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ABSTRACT

Adolescence is conceptualized as the intermediate period between childhood and adulthood. In the teenage years, the increase in the number of pregnant is mainly related to social factors. Thus, this study aimed to assess the risk factors associated with teenage pregnancy, through an epidemiological study of the descriptive type, carried out by monitoring pregnant teens registered in the Monitoring System of the Program for Humanization of Prenatal and Childbirth Care in the city of São Luís (MA). Regarding the main findings of the study, it is observed that the year 2015 registered the highest number, with 2,837 (16.69%) cases. In the three years analyzed, the age group and the number of fetal deaths showed variables of statistical significance with *p*-value ($p \leq 0.01$) and Standard Deviation (SD = 9.16; 1.15; 9.45; 35.59). Over the years evaluated in this study, adolescent maternal mortality varied between 0 and 21.43%, with all cases recorded in the age range between 15 to 19 years old. In 2015, pregnant teenagers were responsible for approximately 20% of premature births; babies up to 37 weeks of pregnant women aged 10 to 19 years old represented 19.43% of newborns. The study showed that teenage pregnancy is a serious public health issue, with most teenage pregnant women not having adequate prenatal care, making them the greatest representatives of maternal and neonatal deaths.

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INTRODUCTION

The adolescence phase that corresponds to puberty can be considered a transition stage in development and that involves physical, cognitive, emotional, and social changes that provide the individual with the possibility of maturing their psychosocial process. This stage directly affects their performance as a result of their socio-cultural and personal relationships [1]. Thus, because of this whirlwind of changes that the adolescent suffers, sexuality is a theme that becomes a potential structural pillar, and that leaves definitive records in the affective life of this young person.

Brazil's Child and Adolescent Statute (ECA), Law no. 8.069/90, consider the adolescent as any person between 12 to 18 years old, while the World Health Organization defines it as the individual between 10 to 19 years old. At this stage of life, major changes in physical and behavioral patterns occur, which are related to the increasingly early initiation of sexual life [2].

According to the Brazilian Society of Studies in Human Sexuality (SBRASH), on average, teenage girls begin to exercise their sexual life at 13 years old, while teenage boys at 16 years old. SBRASH also reveals an inversely proportional association between low education and the tendency of pregnant teenagers to get married, seeking the traditional model of conjugal union. This fact is clearly observable because the teenage girls who did not receive adequate sexual education are forced from an early age to assume domestic responsibilities and enter the labor market early to guarantee their share in the family support [3].

In addition to the sex education mentioned above, Yazlle [4] observes that prevention measures should take into account the knowledge of the purported predisposing factors or precursor situations of teenage pregnancy, such as low self-esteem, school difficulties, alcohol and/or drugs abuse, poor family communication, family conflicts, absent and/or rejecting father, physical, psychological and sexual violence, family rejection due to active sexual activity and pregnancy outside of marriage. Parents' divorce or separation, pregnant teen friends, health problems, and mothers who became pregnant during the girls' adolescence has also been mentioned as influencing situations.

The premature start of the sexual life of many teenage girls makes them more susceptible to the increase in sexually transmitted diseases and the often-unintended pregnancy, which can be

considered risk factors for both this teenager and the baby. Teenage pregnancy is not always a high-risk factor, but what increases this risk are the associations resulting from cultural, social, economic, and biological factors related to this moment. We can mention some factors such as low schooling, maternal history of teenage pregnancy, school dropout, lack of planning for the future, alcohol and drug abuse, and absence of a policy, among others [5].

The problem is exacerbated when adequate monitoring is absent during a teenage pregnancy, a period in which a high incidence of clinical conditions for the mother is observed, such as anemia, gestational hypertension, urinary tract infections, *placenta praevia*, complications during childbirth, such as lacerations and hemorrhages, difficulties to breastfeed, depression, endometritis, among others. There are also risks for the newborn, such as intrapartum suffering, prematurity, low birth weight and cephalopelvic disproportion. In addition, in relation to adolescents, other diseases associated with sex in this period that may occur are vaginal discharge, dysmenorrhea, human papillomavirus and hepatitis [6].

