias significativas entre las madres de 10 a 14 años y las de los otros estratos: prevalencia de raza/color negro o marrón (RP-1,53; IC95% 1,46-1,60), atención prenatal inadecuada (RP-1,89; IC95% 1,84-1,94), prematuridad (RP-1.35; IC95% 1,27-1,43), bajo peso al nacer (RP-1,34; IC95% 1,25-1,43) y menor rendimiento en el primer minuto de Apgar (RP-5.68; IC95% 5,49-5,88). **Conclusión**: la prevalencia de factores de riesgo para los resultados obstétricos y neonatales de adolescentes de 10 a 14 años requiere una evaluación cuidadosa de la salud. El embarazo precoz en la adolescencia requiere la activación de equipos interdisciplinarios y redes de familiares, de asistencia social y de protección socio-jurídica.
**Descriptores:** Embarazo en adolescencia; Adolescente; Recién nacido; Vulnerabilidad social; Servicios de salud del adolescente

## Introduction

Despite lasting only a few years, adolescence brings intense and significant formation changes in all levels of physical, cognitive, social, emotional, and sexual development. For this reason, it requires specific social policies and programs that maintain and expand the gains already obtained in early childhood health. In addition to producing immediate benefits to the protection and health of adolescents, such investments have intergenerational effects and impact their adult lives and the lives of their children positively.[1-2]

Another characteristic of this phase is its heterogeneity, considering the nature of the changes and their impacts. Therefore, it is appropriate to speak of "adolescences" since the period can be split into two main phases: the first, comprising adolescents aged between 10 and 14, sets the beginning of becoming an adolescent and is marked by biological phenomena, identification with their peers, a

better understanding of their gender and acknowledgment of their sexuality; and the second phase, comprising adolescents aged between 15 and 19 and characterized by search for autonomy, financial independence, access to work, and the connection with adulthood. These age brackets are also adopted by the World Health Organization (WHO) and the Ministry of Health to guide the formulation of public policies.[3-4] Among the elements common to these age groups, sexual and reproductive health stands out because its controversial contours are constantly clashing with social structure, values and conditioning factors. It is thus of crucial importance to debate the lives of adolescents and their rights.[4]

A study that analyzed indicators of the sexual and reproductive health of adolescents based on data from the three editions of the Brazilian School Health Survey (PeNSE) revealed that the mean age of sexual debut of Brazilian adolescents is 13, and 19.5% of the sample reported not using any protection method.[5] However, one of the possible outcomes of sexual debut is early pregnancy. According to the WHO, pregnancy is considered early when the adolescent has the first child before age 18.[1,6] Although becoming pregnant is the desire of many women, including adolescents, early pregnancy, depending on the conditions in which it occurs, can lead to significant risks and pregnancy, obstetric, neonatal and social problems and it impacts the future of several generations.[1,5,7-10]

Studies indicate that teenage pregnancy is directly related to low birth weight, prematurity and a higher rate of infant mortality in adolescent mothers.[1,9,11] In addition, due to the complexity of the care it demands, early pregnancy has important implications for health and social protection systems[3,12] and for the present and future lives of young parents since it may interrupt their education and insert them precariously in the labor market, especially when they come from vulnerable population groups.[9,12-13]

The rate of teenage pregnancy worldwide has been decreasing among girls aged 15 to 19 and continues stabilized among girls aged 10 to 14.[8,14] This is a prevalent phenomenon in

underdeveloped and developing countries.[15] Latin America and the Caribbean, for example, have the second highest teen pregnancy rate in the world, estimated at 66.5 births for every 1,000 women aged 15 to 19.[1] Brazil is following quite similarly the world trend reduction in the rate of teenage pregnancy. However, in the 15-19 year-old group, the rate is estimated at 68.4 births for every 1,000 adolescents, an average higher than that in Latin America and the Caribbean, whereas among girls aged 10-14 the numbers remain stable.[1,6,15]

Due to this worrying scenario, Brazil recently established some legal devices and programs to cope with the phenomenon. In the country's Unified Health System (SUS) the indicator "14" interfederative instrument was agreed on to monitor of the proportion of teenage pregnancy among girls aged 10 to 19, which became mandatory for all Brazilian states and municipalities as from 2017.[16] Still in 2019, the National Week for the Prevention of Teenage Pregnancy was established in the Statute of Children and Adolescents (ECA) to be carried out annually with the objective of disseminating information on preventive and educational measures that contribute to the reduction of teenage pregnancy.[17]

