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# EPIDEMIOLOGICAL PROFILE OF PARTURITIONS AND BIRTHS OCCURRING AT HOME: AN ECOLOGICAL STUDY

## PERFIL EPIDEMIOLÓGICO DE PARTOS E NASCIMENTOS OCORRIDOS NO DOMICÍLIO: UM ESTUDO ECOLÓGICO

## PERFIL EPIDEMIOLÓGICO DE PARTOS Y NACIMIENTOS OCURRIDOS EN EL HOGAR: UN ESTUDIO ECOLÓGICO

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**ABSTRACT**

***Objective:*** describing the profile of home births occurred in Brazil during the period 1994-2011. ***Method:*** an ecological study with a quantitative approach developed based on secondary data from the Information System on Live Births/SINASC. ***Results:*** from 53.682.076 of living, 639.155 births (1,19%) had a birthplace at the home environment, with an average of 35.508,61 (SD = 6.928,08) parturitions per year. The Brazilian region with the highest number of births was the Northeast (45,54%). Women held from four to six prenatal visits (20,32%); pregnancies lasted 37-41 weeks (69,84%) and occurred the vaginal parturition (93,57%). Live births weighed between 3.000 to 3.999g (43,77%) and 0,19% had some type of congenital anomaly. ***Conclusion:*** it is necessary improving the quality of records related to Declaration of born alive, in order to reveal the existing reality of reliable way. ***Descriptors:*** Childbirth Household; Live Birth; Information Systems; Epidemiology; Nursing.

**RESUMO**

***Objetivo*:** descrever o perfil dos partos domiciliares ocorridos no Brasil durante o período de 1994 a 2011. ***Método*:** estudo ecológico, com abordagem quantitativa, desenvolvido com base em dados secundários do Sistema de Informação sobre Nascidos Vivos/SINASC. ***Resultados*:** dos 53.682.076 nascidos vivos, 639.155 (1,19%) tiveram como local de nascimento o ambiente domiciliar, com média de 35.508,61 (dp= 6.928,08) partos por ano. A região brasileira com maior número de partos foi a Nordeste (45,54%). As mulheres realizaram de quatro a seis consultas pré-natais (20,32%), as gestações duraram de 37 a 41 semanas (69,84%) e o parto ocorreu por via vaginal (93,57%). Os nascidos vivos pesaram entre 3.000 a 3.999g (43,77%) e 0,19% apresentaram algum tipo de anomalia congênita. ***Conclusão*:** faz-se necessário melhorar a qualidade dos registros relacionados à declaração de nascido vivo, no intuito de revelar a realidade existente de maneira fidedigna. ***Descritores*:** Parto Domiciliar; Nascimento Vivo; Sistemas de Informação; Epidemiologia; Enfermagem.

**RESUMEN**

***Objetivo:*** describir el perfil de los partos en casa ocurridos en Brasil durante el período 1994-2011 ***Método:*** estudio ecológico con un enfoque cuantitativo desarrollado en base a datos secundarios del Sistema de Información sobre Nacidos Vivos/SINASC. ***Resultados:*** de los 53.682.076 nacidos vivos, 639 155 nacimientos (1,19%) tuvieron un lugar el ambiente del hogar, con una media de 35.508,61 partos por año (SD = 6.928,08). La región brasileña con el mayor número de nacimientos fue el Nordeste (45,54%). Las mujeres ocuparon cuatro a seis visitas prenatales (20,32%) embarazos duraron 37-41 semanas (69,84%) y se produjo el parto vaginal (93,57%)> Los nacidos vivos pesaron entre 3.000 a 3.999g (43,77%) y el 0,19% tenían algún tipo de anomalía congénita. ***Conclusiones:*** hace que sea necesario para mejorar la calidad de los registros relacionados con el certificado de nacimiento con el fin de revelar la realidad existente de forma fiable. ***Descriptores:*** Parto en el Hogar; Nacimiento Vivo; Sistemas de Información; Epidemiología; Enfermería.