The outcome of adolescent motherhood is not always positive; mothers often tend to have serious health problems, while facing financial problems, providing ineffective parenting. There are several physiological medical complications, including spontaneous abortion, intrauterine growth restriction, gestational diabetes, pre-eclampsia, premature birth and intra-partum fetal distress [1]. Factors of gestational risk in adolescents in the perinatal period include biological, socioeconomic and assistance determinants. Thus, prenatal care contributes to favorable outcomes, by early detection and treatment of infections, in addition to the control of risk factors that bring complications to the health of pregnant adolescents and the fetus [7].

Given this context, the goal of this study was to assess the risk factors associated with teenage pregnancy.

MATERIALS AND METHODS

Research outlining

A descriptive cross-sectional study with a quantitative approach, conducted in November and December 2018 using secondary data extracted from the Health Informatics Department (DATASUS) of the Brazilian Unified Health System (SUS). The sample

corresponded to pregnant teenage girls whose data on morbidity and mortality during pregnancy, childbirth and the puerperium was available on the Tabnet. The sample was non-probabilistic.

The inclusion criteria were all pregnant girls aged 10 to 19 years old living in the city of São Luís in the state of Maranhão, Brazil in the years of 2015, 2016 and 2017 and whose data related to the variables surveyed were included in the system.

Data collection instruments and procedures

Data collection was performed by extracting data from the DATASUS portal, on the Hospital Information System (SIH), Information System on Diseases of Compulsory Declaration (SINAN) and vital statistics platforms.

The researched variables were extracted according to the following filters: São Luís city, pregnant women (organized in two age groups), 10 to 14 years old and 15 to 19 years old, and from January 2015 to December 2017. Thus, it was possible to obtain data on teenage pregnancy incidence in São Luís city, as well as adequacy for prenatal consultations, the number of fetal deaths born to teenage mothers, congenital anomalies, preterm birth and low birth weight in infants, in addition to maternal deaths rates during adolescence.

The socioeconomic variables of race, education, marital and employment status were not included in the study due to the absence of these records in the database when the research filters were applied.

Statistical analysis

The results were presented descriptively in tables of absolute frequency and percentage. Statistical analysis was performed using the STATA 13.0 software (Stata Corp College Station, Texas, USA). The association between the response variable (teenage pregnancy) and explanatory (demographic and clinical) variables was performed using Pearson's chi-squared test and a *p*-value <0.05 was taken into account.

Ethical aspects

As this is a research that involves a secondary database, authorization from the Research Ethics Committee is waived according to Resolution No. 466/12 of the Brazilian National Health Council.

RESULTS

Tables 1, 2 and 3 show the distribution of the study variables described according to the demographic, clinical and health characteristics of pregnant teenagers in the city of São Luís, Maranhão.

Table No. 1: Distribution of the variable pregnant women related to the years 2015 to 2017 in the city of São Luís-MA, 2020

Variable	2015		2016		2017		DP	*p*-value
	N	%	N	%	N	%		
Pregnant women	16,998	-	15,930	-	15,549	-	0,75	
Pregnant teenagers	2.837	16,69	2.622	16,46	2.323	14,94	0,25	**≤0,001**
10 to 14 years old	128	0,75	130	0,82	81	0,52	27,73	
15 to 19 years old	2.709	15,94	2.492	15,64	2.242	14,42	0,23	
Pregnant women with inadequate prenatal care	2.837	-	2.622	-	2.323	-	0,25	
Pregnant teenagers with inadequate prenatal care	1.605	56,57	1.439	54,90	1.325	57,04	0,14	**0,005**
10 to 14 years old	73	2,57	76	2,90	56	2,41	10,78	
15 to 19 years old	1.532	54,00	1.363	52,00	1.269	54,63	0,13	

n = absolute value; % = percentage value

In the variable that demonstrates the years of pregnancy evolution, the decrease in the number of pregnant adolescents is evidenced, with the year 2015 registering the largest number, with 2,837 (16.69%) of cases; followed by 2016, with 2,622 (16.46%) and in 2017, with 2,323 (14.94%). The largest predominant age range of pregnant teenage girls occurred between 15 to 19 years old, with 2,709 (15.94%) cases in 2015. In the three years analyzed, there was a decrease in the number of pregnant teenagers in both age groups, and in the year 2017 pregnant teenagers in São Luís consisted of prevalence of 15% of the pregnancies of the city. The association between

variables has a strong statistical significance with *p*-value (p≤ 0.01) and Standard Deviation (SD = 0.25; 27.73; 0.23; 0.75).