Rio Grande do Sul (RS) is the state of Brazil with the lowest rates of teenage pregnancy and has had specific programs for sexual and reproductive health care of adolescents since 2010. Despite presenting a decrease in the overall proportion of live births of adolescent mothers since 2013, the proportion of live births of girls aged 10 to 14 remains stable in the state, which reveals a scenario similar to the national and international ones, that is, a public health problem to be faced and overcome.[9-10,15]

In this age group, besides the complex gestational and health risks, studies point to the possible association of pregnancy with sexual violence and child marriage. The phenomenon of unwanted pregnancy in children under 14 with denied interruption, whether due to lack of access or delay in care, is worldwide referred to as "forced child pregnancy" or "child motherhood".[1,6,11,15] However, although it is a relevant theme in the epidemiological and social

arenas, the scientific production on the implications of early pregnancy is still incipient, addressed in an aggregate and/or secondary way to other age groups without distinctions as if it were a homogeneous period.[4,11]

The research question was thus formulated: What are the differences between obstetric and neonatal outcomes of adolescent and adult mothers in the state of Rio Grande do Sul? The objective of this study is to compare the obstetric and neonatal outcomes of adolescent and adult mothers.

## Method

This is a cross-sectional study whose source was the Declaration of Live Birth (DNV) contained in the Information System on Live Births (SINASC), which in turn is part of the database of the Information Technology Department of the Single Health System (DATASUS).

The population surveyed included all mothers of live births in the State of Rio Grande do Sul from 2010 to 2016. The historical series is justified by the year of publication of the National Guidelines and the implementation of the State Policy for Integral Attention to Adolescent Health in the state (APE), 2010. Moreover, 2016 was the last year with available and confirmed data. Data collection occurred in December 2017 with updates that continued through May 2018. Associations between socio-demographic, obstetric, neonatal and age groups were investigated for comparison and analysis purposes. The variables were collected by age group (10 to 14, 15 to 19, 20 years or above) and categories of information on the:

a) mother's socio-demographic characteristics: age, race/color and marital status (has or does not have a partner);

b) pregnancy, delivery and birth: place of occurrence (hospital or another), number of prenatal consultations (up to 6 and 7 or more), gestation length (< 37 and ≥ 37 weeks), type of

pregnancy (single and double or with more than two babies) and type of delivery (vaginal and Cesarean);

c) newborn: birth weight (low birth weight, <2500g; and ≥ 2500g), Apgar score in the 1st and 5th minute (0-7 and 8-10) and congenital anomaly (yes and no).

This research follows the ethical precepts established in Resolution N. 510 of April 7, 2016, considering that it uses information of public access pursuant to Law N. 12,527 of November 18, 2011. Thus, it does not require registration or evaluation by the CEP/CONEP system.

The data were exported to spreadsheets in Microsoft Excel®, organized and categorized. The variables were described by absolute (N) and relative (%) frequencies. The prevalence ratio (PR) was used as a measurement of association, with its respective 95% confidence interval (95% CI). The Chi-square trend test was used to assess trend. It evaluates whether the prevalence of each age group increased or decreased over the years. Pearson's Chi-square test was used to assess the existence of an association between variables. Regarding statistical significance, the analysis of residues was used to identify which categories were associated. For all analyses, the significance level (α) of 5% ($p < 0.05$) was considered. The analyses were carried out in the Statistical Package for the Social Sciences (SPSS) software, version 18.0.

## Results

From 2010 to 2016 the State of Rio Grande do Sul recorded 984,296 live births (LB), and adolescent mothers (10 to 19 years old) accounted for 15.53% (N=152,812) of the total. Table 1, which presents the evolution of births by year and mother's age group, shows a decline in the percentage of LB of mothers aged 10 to 14 and 15 to 19 over the years. On the other hand, the proportion of LB with adult mothers increased.