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## INTRODUCTION

Home was the most common site for the conduction of births until 1950, the time when women were assisted, most often, by so-called midwives. After this period, the birth scene now has characterized the hospital environment and the presence of professionals unrelated to family life.[1] Thus, the woman was taken to enter the hospitals, leaving the environment in which resided, to experience her birth process with unknown people. Added to this there is the loss of natural and physiological character of parturition, due to the insertion and the abusive use of technologies responsible for depersonalizing her.[2]

In reaction to the model created with the institutionalization of parturition, it has increased in recent years discussions around a humanized care during this time. It is known that this new look at their obstetric practices and represents a big challenge for everyone involved, especially in terms of providing a welcoming care for pregnant women and families, grounded, especially, in respect to the particular meanings associated with the process of parturition.[3]

Moreover, it is recognized that the incentive humanized labor and vaginal parturition, an even slower process in health services could avoid the high rate of maternal deaths, with consequent reduction of the high rate of unnecessary cesarean labors. It would allow, similarly, a greater interaction between the parturient and their families in decisions about parturition.[4] In this context of humanization of parturition and birth, a particular phenomenon has drawn attention: homebirth. In the Brazilian context we see the coexistence of two realities associated with the topic. On one hand there is the situation of the less favored regions of the country, North and Northeast, marked by a lack of trained professionals to provide obstetric care, associated with lack of physical structure of health institutions. In this reality emerged the Childbirth Household Assisted by Traditional Midwives Programme, which seeks to ensure minimum standards for care women in parturitions until the health services provided with better conditions.[5]

A different reality mentioned is visible in the South, Southeast and Midwest regions of the country, where the focus has been on improving indicators of maternal and perinatal morbidity and mortality, as well as user's satisfaction.[5] A study on the profile of couples who opted for home birth, assisted by midwife in a city located in the southern region, demonstrated that the 25 members of the sample couples were people with higher education, stable marriage, residing in home and professional stability. Moreover, the choice for this type of parturition was associated with the revaluation of birth as fundamentally familiar and intimate event.[6]

About professional performance of the obstetric nurse, these relate to the ability to developing techniques and skills on the birth process and thereby acquire professional security. It also involves understanding how to provide attentive, full care and based on an ethical-humanistic education, in order to minimize any suffering of the laboring woman.[7]

Given the above, the question is: "What are the characteristics of home births in Brazil?" Thus, considering the movement for humanization of birth and discussions related to the redemption of normal birth, as well as its implementation in other environments such as the home, the current study aims to:

- describing the profile of home births occurred in Brazil during the period 1994-2011.

## METHOD

This study is characterized as an ecological study with a quantitative approach, developed based on secondary data on home births occurred in Brazil, a country located in South America, which the capital city is Brasilia, and presents the territorial extension of 8.515.767.049 km² and is divided into five regions and 27 states. In 2010, the Brazilian population was of 190.755.799 inhabitants.[8]

The data for the study were from the National Information System (SINASC), which provided information from 1994 to 2011 This system was created by the Health Ministry to gather epidemiological data related to births occurring in Brazil and is powered by the statement of live birth, a document distributed at health institutions and notaries. In cases of home parturitions assisted by a health professional, that is responsible for completing the declaration. Turn on births without professional assistance the procedure is performed by the official of record of the notary.[9]

For data analysis, the following variables were considered: region of the country; maternal age group; maternal education; marital status; prenatal consultation; length of gestation; type of pregnancy; type of parturition; gender of infant; color / race of the neonate; Apgar 1 and 5 minutes; birthweight; presence of congenital anomalies; type of congenital anomaly.

There were used the Tabwin Programs (DATASUL) and Excel (Microsoft®) for performing the processing and interpretation of data. On ethical aspects, the data extracted from an information system of the Ministry of Health do not allow the identification of those involved in the results presented, which is in agreement with the ethical principles for research involving humans.