Prenatal care, associated with the year, age group and number of pregnant teenagers with inadequate prenatal care, presents statistical significance with *p*-value (p = 0.05) and Standard Deviation (SD = 0.14; 10.78; 0.13; 0.25). In the variable, more than half of pregnant girls do not perform prenatal care or have done it inadequately, showing a slight reduction in the rates between the years 2015 and 2016, however, it grows again in 2017, with 1,269 (54.63%) in the two age groups evaluated.

Table No. 2: Distribution of the death variable in the years of 2015 to 2017 in São Luís-MA, 2020

Variable	2015		2016		2017		SD	*p*-value
	N	%	N	%	N	%		
Deaths of pregnant women	12	-	14	-	7	-	3.60	
Deaths of pregnant teenagers	2	16,67	3	21,43	-	-	-	**0,005**
10 to 14 years old	-	0	-	-	-	-	-	
15 to 19 years old	2	16,67	3	21,43	-	-	0.70	
Fetal deaths	244	-	185	-	180	-	35.59	
Fetal deaths born to pregnant teenagers	1	0,41	1	0,54	3	1,67	9.16	**≤ 0,001**
10 to 14 years old	1	0,41	1	0,54	3	1,67	1.15	
15 to 19 years old	19	7,79	37	20,00	23	12,8	9.45	

n = absolute value; % = percentage value

Over the evaluated years, maternal mortality of teenage mothers varied between 0 and 21.43%, with all cases recorded in the range between 15 to 19 years old. The year with the highest record of both adult and teenage maternal mortality was in 2016. By associating the variables, maternal mortality with the year, age group and the number of maternal deaths of teenage girls, the age between 15 to 19 years old in 2015, 12 deaths occurred, of these 02 deaths (16.67%) were teenagers; in 2016, of the 14 deaths, 03 (21.43%) were adolescents. When associating the variables, there was statistical significance with *p*-value (p = 0.05) and Standard Deviation (SD = 0.70; 3.60).

In the association between year, age group and the number of fetal deaths, in the three years investigated, the variables showed statistical significance with *p*-value (p≤ 0.01) and Standard Deviation (SD = 9.16; 1.15; 9.45; 35.59). The fetal deaths of teenage mothers represented 13.79% of the total fetal deaths, being more expressive at the 15 to 19 years old age group. The year with the highest overall fetal mortality was 2015, and the highest fetal mortality of adolescent mothers was 2016.

The variables correlation between the fetal deaths of adolescent and non-adolescent mothers, in the years considered, was identified that in 2015, of the 244 deaths, 20 (8.2%) occurred in fetuses of adolescent mothers; in 2016, of the 185 deaths, 38 (20.54%) were fetuses of teenage mothers, pointing to a growth that decreased in 2017, with 26 (14.47%) deaths.

Table No. 3: Distribution of the newborn variable related to the years 2015 to 2017 in São Luís-MA, 2020

Variable	2015		2016		2017		SD	*p*-value
	N	%	N	%	N	%		
Premature newborns	2.182	-	2.070	-	1.806	-	0.19	-
Premature newborns of pregnant teenagers	424	19,43	412	19,9	311	17,22	62.06	0,001
10 to 14 years old	33	1,51	25	1,2	18	1,0	7.50	-
15 to 19 years old	391	17,92	387	18,7	293	16,22	55.46	-
Newborns with low weight of pregnant women	1.564	-	1.435	-	1.423	-	78.17	-
Newborns with low weight of pregnant teenagers	300	19,18	303	(21,11	238	16,72	36.69	0,002
10 to 14 years old	25	1,6	15	1,04	13	0,91	6.42	-
15 to 19 years old	275	17,58	288	20,07	225	15,81	33.23	-
Newborns with congenital anomalies of pregnant women	167	-	224	-	150	-	38.05	-
Newborns with congenital anomalies of pregnant teenagers	31	18,56	46	20,54	20	13,34	13.05	0,011
10 to 14 years old	-	-	3	1,34	1	0,67	1.41	-
15 to 19 years old	31	18,56	43	19,20	19	12,67	12	-

n = absolute value; % = percentage value

Pregnant teenage girls are responsible for approximately 20% of premature births, in 2015 infants of pregnant women between 10 to 19 years old represented 19.43% of those born up to 37 weeks; in 2016, this number rose to 19.9%, and in 2017, they were responsible for 16.22% of the prematurity cases.