**Table 1** – Distribution of live births by mother's age group from 2010 to 2016, Rio Grande do Sul, Brazil, 2018

| | Mother's age group (in years) | | | | | |
| | 10-14 | | 15-19 | | 20 or older | |
| Year | n | % | n | % | n | % |
|------|-----|------|--------|-------|---------|-------|
| 2010 | 937 | 0.70 | 20,904 | 15.69 | 111,385 | 83.61 |
| 2011 | 903 | 0.66 | 21,092 | 15.32 | 115,713 | 84.03 |
| 2012 | 914 | 0.66 | 21,688 | 15.61 | 116,332 | 83.73 |
| 2013 | 909 | 0.64 | 21,715 | 15.36 | 118,723 | 84.00 |
| 2014 | 938 | 0.65 | 21,510 | 15.01 | 120,864 | 84.34 |
| 2015 | 869 | 0.59 | 20,700 | 13.95 | 126,790 | 85.46 |
| 2016 | 765 | 0.54 | 18,968 | 13.41 | 121,677 | 86.05 |
| P* | | <0.001 | | <0.001 | | <0.001 |

Source: Information System on Live Births (SINASC); *P value for the Chi-square trend test.

There was an association between mother's age group and variables race/color (p<0.001), marital status (p<0.001), place of delivery (p<0.001), number of prenatal consultations (p<0.001), and type of delivery (p<0.001) (Table 2).

**Table 2** – Socio-demographic, pregnancy and childbirth characteristics according to the mother's age group from 2010-2016, Rio Grande do Sul, Brazil, 2018

| | Mother's age group (in years) | | | | | | |
| | 10-14 | | 15-19 | | 20 or older | | |
| Variables | n | % | n | % | n | % | P value* |
|-----------|-----|------|---------|------|---------|------|----------|
| **Race/Color** | | | | | | | <0.001 |
| White | 4,694 | 78.0 | 114,283 | 79.3 | 703,472 | 85.6 | |
| Black and brown-skinned | 1,322 | 22.0 | 29,798 | 20.7 | 118,052 | 14.4 | |
| **Marital status** | | | | | | | <0.001 |
| Has a partner | 714 | 11.5 | 34,617 | 23.8 | 420,502 | 50.8 | |
| Does not have a partner | 5,490 | 88.5 | 111,090 | 76.2 | 406,446 | 49.2 | |
| **Place of delivery** | | | | | | | <0.001 |
| Hospital | 6,192 | 99.3 | 146,138 | 99.7 | 828,693 | 99.7 | |
| Others | 43 | 0.7 | 435 | 0.30 | 2,773 | 0.33 | |
| **Prenatal consultations** | | | | | | | <0.001 |
| < 7 | 2,901 | 46.8 | 56,560 | 38.8 | 204,619 | 24.7 | |
| $\geq 7$ | 3,296 | 53.2 | 89,175 | 61.2 | 622,894 | 75.3 | |
| **Type of delivery** | | | | | | | <0.001 |
| Vaginal | 3,484 | 55.9 | 79,616 | 54.3 | 297,654 | 35.8 | |
| Cesarian | 2,750 | 44.1 | 66,912 | 45.7 | 533,630 | 64.2 | |

Fonte: Information System on Live Births (SINASC). The yellow, indigenous races/colors and the category "ignored" were removed due to their low value for statistical evaluation. Data presented as n (%). Total values may differ due to blank or ignored information. *P value for the Chi-square test.

The evaluation of maternal socio-demographic characteristics shows that the lower the mother's age group the higher the prevalence of black and brown-skinned women who do not have a partner (Table 3). Although the prevailing place of delivery is the hospital, deliveries occurs twice as much in other places for adolescents aged 10 to 14 when compared to those of adult women (PR=2.07; CI95%: 1.53-2.79).

Regarding prenatal consultations, it was found that the lower the mother's age the lower the probability of her having had more than 7 (PR=1.89; CI95%: 1.84-1.94 for younger adolescents and PR=1.57; CI95%: 1.56-1.58 for those aged 15 to 19). Regarding the type of delivery, the adolescent groups recorded higher percentages of vaginal delivery when compared to that of adult women (PR=1.56; CI95%: 1.53-1.60 for younger adolescents and PR=1.52; CI95%: 1.51-1.53 for those aged 15 to 19) (Table 3).

