

Comparative analysis of gestations and frequency of prematurity and low birth weight among children of adolescent and adult mothers

Análise comparativa das gestações e da frequência de prematuridade e baixo peso ao nascer entre filhos de mães adolescentes e adultas

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ABSTRACT

Objective: To perform a comparative analysis between the frequency of prematurity and low birth weight among newborns of adolescent and adult mothers, and to evaluate selected maternal data. **Methods:** A comparative cohort study involving 703 pregnant women and their newborns at a public hospital in the city of São Paulo (270 mothers aged 10-19 years, and 433 aged 20-35 years), during the period from March to August 2003. **Results:** The birth of premature or low birth weight children was not prominent in any of the age groups; the small differences found were not statistically significant. However, significant differences were found between the two age groups in the items: number of gestations, with a predominance of first pregnancies among adolescents (70.3%), and a greater number of second or third pregnancies among adults (26.9 and 53.3%, respectively); in the prenatal period, fewer clinic visits among adolescents and more visits among adults (45.1% and 63.3%, respectively). **Conclusion:** The group of pregnant adolescents in the population studied did not differ from the group of adults as to frequency of prematurity and low birth weight. Among adolescents, there was a significantly higher number of primiparous patients compared to adults, and a lower number of prenatal visits.

Keywords: Pregnancy in adolescence; Infant, low birth weight; Premature birth

RESUMO

Objetivo: Realizar uma análise comparativa entre frequência de prematuridade e baixo peso ao nascer entre recém-nascidos de mães adolescentes e adultas, e avaliar dados maternos selecionados. **Métodos:** Estudo de coorte comparativo, envolvendo 703

gestantes internadas em hospital público da cidade de São Paulo e seus recém-nascidos (270 mães entre 10 e 19 anos e 433 entre 20 e 35 anos), no período de março a agosto de 2003. **Resultados:** O nascimento de crianças prematuras ou com baixo peso não foi predominante em nenhuma das faixas etárias; pequenas diferenças encontradas não foram estatisticamente significativas. No entanto, foram encontradas diferenças significativas entre os dois grupos etários nos quesitos: número de gestações, predominando maior número de primeiras gestações entre as adolescentes (70,3%) e maior número de segundas ou terceiras entre as adultas (26,9 e 53,3%, respectivamente) e, no pré-natal, predominando menor número de consultas entre as adolescentes e maior entre as adultas (45,1% e 63,3%, respectivamente). **Conclusão:** O grupo de gestantes adolescentes, na população estudada, não diferiu do grupo de adultas, quanto à frequência de prematuridade e ao baixo peso ao nascer. Entre as adolescentes, houve significativamente maior número de primíparas, em relação às adultas, e menor número de consultas pré-natais.

Descritores: Gravidez na adolescência; Recém-nascido de baixo peso; Nascimento prematuro

INTRODUCTION

For adolescents, the occurrence of pregnancy is a limiting and disrupting factor of their lives, hindering their development and integration into society. This type of gestation has ample applications relative to the adolescent's very personhood, involving from biological to legal, social, economic, family and emotional issues, and leads to their social exclusion⁽¹⁾.

Study carried out at Maternidade do Hospital Municipal Doutor Fernando Mauro Pires da Rocha (Hospital Municipal do Campo Limpo), São Paulo (SP), Brazil.

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The increase in undesirable pregnancy in adolescence generally happens among 13- to 18-year-olds, and is accompanied by a delay in the entry of these teens into the work market. In lower social classes, there are also issues of job instability, few professional opportunities and low salaries, suggesting that adolescent pregnancy is associated, in some way, to a general deterioration in quality of life of these women. This situation is reflected in the emotional area, hindering the establishment of love relationships that will last and that could place them in the position of assuming a likely maternity with prenatal assistance and adequate delivery, besides the support and rearing of a child⁽²⁾.

Over the last years many developed countries have shown a declining tendency in total percentage of deliveries among women aged up to 20 years. In the United States, between 1990 and 2004, the pregnancy rate among adolescents fell by 38%⁽³⁾. In Brazil, these rates were increasing until the end of the 1990s: data from 1994 showed that live newborns of women under the age of 20 years were 20.8% of the total, and, in 1998, they represented 23.6%⁽⁴⁻⁶⁾. As of 2005, however, a drop has been noted, which is more accentuated in the Northeast and Mid-West regions of Brazil. Such a change, according to the Ministry of Health, has occurred because of campaigns for the use of condoms, the dissemination of information on contraception methods, and the greater access to healthcare services, besides the greater participation of women in the job market⁽⁷⁾.