## RESULTS

Between the years 1994 - 2011, from the 53.682.076 live births in Brazil, 639.155 (1,19%) had a birth place at the home environment, with an average of 35.508,61 (SD = 6928.08) parturitions per year. In 1994, there were identified 30.059 (1,17%) live births at the home environment. After observed reduction in 1996 (0,91%), it noticed a trend towards increasing the number of births in this location until 2001, when were recorded 48.551 (1,56%) live births. Subsequently, there was a reduction in these numbers, being registered in 2011 a total of 25.997 (0,86%) births at home (Figure 1).

The Brazilian region with the largest number of home parturitions was the Northeast, registering 291.069 births (45,54%), followed by the North with 239.501 (37,47%) and South East with 54.488 (8,53%) parturitions. The South region had 37.133 (5,81%) parturitions, and the Midwest, 16.963 (2,65%). Despite the higher number of live births by means of home births, there have been identified in the Northeast, one realizes, as shown in Figure 2, there was a decrease in the number of births in this region when comparing the first and last reporting year: in 1994 occurred 13.529 births, in contrast only 7.663 in 2011, representing a decrease of 43,36%. Opposite situation was observed in the northern region of the country, which in 1994 had 6.629 births and in 2011, a total of 13.849, or an increase of 108,92%.

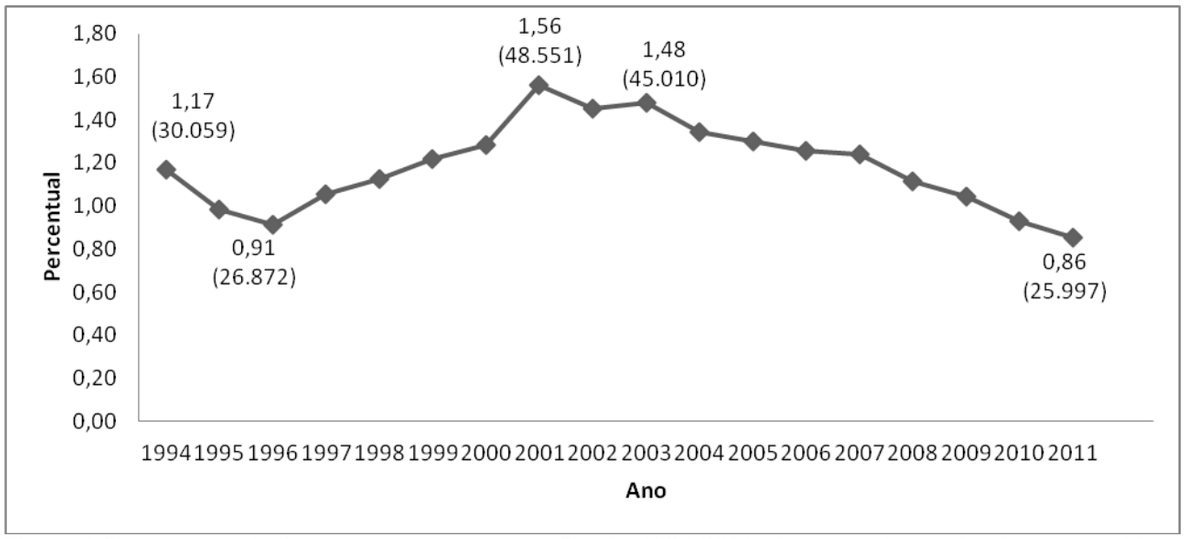


Figure 1 Percentage of births occurred at home. Brazil, 1994-2011. Source: Information System on Live Births (SINASC). Information collected in 4th October, 2013.