**Table 3** – Prevalence ratio for pregnancy and childbirth characteristics comparing adolescents aged 10 to 14 and 15 to 19 with adult women from 2010-2016, Rio Grande do Sul, Brazil, 2018

| Outcomes | 10-14 year-old adolescents | | | 15-19 year-old adolescents | | |
|---|---|---|---|---|---|---|
| | PR | CI95% | | PR | CI95% | |
| Black or brown-skinned race/color | 1.53 | 1.46 | 1.60 | 1.44 | 1.42 | 1.46 |
| Does not have a partner | 1.80 | 1.78 | 1.82 | 1.55 | 1.54 | 1.56 |
| Delivery out of a hospital | 2.07 | 1.53 | 2.79 | 0.89 | 0.80 | 0.98 |
| Prenatal consultations <7 | 1.89 | 1.84 | 1.94 | 1.57 | 1.56 | 1.58 |
| Vaginal delivery | 1.56 | 1.53 | 1.60 | 1.52 | 1.51 | 1.53 |

PR – prevalence ratio; CI95% – 95% confidence interval.

The analysis of obstetric outcomes (Table 4) showed higher prevalence of low birth weight for newborns in both groups of adolescent mothers when compared to those of mothers aged 20 years or older (p<0.001). Newborns of adolescent mothers had a higher prevalence of

Apgar score lower than 7 points in the 1st and 5th minute compared to that of newborns of adult mothers (p<0.001).

**Table 4** – Characteristics of the newborn according to the mother's age group from 2010 to 2016, Rio Grande do Sul, Brazil, 2018

| Variables | 10-14 | | 15-19 | | 20 or older | | P value* |
|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | |
| **Gestation length** | | | | | | | <0.001 |
| < 37 weeks | 947 | 15.5 | 16,484 | 11.4 | 94,504 | 11.5 | |
| ≥37 weeks | 5,159 | 84.5 | 128,136 | 88.6 | 727,753 | 88.5 | |
| **Birth weight** | | | | | | | <0.001 |
| < 2,500g | 774 | 12.4 | 13,948 | 9.5 | 77,270 | 9.3 | |
| ≥ 2,500g | 5,460 | 87.6 | 132,616 | 90.5 | 754,128 | 90.7 | |
| **1st min Apgar score** | | | | | | | <0.001 |
| 0 to 7 | 1,073 | 68.0 | 21,139 | 14.6 | 98,597 | 12.0 | |
| 8 to 10 | 505 | 32.0 | 123,581 | 85.4 | 724,694 | 88.0 | |
| **5th min Apgar score** | | | | | | | <0.001 |
| 0 to 7 | 248 | 4.0 | 4,125 | 2.8 | 18,432 | 2.2 | |
| 8 to 10 | 5,883 | 96.0 | 140,661 | 97.2 | 805,210 | 97.8 | |
| **Congenital anomaly** | | | | | | | <0.001 |
| Yes | 71 | 1.2 | 1.432 | 1.0 | 7,609 | 0.9 | |
| No | 6.050 | 98.8 | 142.268 | 99.0 | 809,640 | 99.1 | |

Fonte: Information System on Live Births (SINASC). The yellow, indigenous and "ignored" races/colors were removed due to their low value for statistical evaluation. Total values may differ due to blank or ignored information. *P value for the Chi-square test.

Prevalence of prematurity was significantly higher among newborns of mothers aged 10 to 14 (PR=1.35; CI95%: 1.27-1.43) than among those of adult mothers (Table 5). There was no difference in the prevalence of prematurity among children of women aged 15 to 19 and those of adult women (PR=0.99; IC95%: 0.98-1.01). However, prevalence of congenital anomalies was significantly higher only for newborns of mothers aged 15 to 19 when compared to those of women aged 20 or older (PR=1.07; CI95%: 1.01-1.13) (Table 5).