As to newborns of adolescent mothers, several studies showed a higher frequency of prematurity and low birth weight, lower Apgar score, and higher frequency of perinatal diseases⁽⁸⁻¹²⁾. We further point out that, associated with these risks are other factors, such as low level of schooling, inadequate or non-existent prenatal care, low socioeconomic conditions and compromised maternal nutritional status⁽¹²⁻¹⁶⁾.

The identification and recognition of all variables involved in this problem area would allow healthcare services to propose effective actions among young teens as to early pregnancy. On the other hand, these services could offer better care, meeting all the survival needs of future mothers and of the children of this generation of adolescents that seek their help⁽¹⁷⁾.

OBJECTIVE

To conduct a comparative analysis on the frequency of prematurity and low birth weight among children of adolescent and adult mothers, and to identify the

differences between these two groups, as per selected prenatal variables.

METHODS

This was a cohort study involving all adolescent and adult pregnant women and their respective newborns delivered at the Maternity of the *Hospital Municipal Doutor Fernando Mauro Pires da Rocha (Hospital Municipal do Campo Limpo)*, in the city of São Paulo (SP), during the period from March to August, 2003.

The research project protocol was approved by the Research Ethics Committee of the *Hospital Municipal Doutor Fernando Mauro Pires da Rocha*.

This maternity operates with a system of rooming-in, special care pathological nursery, and neonatal intensive care unit (NICU), and therefore, the clinical charts of mothers and newborns were available in these sectors.

Based on a review of literature, an outline was drawn up for the study, composed of personal, social and biological variables. The data necessary for completing this instrument were retrieved from the charts of patients and of their respective newborns.

When consulting the maternal charts, the following data were collected:

- maternal age, obtained from the date of birth recorded on the admission form and confirmed with a document presented by the patient;
- schooling level divided into two groups: up to Elementary School and beyond Elementary School;
- marital status: single or married – the second category included consensual union;
- number of gestations: 1, 2, and equal to or >3;
- participation in prenatal care, according to the number of clinical visits and classified as ≤ 6 and > 6 , as per a criterion established by the World Health Organization (WHO)⁽¹⁸⁾;
- weight gain during pregnancy, calculated by the difference between the weight on the date of the delivery and at the beginning of the prenatal program, retrieved from the patient card and classified as <8kg, between 8 and 16kg, or >16 kg;
- mode of delivery: vaginal or caesarean.

As to maternal age, two groups were formed: adolescents, aged 10 to 19 years; and adults, in the 20-35-year age group.

Maternal diseases during gestation were not considered in the present study, as they were not recorded appropriately on the charts and could cause bias in the analysis of the results.

The definition of adolescence used was that of WHO⁽¹⁹⁾, establishing chronological limits, considering it as the period that extends from 10 to 19 years, 11 months and 29 days of age.

The following variables were considered for newborns:

- weight at birth: for the purposes of the study, the weight of the newborn at delivery was divided into the categories <2,500g and ≥2,500g, as per the WHO criteria⁽²⁰⁾;
- gender: classified as male and female;
- Five-minute Apgar score, distributed into <7 and >7;
- post-natal gestational age corresponds to the maturity assessed by the somatic Capurro method for full-term newborns and classification of the newborn as per WHO criteria: pre-term (gestational age <37 weeks) and full-term (gestational age ≥37 weeks).

Included were all mothers whose charts had 85% of the selected maternal data filled in correctly; excluded

were puerperal women admitted over the week-ends (Saturdays and Sundays), those whose charts had more than 15% of selected maternal data recorded incorrectly, and twin newborns. The final sample total was 700 pregnant women.

Statistical analysis was made by the χ^2 test, adopting a 5% significance level ($p < 0.05$).

RESULTS

Composing this sample were a total of 700 mother-child pairs; 269 mothers aged 10-19 years and 431 aged 20-35 years. In the Adolescent Group, 14 (5.2%) patients were under 14 years of age.

The total n varied between 251 and 269, since a few data were lost.

Table 1 shows maternal characteristics in both groups studied. We point out that there was statistical significance of data in reference to the number of gestations, primiparity and less than six prenatal visits of the Adolescent group.