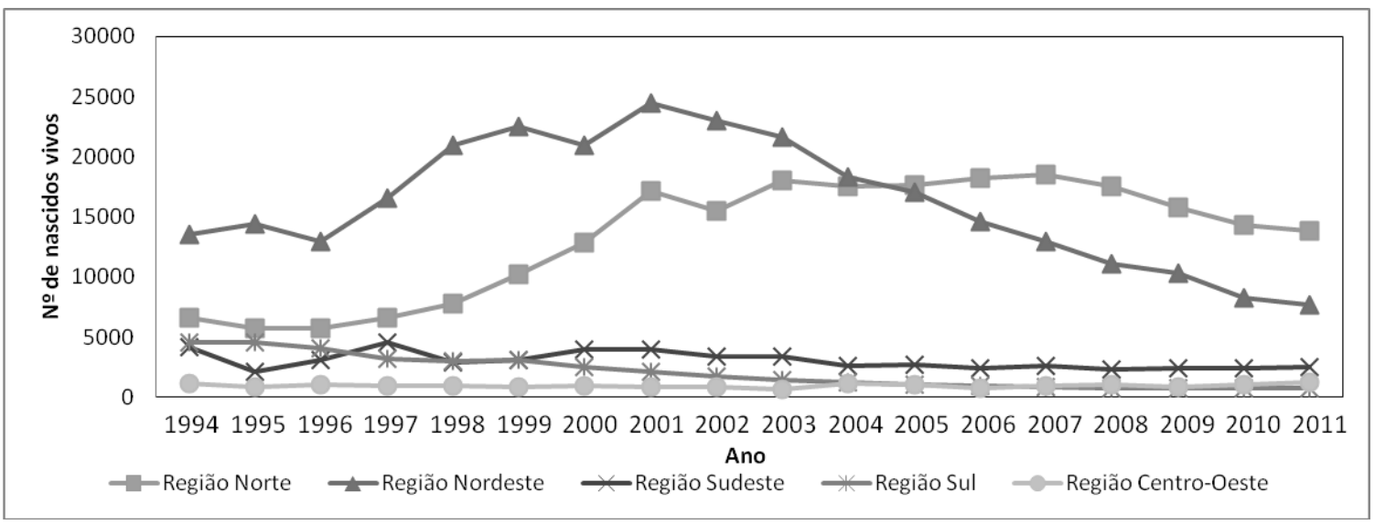


Figure 2. Number of live births at home by region, Brazil, 1994-2011. Source: Information System on Live Births (SINASC). Information collected in 4th October, 2013.

With respect to the characteristics of the mothers who gave birth at home, it was noticed that most were between 20 and 29 years old, 311.486 (48,73%), followed by age range between 30 and 39, with 143,151 (22,40 %). Mothers aged between 10 and 19 corresponded to 131.201 (20,53). The level of education was 1 to 7 years of schooling for 339.918 (53,18%) women. A total of 131,833 (20,63 percent) had no instruction, 69.292 (10,84 percent) had 8 years and over, and in 98,112 (15,35%) cases, the information was ignored. As for marital status, 265.305 (41,51%) were single and in 208.442 (32,61 percent) the item was ignored.

Regarding aspects related to pregnancy and childbirth, 132.410 (20,72%) of women had of 4 to 6 prenatal consultations and 129.858 (20,32%) from 1 to 3 consultations. It should be noted the fact that 135.080 (21,13%) mothers had not having any attendance during pregnancy. In addition, the percentage of dropped data for this item was more than 22%. In 446.393 (69,84%) parturitions pregnancies lasted from 37 to 41 weeks, 591.661 (92,57) women had pregnancy of only type, and 598.060 (93,57 percent) births occurred by vaginally (table 1).