When analyzing the variables related to premature birth associated with the age group and the number of premature births in adolescent mothers, it was presented statistical significance with *p*-value (p = 0.01) and Standard Deviation (SD = 7.50; 55.46; 0.19). The age group and year of the study identified that in 2015 there were 391 (17.92%) fetal deaths of adolescent mothers who went into premature birth; in 2016 there were a total of 387 (18.7%) deaths, reducing to 293 (16.22%) deaths in 2017.

Infants of pregnant teenagers represent about one-fifth of those born with low birth weight. In 2015 they represented 19.02% of the group, in 2016 this rate increased to 21.11% and in 2017 it decreased to 16.72%. In the association between the variables age group and infants with low birth weight born to teenagers mothers, in contrast to the total number of infants born with low birthweight in São Luís, it showed statistical significance with (p = 0.002) and Standard Deviation (SD = 36.69; 6.42; 33.23; 78.17).

Newborns with congenital anomalies, children of pregnant teenagers in São Luís, represent 18.56% of the anomalies in the age group between 15 to 19 years old. In 2016, there was an increase in incidence with a slight decrease in 2017. When establishing a comparison between the age groups, newborns with congenital anomalies of pregnant teenage girls aged 10 to 14 years old and the total of infants with congenital anomalies born to pregnant teenagers aged 15 to 19 years old in São Luís, the data presents statistical significance with (p = 0.011) with Standard Deviation (SD = 13.05; 1.41; 12; 38.05).

DISCUSSION

The pregnant teenage girls considered in this research represented 56.14% of the pregnant women who did not perform prenatal care or have done it inadequately, that is, they had less than six consultations over the gestational period. On the other hand, Fernandes et al. [8] found positive results, with 62.7% of pregnant adolescents having attended six or more prenatal

consultations. This difference reflects the social and public health inequities between the regions of the country, since the study took place in the South, in the city of Pelotas.

In this study, it was possible to see that, in São Luís, the average age for the pregnancy of teenage girls was 16 years old, with more than half of them not having performed prenatal care or doing it improperly. This index decreased between 2015, 2016 and 2017 in both explored age groups. This may indicate improvements in care at health units in the city, which favored the monitoring of pregnant teens.

The study by Viellas et al. [9] shows that pregnant teenagers attend prenatal appointments less often or start this follow-up later because they fear family reaction and social rejection. Prenatal care with a lower number than that recommended by the Ministry of Health is a risk factor for low birthweight. In this sense, the demographic and health indicators concerning pregnant teenagers portray an unfavorable state, with low adherence and/or unsatisfactory prenatal care, even considering the hypothesis of the existence of underreporting of procedures to the System to Accompany the Prenatal and Birth Humanization Program (SISPRENATAL).

This study identified that the death rate of pregnant teenagers in São Luís varied between 16.67% to 21.43% in the year 2015 to 2016, with cases in the age group between 15 to 19 years old having the highest record of maternal mortality. In a retrospective study on maternal mortality in pregnant adolescents, Silva et al. [10] revealed that the highest mortality rate in young mothers was in the age group of 16 to 18 years old, who represented 78.93% of the cases, with no records of death in mothers aged 10 to 14 years old. These results are similar to those found in this research, in which the maternal mortality records are in the range of 15 to 19 years old, which can be justified by the greater number of pregnancies in this age group.

In São Luís, psychosocial and health care factors are determining characteristics of fetal deaths of pregnant adolescents. In this study that uses three-year data as a basis and tool, the correlation between the age of the pregnant teenagers and fetal mortality occurs differently in the age group of 15 to 19 years old, in which were found that the highest newborn mortality rates were those born to the teenage girls and it may be associated with a high rate of premature births.

The findings of this research identified that pregnant adolescents are responsible for approximately 20% of premature births and in 2015 pregnant teenagers who were in the age

group of 10 to 19 years old represented 19.43% of premature infants born up to 37 weeks. In 2016, this percentage increased slightly, and in 2017, they accounted for 17.22% of preterm births. Azevedo et al. [5] highlight prematurity and neonatal mortality as the main complications observed in infants of pregnant teenage girls, with a prevalence of 39%.