Table 1. Maternal of characteristics both study groups

Characteristics	Adolescents 10-19 years		Adults 20-35 years		p<0.05	Total	
	n	(%)	n	(%)		n	(%)
Schooling							
≤Elementary School	172	(64.9)	284	(66.8)		456	(66.1)
>Elementary School	93	(35.1)	141	(33.2)		234	(33.9)
Total	265	(100.0)	425	(100.0)		690	(100.0)
Number of gestations							
1	187	(70.3)	85	(19.9)	*	272	(39.2)
2	63	(23.7)	115	(26.9)		178	(25.6)
≥3	16	(6.0)	228	(53.3)		244	(35.2)
Total	266	(100.0)	428	(100.0)		694	(100.0)
Prenatal care (number of visits)							
<6	120	(45.1)	157	(36.7)	*	277	(39.9)
≥6	146	(54.9)	271	(63.3)		417	(60.1)
Total	266	(100.0)	428	(100.0)		694	(100.0)
Mode of delivery							
Vaginal	186	(69.1)	306	(71.0)		492	(70.3)
Cesarean	83	(30.9)	125	(29.0)		208	(29.7)
Total	269	(100.0)	431	(100.0)		700	(100.0)
Weight gain (kg)							
<8	59	(23.5)	101	(27.1)		160	(25.6)
8≤16	145	(57.8)	213	(57.1)		358	(57.4)
≥16	47	(18.7)	59	(15.8)		106	(17.0)
Total	251	(100.0)	373	(100.0)		624	(100.0)

* p-value: significant <0.05.

Table 2 shows the characteristics of newborns in both groups. It is noted that the 5-minute Apgar score had a frequency of 4.2% among adolescents, and that the

frequency of prematurity was 8.7%, with low-birth-weight accounting for 10.1% of the newborns, and no statistically significant differences were found between the groups.

Table 2. Characteristics of newborns in both study groups

Characteristics	Adolescents 10-19 years		Adults 20-35 years		Total	
	n	(%)	n	(%)	n	(%)
5-minute Apgar score						
<7	11	(4.2)	10	(2.4)	21	(3.1)
≥7	252	(95.8)	404	(97.6)	656	(96.9)
Total	263	(100.0)	414	(100.0)	677	(100.0)
Prematurity (weeks)						
<37	23	(8.7)	29	(6.9)	52	(7.6)
≥37	240	(91.3)	392	(93.1)	632	(92.4)
Total	263	(100.0)	421	(100.0)	684	(100.0)
Weight (NB) (g)						
<2500	27	(10.1)	37	(8.6)	64	(9.2)
≥2500	240	(89.9)	391	(91.4)	631	(90.8)
Total	267	(100.0)	428	(100.0)	695	(100.0)
Gender						
Female	128	(48.1)	211	(49.5)	339	(49.0)
Male	138	(51.9)	215	(50.5)	353	(51.0)
Total	266	(100.0)	426	(100.0)	692	(100.0)

NB: newborn.

DISCUSSION

The primary objective of this study was to evaluate the possible influence of maternal age on birth of premature and low birth weight newborns in a needy population, treated at a hospital in the outskirts of the city of São Paulo. However, other elements, such as socioeconomic characteristics, were also analyzed for a better understanding of the problems presented.

As to the sociodemographic aspects related to adolescent pregnancy, most studies highlighted the interference in the academic course, since the difficulties surrounding a return to school after pregnancy lead to an abandonment of studies⁽⁹⁾.

There is consensus as to different determining factors (structural and social), which could interfere in the schooling process of youth⁽²¹⁾.

There are multiple factors that can influence the low level of schooling of adolescents. However, over the last three decades, research has shown that early maternity can compromise the educational process, especially in unfavorable socioeconomic conditions⁽¹⁴⁾.

In the present study, it was noted that most adolescents only went through Elementary School. Nevertheless, the same schooling level was found for adult mothers, a finding pertinent to the population studied – resulting in similar behavior in both groups.

It was noted that most of the adolescents were primigravid, while the majority of adult mothers were at least in their second gestation, which is a significant difference.

However, in verifying the number of adolescents already in the second and third gestations, it is important to point out the need for improved family planning programs, since the earlier the teens get pregnant, the greater the risk of abandoning studies and being exposed to unemployment, thus perpetuating poverty⁽²²⁾. Additionally, intensification in the number of sex education programs in schools would be desirable besides a greater access of the low-income population to contraceptive methods, with the intention of avoiding pregnancy that is unplanned or undesired by the adolescents⁽²³⁾.

When the gestational antecedents of the mothers were analyzed, a significant result regarding prenatal care was noted. Relative to adolescents, most adult mothers had a number of visits considered appropriate by WHO⁽¹⁹⁾. However, these indices were less than ideal in both groups, which could indicate this population is not aware of its importance or find access to healthcare services difficult.

As to maternal weight gain during pregnancy, there was no significant difference between groups in the present paper. In a literature review, Groth asserts that adolescents between 16 and 19 years of age should gain weight in a manner similar to adult pregnant women⁽²⁴⁾. It is interesting to note that a greater number of adult pregnant women gained less than 8kg (a gain considered the average recommended⁽²⁵⁾ for adult pregnant women), relative to adolescent gravidas, without, however, being statistically significant. On the other hand, a greater number of adolescents had a weight gain of >16kg relative to the Adult group, without, however, reaching a significant difference. One can speculate that in the population stratum analyzed, the nutritional status of adult gravidas would be worse than that of adolescents, due to local socioeconomic factors.

