ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 10, Issue, 06, pp. 36907-36911, June, 2020
https://doi.org/10.37118/ijdr.19132.06.2020

RESEARCH ARTICLE OPEN ACCESS

ANALYSIS OF THE PROPORTION OF LIVE BIRTHS TO ADOLESCENT MOTHERS AND TEMPORAL TREND IN BRAZIL (2008 TO 2017)

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ARTICLE INFO

Article History:
Received 17th March, 2020
Received in revised form
26th April, 2020
Accepted 27th May, 2020
Published online 29th June, 2020

Key Words:

Adolescent pregnancy,
Geographic mapping,
Health surveillance,
Maternal and child health.

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ABSTRACT

This study aims to estimate the proportion of live births to adolescent mothers for Brazil and regions and to provide a time trend and analysis of the spatial area, from 2008 to 2017. It is an ecological study of time series, with data collected from the Live Birth Information System (SINASC) and the Department of Informatics of the Unified Health System (DATASUS). We calculated the proportion of live births by dividing the number of live births of mothers from 10 to 19 years old, by the total live births of mothers in the same area, multiplied by 100. The use of polynomial regression enabled a time trend. The development of proportion maps promoted the analysis of spatial distribution. In Brazil, the proportion of live births to teenage mothers (10 to 19 years old) varied from 20.4% in 2008 to 16.5% in 2017. For all age groups (10 to 19, 10 to 14 and 15 to 19), the North region presented the highest proportions, followed by the Northeast region, both higher than national values. The Midwest showed a proportion similar to the national one. The Southeast region had the lowest proportions, followed by the South, both lower than the national. Brazil and all regions showed a decreasing trend in the proportion of live births to adolescent mothers for all age groups. Specific actions regarding adolescent reproductive and social care adapted to regional characteristics are necessary.

Citation: ***Ana Claudia Garabeli Cavalli Kluthcovsky, Barbara Letícia Rosa Pereira, Everton José Maier Wosniak, Maria Júlia Dechandt and Lucas Cavalli Kluthcovsky.*** "Analysis of the proportion of live births to adolescent mothers and temporal trend in brazil (2008 to 2017)*", International Journal of Development Research*, 10, (06), 36907-36911.

INTRODUCTION

Adolescent pregnancy, according to the World Health Organization (WHO), is a public health problem, due to its biological, psychological, and social effects on the mother and child. Complications during pregnancy and childbirth are the main causes of death among adolescents in most countries (Flores-Valencia, Nava-Chapa, and Arenas-Monreal, 2017). Every day, in developing countries, 20,000 adolescents under the age of 18 have children, 200 of whom die from pregnancy complications pregnancy or childbirth. Early pregnancy can have important consequences for the adolescent in health, education, and rights areas, which may affect her insertion in the job market and future expectations (United Nations Population Fund, 2013). Approximately 16 million adolescents aged 15 to 19 become pregnant worldwide per year, 2 million of which are under 15 years of age.

Latin America and the Caribbean have the second-highest rate of teenage pregnancies, estimated at 65.5 births / 1000 adolescents between 15 and 19 years old, only surpassed by Sub-Saharan Africa (United Nations - Brazil, 2018). Many factors can contribute to adolescent pregnancy. In many societies, girls may be under pressure to marry and have children or have limited prospects for study and employment. In low and middle-income countries, more than 30% of girls are married before the age of 18. Other factors include poor education, lack of knowledge or difficult access to contraceptive methods, lack of sexual education, and sexual violence (World Health Organization, 2014). There is an association of adolescent pregnancy with fewer consultations and later onset of prenatal care, not performing prenatal care with the same professional, lower tetanus vaccination, a greater need to ferrous sulfate use, forceps use, episiotomy, and medical care by the public health system when compared to pregnancy in non-adolescents (Cesar *et al.*, 2011).

Adolescent mothers showed perinatal risks related to prematurity (Gravena *et al*., 2013; Goldenberg, Figueiredo, and Silva, 2005), Apgar in the fifth minute less than seven (Gravena *et al*., 2013), and underweight at birth (Goldenberg, Figueiredo, and Silva, 2005). Studies related to adolescent pregnancy are of great importance in public health. This category includes studies that analyze the proportion of live births and the temporal trend added to spatial distribution. The results found may contribute as an information source to direct actions that contemplate the reproductive and social rights of adolescents. This study aimed to estimate the proportions of live births to adolescent mothers and the temporal trend for Brazil and regions, as well as the spatial analysis of the area, from 2008 to 2017.