**Table 5** – Prevalence ratio for neonatal outcomes comparing adolescent mothers aged 10 to 14 and 15 to 19 to adult women from 2010 to 2016, Rio Grande do Sul, Brazil, 2018

| Outcomes | 10-14 year-old adolescents | | | 15-19 year-old adolescents | | |
|---|---|---|---|---|---|---|
| | PR | CI95% | | PR | CI95% | |
| Preterm | 1.35 | 1.27 | 1.43 | 0.99 | 0.98 | 1.01 |
| Birth weight < 2500g | 1.34 | 1.25 | 1.43 | 1.02 | 1.01 | 1.04 |
| 1st min Apgar score from 0 to 7 | 5.68 | 5.49 | 5.88 | 1.22 | 1.20 | 1.24 |
| 5th min Apgar score from 0 to 7 | 1.81 | 1.60 | 2.04 | 1.27 | 1.23 | 1.32 |
| Presence of congenital anomaly | 1.25 | 0.99 | 1.57 | 1.07 | 1.01 | 1.13 |

PR – prevalence ratio; CI95% – 95% confidence interval

## Discussion

The study pointed out that in the State of Rio Grande do Sul, in the historical series from 2010 to 2016, the proportion of births decreased in the two age groups of adolescent mothers and increased among the mothers who were 20 or older. The percentage of births follows the international and national downward trend. However, the 2016 United Nations Fund Report warns of evidence of social inequality: while there is a reduction in the fertility rate in the most favored social strata, the increasingly early occurrence of pregnancies prevails in less developed regions such as Latin America.[1]

A study conducted in five regions of Brazil evaluated the trend of pregnancy in the two age groups of adolescence (10 to 14 and 15 to 19) from 2000 to 2011 relating it to the Human Development Index (HDI). The investigation revealed that there is an inversely proportional relationship between the number of LB and HDI, the Southeast region having the lowest number of LB and the highest HDI in Brazil in the period. The study also revealed the decline of cases of teenage pregnancy throughout the country but with increased pregnancy by 5% in the age group of 10 to 14 in the North and Northeast regions, both with the lowest IDHs in Brazil.[14]

Among adolescent mothers, a higher prevalence of unfavorable outcomes was observed for newborns whose mothers were aged between 10 and 14 when compared to those whose mothers

were aged between 15 and 19 or adult. An international study points out that the greatest gains in maternal health in recent decades have benefited younger women more than adolescents.[2]

In the race/color indicator, self-declared white color presented the highest percentage in all age cycles, which may be partly justified by the ethnic characteristics of the state.[18] However, there was statistical significance indicating a higher percentage of black or brown mothers in the adolescent strata. This finding corroborates the results of other studies, which may indicate a situation of greater vulnerability when associated with other determinants such as schooling. Studies conducted in Brazil using SINASC as source showed that black adolescent women with low schooling had fewer prenatal consultations when compared to white adult mothers with longer schooling.[11,19]

For most adolescents motherhood occurred without the relationship with a partner, that is, without the coexistence of the father, whether biological or affective, which is a reality similar to those found in another study.[11] However, the rate of 11.5% of adolescent mothers aged 10 to 14 declared to be in a stable or married union raises the question about the circumstances of pregnancy and the marital relationship, considered child marriage and sex crime in Brazil. This is a concerning reality, mainly due to the vulnerabilities that may be associated with social inequalities, evidenced so far by the color of the skin and low schooling of adolescent mothers, and may also reveal situations of sexual violence.

Child marriage is recognized internationally as a violation of human rights as it can prevent adolescents from exercising their right to freely choose a spouse and have complete information about this choice.[20] Furthermore, high rates of child marriage are associated with less family planning, greater fertility, unwanted pregnancy, increased risk of complications during childbirth, limited academic progress and reduced income potential.[6,21] The importance of preventing child marriage and the intergenerational deleterious effects caused by early pregnancy are thus revealed.

One study found that children born to women who married before the age of 18, compared to those whose mothers got married later, are between 25% and 29% more likely to have their healthy development impaired. Moreover, geographic location and primary education were the contextual factors that explained most of this relationship.[22] Therefore, prevention of child marriage can also reduce maternal mortality by 70% and reduce infant mortality by 3% in a country.[21]

ECA is the milestone in the recognition of adolescents as subjects of rights in Brazil. This legal instrument provides for the doctrine of integral protection, identifies this population as an absolute priority and affirms the right to life, health and protection against any form of violence.[23] For the purpose of this study, it is worth noting that ECA must guarantee all opportunities for the full development of adolescents, including sexual and reproductive rights and access to sexual education.[4]