**Table 1.** Characteristics of women who gave birth at home. Brazil, 1994 -2011.

| Variables | n | % |
|---|---|---|
| **Number of pre-natal consultations** | | |
| **None** | 135.080 | 21,13 |
| **1 - 3** | 129.858 | 20,32 |
| **4 - 6** | 132.410 | 20,72 |
| **1 - 6 (unspecified)** | 35.707 | 5,59 |
| **7 or more** | 59.409 | 9,29 |
| **Ignored** | 146.691 | 22,95 |
| **Time of pregnancy (weeks)** | | |
| **Less than 22** | 1.071 | 0,17 |
| **22 - 27** | 4.011 | 0,63 |
| **28 - 31** | 3.521 | 0,55 |
| **32 - 36** | 48.292 | 7,56 |
| **28 - 36 (unspecified)** | 15.946 | 2,49 |
| **37 - 41** | 446.393 | 69,84 |
| **42 or more** | 28.892 | 4,52 |
| **Ignored** | 91.029 | 14,24 |
| **Type of pregnancy** | | |
| **Only one** | 591.661 | 92,57 |
| **Double** | 8.175 | 1,28 |
| **Three times** | 2.125 | 0,33 |
| **Ignored** | 37.194 | 5,82 |
| **Parturition type** | | |
| **Vaginal** | 598.060 | 93,57 |
| **Cesarean** | 4 | 0,00 |
| **Forceps /Other** | 103 | 0,02 |
| **Ignored** | 40.988 | 6,41 |

***Source:*** Information System on Live Births (SINASC). Information collected in 4th October, 2013.

Data on live births showed that 318 125 (49,77%) were males, 277.067 (43,35%) of mixed race/ color, 279.772 (43,77%) weighed between 3000-3999 g, 533.687 (83,50%) and 535.238 (83,74%) had Apgar ignored at 1 and 5 minutes, respectively. Only 1,212 (0,19%) live births had some type of congenital anomalies, especially defects and other congenital deformities of the musculoskeletal system, 329 (27,21%), and congenital deformities of the feet, 222 (18,36%) (Table 2).

**Table 2.** Characteristics of live births at home. Brazil, 1994-2011.

| Variables | n | % |
|---|---|---|
| **Gender** | | |
| **Male** | 318.125 | 49,77 |
| **Female** | 318.022 | 49,76 |
| **Ignored** | 3.008 | 0,47 |
| **Race/Color** | | |
| **Maroon (dark)** | 277.067 | 43,35 |
| **White** | 92.190 | 14,42 |
| **Indian** | 53.529 | 8,37 |
| **Black** | 21.714 | 3,40 |
| **Yellow** | 5.517 | 0,86 |
| **Ignored** | 189.138 | 29,59 |
| **Weight** | | |
| **Less than 500g** | 657 | 0,10 |
| **500 to 999g** | 1.584 | 0,25 |
| **1.000 to 1.499 g** | 3.307 | 0,52 |
| **1.500 to 2.499 g** | 36.172 | 5,66 |
| **2.500 to 2.999 g** | 94.983 | 14,86 |
| **3.000 to 3.999 g** | 279.772 | 43,77 |
| **4.000g and over** | 38.086 | 5,96 |
| **Ignored** | 184.594 | 28,88 |
| **Congenital anomalies** | | |
| **Yes** | 1.212 | 0,19 |
| **No** | 354.224 | 55,42 |
| **No or ignored** | 80.666 | 12,62 |
| **Ignored** | 203.053 | 31,77 |

***Source:*** Information System on Live Births (SINASC). Information collected in 4th October, 2013.

## DISCUSSION

The findings of this study have been demonstrating a reduction in the number of home births occurred in Brazil during the studied period. In the United States, for example, between 2004 and 2009 there was a 29% increase in the number of home births, which increased from 0,56% to 0,72% of total births,[10] number lower than that registered in Brazil in 2011, that even after reducing the percentage reached 0,86%, according to data presented previously.

In terms of regional differences demonstrated, these reflect in particular the institution in recent years; health oriented training programs for traditional birth attendants as a way to reduce maternal and neonatal morbidity and mortality. In this context we highlight the North and Northeast regions, particularly "rural areas, riverine, difficult to access, and traditional maroon and indigenous populations." In 2000, among the initiatives taken by the Ministry of Health to improve care during pregnancy and puerperal period, stood out the Program Working with Traditional Birth Attendants, which reintroduced the discussion agenda of the Health System the need to improve the quality of care provided by these midwives during parturition and childbirth.[9: 9] The impact of this program may be associated with elevation of 108.92% in the number of home births identified in the northern region of the country.