One of the risk factors associated with teenage pregnancy found in this research refers to how the pregnant girl performs prenatal care, with 56.14% of the pregnant teens evaluated not having performed prenatal care, or not doing it properly. Viellas et al. [9] explain this behavior of teenage girls towards pregnancy as the result of the adolescent's fear of her family reaction and moral rejection of her condition.

The process of redefining the adolescent's roles within the family dynamics is quickly configured by the discovery of pregnancy, in addition to the confirmation of the daughter's sexuality: the pregnant teenager, abandoning the condition of a daughter, becoming a mother and her parents playing the roles of parents and grandparents. However, sometimes the pregnant girl and her family cannot organize themselves in a balanced way, and often the daughter can make of her child a "gift" for the mother, or even the mother, through the daughter's motherhood, "can revive, once again, her desire for completeness" by not giving her daughter the space necessary for the exercise of motherhood [11].

In this study, fetal deaths may be associated with the mother's early age as a risk factor for maternity due to the adolescent's biological immaturity, making it difficult for the young mother to establish an emotional bond with the fetus.

Another serious risk factor to be considered is the occurrence of gestational syphilis associated with teenage pregnancy, and many studies on the topic indicate that these risk factors are associated with young girls' sexual misinformation. The study by Oliveira, Peixoto and Cardoso [12] points out that 42.8% of the pregnant teenagers investigated had syphilis and had attended only incomplete elementary school.

Another study shows that low adherence to HPV vaccination is also due to the "lack of awareness" about the problem. The same study shows that 96% of the adolescents surveyed know that HPV is a sexually transmitted disease and only 57% of these adolescents associated HPV infection with sexual intercourse without a condom [14]. A study by Azevedo et al. [5]

states that adolescents present risk behavior for sexually transmitted diseases, comprising 20% of fetal and maternal deaths.

Preterm births, low birth weight (LBW), and neonatal mortality are pointed out by Azevedo et al. [5] as the main complications observed in babies of pregnant teenagers, with a prevalence of 39%, 32%, and 6.9% respectively. In the present study, the incidence in the first two variables was also significant, representing in the three years evaluated about 20% of cases of prematurity and LBW in São Luís. The fetal mortality of young mothers represented 13.79% of fetal deaths observed in the city.

Silva et al. [10] found the highest maternal mortality rate, in a retrospective study in São Luís, for pregnant teenagers in the group age of 16 to 18 years old, representing 78.93% of the cases, with no death reported in mothers aged 10 to 14 years old. Similar results were found in the present study, in which maternal mortality records are in the 15 to 18 years old age range, justifying the significant number of pregnancies in this age group.

Regarding congenital anomalies, Reis et al. [13] found no significant differences in their work between the infants of pregnant women younger or older than 20 years old, and the most prevalent abnormalities in the children of teenage mothers were neural tube defects. In this research, the infants of pregnant teenagers represent on average 17.93% of the cases of fetal anomaly.

The main limitations of this study involved the underreporting of pregnancies and injuries in the SUS and the partial and late feeding of the DATASUS data, such as the absence of socioeconomic variables. Besides, the real dimension of this research is still limited by the absence of data on pregnant teenagers that were attended in the private health system of the city to compose the sample.

CONCLUSION

The state of Maranhão has the highest fertility rate among the states of the Northeast; and in the capital city of São Luís, the average age of the first pregnancy is responsible for one-fifth of all pregnancies in the state.

This study shows that teenage pregnancy is a serious public health issue, with more than half of pregnant teenagers not having adequate prenatal care, making them the greatest representatives of maternal and neonatal deaths and presenting a risk factor in the high rate of preterm births in the city of São Luís. Thus, these data emphasize the need for a closer work and attention to this audience to reduce pregnancies in the age group of 10 to 19 years old and avoid clinical problems.

This scenario confirms the need for implementation in health units, schools and community entities, in public policies for the guidance, support and protection of these adolescents, aiming at delaying the risks of premature pregnancy and preventing pregnant women from risks and clinical problems by encouraging adequate prenatal care. Therefore, prenatal care in the municipality of São Luís must be more effective in maintaining a low-risk pregnancy and in preventing and recovering the health of adolescents in a context of wide assistance coverage.

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