Under the Brazilian law, every pregnancy up to the age of 14 is considered a sexual crime (staturory rape), regardless of the age of the author or the consent of the victim, and compulsory notification must be made within 24 hours. However, even with the strictness of the law, a nationwide study showed that out of the 31,611 LB of up to 13-year-old mothers, only 4% were reported in the Notifiable Diseases Information System (SINAN).[11]

Regarding the indicators of the puerperal-pregnancy cycle, the study revealed that the younger the mothers the higher the risk of their having an inadequate prenatal care, considering that the Ministry of Health classifies as adequate prenatal care having at least seven consultations. This reality converges with that of other studies conducted in the country, which show that the older the mother the more appropriate her prenatal care is.[9,19,24-25]

The other variables analyzed (birth weight, gestation length, type of delivery and Apgar Score) showed concerning results in the adolescent age groups, especially for those girls aged 10 to 14. A study in the United Kingdom[26] corroborates these results by indicating that the probability of very low birth weight (<1,000 g) was significantly higher in the group of (≤ 19 year-old) adolescents compared to the same indicator in the group of women aged 20 to 34. Weight

below 2,500g and gestation length of less than 37 weeks when associated are considered major risk factors for neonatal mortality. A study conducted in a public maternity hospital in the Amazon region revealed higher rates of prematurity and low birth weight in adolescents, with lower performances in those aged 10 to 14.[27]

The highest proportion of vaginal delivery was identified in adolescents aged 10 to 14 (55.9%) – only indicator of this age group that is higher than those of the other age groups. A study conducted in Romenia identified that adolescent (<20 year-old) mothers were more likely than adult (>20 to 24 year-old) ones to give birth by vaginal delivery and the rate of delivery using a Cesarean section was lower in that group.[28] Another study shows that "young adolescents", those aged 11 to 14, had a lower risk of a Cesarean delivery compared to young adults aged 20 to 24.[29]

The results show that adolescent women present significant social vulnerability and higher obstetric and neonatal risk, especially those aged 10 to 14. Therefore, the sexual and reproductive health of women under 15 is recognized as a priority and pregnancy is acknowledged as a risk factor, which emphasize the need for differentiated care addressing the specificities of this age group in addition to educational and preventive actions.[9-10,30]

International studies on the effectiveness of health intervention are being carried out and their results have pointed to a comprehensive sexual education, one that involves several actors and spaces.[1,20-21] Investment in knowledge and actions has been pointed out as high-quality evidence of moderate benefit for all countries, regardless of their income. Both adult-led and peer-led interventions have showed benefits for safe sex behavior and, as far as pregnancy prevention is concerned, coupling education with access to contraceptives was identified as high-quality evidence.[2]

It is worth mentioning the limitations of studies conducted with secondary data, minimized in this research by comparing the characteristics of pregnancy and live births of

adolescents with those of adult women. It should be noted that cross-sectional studies represent the initial stage of a health surveillance process and, in this case, important elements have been revealed for subsequent studies to investigate the circumstances of pregnancy, especially in precocity situations, and its interface with sexual violence.

## Conclusion

In this study the gestational, obstetric and neonatal outcomes of adolescent mothers with certain socio-demographic characteristics were worse (prematurity, low birth weight and lower prenatal coverage) than those of adult mothers and the risks were significantly higher in those aged 10 to 14.

The indicators point to the vulnerabilities that surround adolescence concerning sexual and reproductive rights. It is therefore essential to recognize adolescents as individuals of rights, guarantee their access to sexual education, services and health education, and break with moral impositions and obstacles in care. It is necessary to overcome the alarmist discourse about teenage pregnancy to build and rebuild paths of health education that lead to dialogue on safe sexual and reproductive exercise, which would benefit their life projects in this very significant phase. Furthermore, adolescents and their support networks need access to health territories so that their rights are recognized and guaranteed.

Pregnant adolescents and adolescent mothers aged 10 and 14 require action from the health and protection sectors. In addition to the clinical and psychological repercussions, there are social protection implications in early pregnancies, as they can result from sexual violence. In such cases, health care cannot be restricted to forwarding these girls to prenatal care or the newborn to childcare. It should be emphasized that precocious pregnant adolescents need a thorough assessment by the health team because there is a chance of various forms of violation of rights involved. Therefore interdisciplinary teams, family networks, social assistance and socio-legal protection should be engaged when it comes to adolescent pregnancy.

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