Relating to the characteristics of the laboring woman, identified in relation to the age group of 20 to 29 years old less than the results of a study conducted in the Brazilian semi-arid region with mothers of children under five years old, which showed a rate of 74,1%.[11] On the other hand, in the study cited the percentage of adolescents who had home births was 9,6% in the present study this value was 20,53%.

These data can be related to the level of education of the mother, 20,63% had no education, and consequently to their ignorance about the practices of contraception, condition that emphasizes the number of teenage pregnancies. It is noteworthy, compared to these numbers, the importance of providing a special attention from health services, with an emphasis on the monitoring of cases of teenage pregnancy programs, as well as interventions that aim to reduce or prevent these occurrences, mainly when unplanned.[12]

The majority of pregnant women was unmarried (41,51%), the opposite result to that found in a study of planned home births attended by midwives, in which almost all of the patients had a stable relationship (90,9%).[13] The new family configurations, especially those represented by single mothers, require a series of adjustments, given the absence of the father having a significant implications for the development of the family. This condition creates maternal overload, especially in situations related to economic difficulties, social and affective.[14]

The significant percentage of women who did not perform prenatal drew attention (21,13%). A research developed about maternal deaths in Aracaju, Sergipe, showed that in 12,5% of deaths, women had not received this type of assistance and little more than a third attended seven or more visits,[15] numbers that emphasize the importance such assistance and the possible effects of its absence. Regarding this fact, the Ministry of Health shows that one should ensure "minimally 6 prenatal consultations and continuity of care, monitoring and evaluation of the impact of these actions on maternal and perinatal health".[16:40] Thus, data clearly reflect the problems and difficulties that directly influence the quality of prenatal care.

In the case of this item also highlighted the percentage of ignored information (22,95%), causing the other options regarding the prenatal consultations may have been underestimated or overestimated. It also reveals the need for improvements in the quality of records present in the Brazilian information systems, which suffer from underreporting problem, which hinders decision making simply based on such information.

As regards the duration of gestation, it showed an investigation percentage of 72,7% of women with 38 to 40 weeks,[13] data similar to those observed in this study, in which the gestational period between 37 to 41 weeks was present in 69,84 % of cases, values that are consistent with the parameters of normality, given a normal pregnancy lasts 40 weeks on average.[16] The occurrence of vaginal parturition in household denotes its characteristic low risk. About the need for a hospital transfer in cases of births at home, an investigation showed that among the 11 that occurred, a total of 100 home births attended, 09 resulted in Cesarean section.[17] This confirms the fact of planned births to occur in household had low potential of complications, however does not eliminate the possibility of its occurrence.

During the analysis of the results of live births, it was observed that in terms of gender, both had nearly identical values. However, research conducted in the state of Rio Grande do Sul, demonstrated live births male with slight superiority to females (51,51%).[18] The race/color, had featured white (89,22%), different that observed in this study, where the maroon was predominant (43,35%). The differences highlight the diversity present in the Brazilian scenario, marked by great cultural mixing.

Considering birthweight of newborns who had the birth place at home, researches showed that about 61,32% and 78,6% had between 3000 to 3999g;[18.1] superior results to our study (43,77%). However it is necessary to consider the amount of missing data (28,88%), which may reflect the percentage obtained. About the Apgar score at 1 and 5 minutes, the percentages greater than 80% of missing data for both days, render a statement on the matter. Similarly, it demonstrates how important this record is for information that was neglected.

In only 0,19% of cases, there were reported the presence of an anomaly, but the missing data amounted to over 30%. Research conducted in southern Brazil recorded the absence of abnormalities in 95,8% of neonates,[19] information corroborated by another study conducted in the same region, where 99,19% of newborns showed no abnormalities. Among those who had stood out the deformation of the musculoskeletal system with 27,21%.[18] Other studies describing information about birth defects highlighted this anomaly as accounting for 44,7% and 25,7% of cases.[20,21]

## CONCLUSION

With respect to home births in Brazil, in the period from 1994 to 2011 related to the location, mothers' and newborn variables were established. The Brazilian Northeast region corresponded with higher parity. However, it was the northern region increased significantly during the study period. The results showed adult and single mothers with pregnancies between 37 and 40 weeks and birth occurred vaginally. Neonates in turn presented browns, weighing 3000 to 3999g and without congenital anomalies.