The predominant mode of delivery among all mothers was vaginal, showing no significant difference between the groups. Briggs et al., when studying 207 adolescents and 415 adult pregnant women, considered that a smaller significant proportion of adolescents were submitted to caesarian sections⁽²⁶⁾. In the present study, the greater frequency of vaginal births may also be related to the policy of stimulating vaginal births of the Brazilian unified healthcare system (SUS), decreasing surgical deliveries, in order to improve the recovery of mothers and minimize healthcare costs.

When considering characteristics of newborns, no significant differences were observed in the parameters evaluated as to full-term births, 5-minute Apgar scores, with most newborns weighing >2500g and similar percentages for both genders in the groups studied.

The non-predominance of prematurity in adolescents is equivalent to what was observed by Jiménez et al.⁽²¹⁾, who found no association between juvenile pregnancy and prematurity. On the other hand, Simões et al.⁽²⁷⁾, even after adjustment of reproductive and socioeconomic factors, found an association between maternal age <18 years and prematurity, a fact also reported by Martins et al.⁽²⁸⁾.

The incidence of low birth weight showed no significant difference between the two groups of mothers; however, it is relatively high if compared to

the Health Report 2004, in which the Southeast Region showed a percentage of 8%, and the South Region of 8.1%⁽²⁹⁾. Mariotoni and Barros-Filho concluded that pregnancy in adolescence represented no risk for fetal growth, even when the influence of psychosocial factors and past gestational history were removed, which is in agreement with the present study⁽³⁰⁾. Partington et al. verified that adolescents had a greater risk of having a second child with low birth weight⁽³¹⁾. Since in the present study most adolescents were primigravid, one can speculate that this may have been a reason for no differences having been found between adolescents and adults as to the frequency of low birth weight. Another possible explanation would be regarding the predominance of the number of pregnant adolescents over 16 years of age, in the Adolescent group.

Given this, the association between pregnancy in adolescence and prematurity and/or low birth weight is still not totally established. Reports that confirm such an association probably studied pregnancies at much earlier ages (up to 14 years of age) and with poor prenatal assistance⁽³²⁾. On the other hand, studies that verified such an association, especially between gestation in adolescence and low birth weight, suggest that deficient intrauterine growth would not be a direct consequence or independent determinant of early-age pregnancy⁽³⁰⁾. Vitalle⁽¹⁴⁾ stresses that adolescence does not influence the occurrence of low birth weight, but that it increases by 1.3% the risk of prematurity. The author further highlights that economic conditions are the most important risk factor in determining prematurity and low weight.

Pregnancy in adolescence, albeit having serious repercussions on the mother and child, and being considered a high-risk gestation by WHO⁽¹⁹⁾, seems to suggest that the risk is more social than biological, as is currently admitted. The findings of the present study point to this aspect, since the socioeconomic level of both groups (Adolescents and Adults) did not differ, along with the prevalence of low weight and prematurity. Nevertheless, its frequency proved high in comparison to population data⁽²⁹⁾, which would require the implementation of public health activities that involve all these needy pregnant women.

The limitations, however, of the present study should be acknowledged: the fact that the study period covered 6 months and was based on the review of clinical charts that had not been homogeneously completed. The fact that the group of adolescents under the age of 15 years was small and that most teens were primigravid may also have influenced the results. Other studies are necessary to better explain such aspects.

Despite this fact, this set of elements identifies the need for a better understanding of the problem in all its dimensions, and a search for solutions that can be applied with priority in preventive behavior, and then, in the attempt to reduce its effects. In the present study it was evident that the behavior of the Adolescent group was similar to that of the Adult group regarding the perinatal results, albeit showing, in both groups, less than ideal maternal-infant healthcare figures related to the averages reported in Brazilian data⁽²⁸⁾. This suggests that in a needy population, social factors demand even more attention than the biological factors. The identification and recognition of all variables involved in this problem will enable the authorities to propose effective actions not only amidst the adolescent population, with respect to the occurrence of early pregnancy, but also in the adult population of needy pregnant women.

CONCLUSIONS

The adolescent gravidas of the population studied show no significant differences relative to the adult patients as to level of schooling, weight gain during pregnancy and mode of delivery. Among the adolescents we found a greater number of primiparous mothers and a smaller number of prenatal care visits – which are significant differences.

As to the newborns, no significant differences were observed in the parameters evaluated as to the occurrence of prematurity, low birth with, and 5-minute Apgar score.

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