The data found related to prenatal showed large portion of women who have not had this type of care during pregnancy. Investments in prenatal care and ways to demonstrate the importance of this practice within the obstetric context should be valued. The main limitations of the study were the large number of missing data and underreporting of cases, as well as the small number of studies involving the theme. Therefore, it is necessary to improve the quality of records related to the birth certificate, paying attention to the veracity and reliability of the information related in order to reveal the existing reality in fact. Similarly, we need to foster new research on home birth as a way to improve knowledge about this practice.

## REFERENCES

1. Colacioppo PM, Koiffman MD, Riesco MLG, Schneck CA, Osava RH. Parto domiciliar planejado: resultados maternos e neonatais. Referência [Internet]. 2010 [cited 2013 Nov 12];3(2):81-90. Available from: http://www.scielo.oces.mctes.pt/pdf/ref/v3n2/v3n2a09

2. Santos LM, Carneiro CS, Carvalho ESS, Paiva MS. Percepção da equipe de saúde sobre a presença do acompanhante no processo parturitivo. Rev RENE [Internet]. 2012 [cited 2013 Nov 12];13(5):994-1003. Available from: http://www.revistarene.ufc.br/revista/index.php/revista/article/viewFile/1157/pdf

3. Silva RC, Soares MC, Jardim VMR, Kerber NPC, Meincke SMK. The speech and practice of humanizing childbirth in adolescents. Texto & Contexto Enferm [Internet]. 2013 [cited 2013 Nov 12];22(3):629-36. Available from: http://www.scielo.br/pdf/tce/v22n3/en_v22n3a08.pdf

4. Nagahama EEI, Santiago SM. Parto humanizado e tipo de parto: avaliação da assistência oferecida pelo Sistema Único de Saúde em uma cidade do sul do Brasil. Rev Bras Saúde Matern Infant [Internet]. 2011 [cited 2013 Nov 13];11(4):415-25. Available from: http://www.scielo.br/pdf/rbsmi/v11n4/v11n4a08.pdf

5. Cunha AA. A controvérsia do parto domiciliar. Femina [Internet]. 2012 [cited 2013 Nov 13]; 40(5):253-62. Available from: http://files.bvs.br/upload/S/0100-7254/2012/v40n5/a3415.pdf

6. Feyer ISS, Monticelli M, Knobel R. Perfil de casais que optam pelo parto domiciliar assistido por enfermeiras obstétricas. Esc Anna Nery Rev Enferm [Internet]. 2013 [cited 2013 Nov 16]; 17(2):298-305. Available from: http://www.scielo.br/pdf/ean/v17n2/v17n2a14.pdf

7. Caus ECM, Santos EKA, Nassif AA, Monticelli M. O processo de parir assistido pela enfermeira obstétrica no contexto hospitalar: significados para as parturientes. Esc Anna Nery Rev Enferm [Internet]. 2012 [cited 2013 Nov 20];16(1):34-40. Available from: http://www.scielo.br/pdf/ean/v16n1/v16n1a05.pdf

8. Instituto Brasileiro de Geografia e Estatística [Internet]. Brasil em síntese [cited 2013 Dec 5]. Available from: http://brasilemsintese.ibge.gov.br/

9. Ministério da Saúde (Brasil). Parto e nascimento domiciliar assistidos por parteiras tradicionais: o Programa Trabalhando com Parteiras Tradicionais e experiências exemplares. Secretaria de Atenção à Saúde. Brasília: Ministério da Saúde; 2011.

10. MacDorman MF, Mathews TJ, Declercq E. Home births in the United States, 1990–2009. NCHS Data Brief [Internet]. 2012 [cited 2013 Nov 22];(84):1-8. Available from: http://www.cdc.gov/nchs/data/databriefs/db84.pdf

11. Mano PS, Cesar JA, González-Chica DA, Neumann NA. Iniquidade na assistência à gestação e ao parto em município do semiárido brasileiro. Rev Bras Saúde Matern Infant [Internet]. 2011 [cited 2013 Nov 22];11(4):381-8. Available from: http://www.scielo.br/pdf/rbsmi/v11n4/v11n4a04.pdf

12. Silva AAA, Coutinho IC, Katz L, Souza ASR. Fatores associados à recorrência da gravidez na adolescência em uma maternidade escola: estudo caso-controle. Cad Saúde Pública [Internet]. 2013 [cited 2013 Nov 25];29(3):496-506. Available from: http://www.scielo.br/pdf/csp/v29n3/a08v29n3.pdf

13. Koettker JG, Brüggemann OM, Dufloth RM. Planned home births assisted by nurse midwives: maternal and neonatal transfers. Rev Esc Enferm USP [Internet]. 2013 [cited 2013 Dec 11];47(1):15-21. Available from: http://www.scielo.br/pdf/reeusp/v47n1/en_a02v47n1.pdf

14. Marin A, Piccinini CA. Famílias uniparentais: a mãe solteira na literatura. Psico [Internet]. 2009 [cited 2013 dez 11];40(4):422-9. Available from: http://revistaseletronicas.pucrs.br/fo/ojs/index.php/revistapsico/article/viewFile/2683/4927

15. Borges CLMS, Costa MCN, Mota ELA, Menezes GMS. Evolução temporal e diferenciais intra-urbanos da Mortalidade Materna em Aracaju, Sergipe, 2000-2010. Epidemiol Serv Saúde [Internet]. 2013 [cited 2013 Dec 12];22(2):307-16. Available from: http://scielo.iec.pa.gov.br/pdf/ess/v22n2/v22n2a12.pdf

16. Ministério da Saúde (Brasil). Atenção ao pré-natal de baixo risco. Secretaria de Atenção à Saúde. Brasília: Ministério da Saúde; 2012.

17. Koettker JG, Brüggemann OM, Dufloth RM, Knobell R, Monticelli M. Outcomes of planned home birth assisted by nurses, from 2005 to 2009, in Florianópolis, Southern Brazil. Rev Saúde Pública [Internet]. 2012 [cited 2013 Dec 15];46(4):747-50. Available from: http://www.scielo.br/pdf/rsp/v46n4/en_cb3548.pdf

18. Zanini RR, Moraes AB, Giugliani ERJ, Riboldi J. Contextual determinants of neonatal mortality using two analysis methods, Rio Grande do Sul, Brazil. Rev Saúde Pública [Internet]. 2011 [cited 2013 Dec 15];45(1):1-10. Available from: http://www.scielo.br/pdf/rsp/v45n1/en_1549.pdf

19. Melo WA, Uchimura TT. Perfil e processo da assistência prestada ao recém-nascido de risco no Sul do Brasil. Rev bras epidemiol [Internet]. 2011 [cited 2013 Dec 20];14(2):323-37. Available from: http://www.scielo.br/pdf/rbepid/v14n2/13.pdf

20. Geremias AL, Almeida MF, Flores LPO. Evaluation of the birth certificates as source of information on birth defects. Rev Bras Epidemiol [Internet]. 2009 [cited 2013 Dec 25];12(1):1-9. Available from: http://www.scielo.br/pdf/rbepid/v12n1/en_07.pdf

21. Carvalho IS, Costa Júnior PB, Macedo JBPO, Brito RS. Epidemiologic characterization of parturitions and births: anecological study based on an information system. Rev enferm UFPE on line [Internet]. 2014 [cited 2014 Apr 02];8(3):616-23. Available from: http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/5596/pdf_4708


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