MATERIALS AND METHODS

This is an ecological study of time series, which used techniques of spatial analysis of the area. Data collection occurred in the Live Birth Information System (SINASC) (Brazil, 2019a), available at the Department of Informatics of the Unified Health System (DATASUS) website. The WHO defines adolescent pregnancy as any pregnancy of a girl aged 10 to 19 years, with age defined as the mother's age at the time of the baby's birth (World Health Organization, 2004). The team calculated the proportion of live births to adolescent mothers to estimate its participation in the total number of live births, for Brazil and its regions, between the years 2008 and 2017. We calculated the proportion by dividing the number of live births of mothers, from 10 to 19 years old, by the total live births of mothers in the same area, multiplied by 100 (Brasil, 2019b). The same method was used for the 10 to 14 and 15 to 19-year-old age groups. The Brazilian regions were the units of spatial analysis. Proportion maps followed color scales, where the darkest tones refer to the highest proportions, and the lightest tones refer to the lowest proportions of adolescent pregnancy. The trend in the proportions of live births to adolescent mothers used the polynomial regression model, considering proportions as a dependent variable (Y) and years of study as an independent variable (X). Construction of dispersion diagrams between rates and years of study enabled the identification of the function that expressed the relationship between them, to choose the polynomial order for analysis. From this association, there was a polynomial regression model estimation (Latorre and Cardoso, 2001). The determination coefficient (r^2) was a measure of precision. Initially, the simple linear regression model ($Y = \beta0 + \beta1X$) was tested and, later, the higher-order, second degree ($Y = \beta0 + \beta1X + \beta2X$) and third-degree ($Y = \beta0 + \beta1X$) models + $\beta2X + \beta3X$). The value of $\beta0$ represents the average rate of the period analyzed and $\beta1$ the speed of the trend. The best model was the one with the highest statistical significance, in addition to residues without bias. For statistically similar models, the principle of parsimony was used (Latorre and Cardoso, 2001). There was smoothing in the series variations through a moving mean centered on three successive means. In this way, the annual rates correspond to the arithmetic mean of the rates of the previous year, of the same year and the following year. The data were processed in spreadsheets using Microsoft Office Excel® 2010 for Windows®. The software used for statistical analysis was the Statistical Package for Social Science (IBM SPSS Statistics), version 15.0, and the level of significance was set at $p < 0.05$. The Research Ethics Committee (CEP) approved this project under opinion number 2.991.249, CAAE 01605018.9.0000.0105.

RESULTS

Between 2008 and 2017, there were a total of 5,500,134 live births to adolescent mothers and 23,679,381 live births to non-adolescent mothers, according to data from SINASC, DATASUS. In Brazil, the proportion of live births to adolescent mothers (10 to 19 years old) ranged from 20.4% in 2008 to 16.5% in 2017. The lowest proportions occurred in the South (13.1%) and Southeast (13.3%). The highest proportions occurred in the North in 2008 (27.1%), followed by the Northeast in 2008 (23.2%) (Table 1). For all age groups (10 to 19, 10 to 14 and 15 to 19 years), the North region presented the highest proportions, followed by the Northeast, both superior to Brazil in all examined years. The Midwest values were similar to the national. Differently, the Southeast had the lowest proportion, followed by the South, both lower than national values, for all the included years. The proportion of adolescent pregnancy was lower in the 10 to 14 years group, when compared to the 15 to 19 years, this variation ranged from 0.8% to 1.0% for Brazil, and from 0.5 to 1.7% between regions (Table 1). As shown in Table 2, Brazil and all regions showed a significant and decreasing trend in the proportion of live births to adolescent mothers, for all age groups.

DISCUSSION

In this study, the proportions of live births to adolescent mothers in Brazil aged 10 to 19 years ranged from 20.4% (2008) to 16.5% (2017). For the 10 to 14 age group, the variation was from 1.0% (2008 to 2013) to 0.8% (2016 and 2017) and between 15 and 19 years the variation was 19.4% (2008 to 2015) , 7% (2017). For all age groups, the North and Northeast presented the highest proportions, both larger than Brazil. Midwest remained with proportions similar to the country, the Southeast and South had the lowest proportions, both lower than the national proportions, for all years surveyed. Information on the proportion of adolescent pregnancies in other countries showed results with different values (Instituto Nacional de Estadística y Geografía, 2020; Maharjan *et al*., 2019; Subedi, Sharma and Yadav, 2019; Banerjee *et al*., 2009). In Mexico, the proportion of pregnant adolescents under the age of 20 ranged from 16.8% in 2006 to 17.5% in 2017 (National Institute of Statistics and Geography, 2020), with all proportions being lower than those in Brazil for the respective years, except for 2017 (16.5% for Brazil). In a hospital in rural Nepal, between July 2007 and July 2017, 29.06% of the 7,054 births were to adolescent mothers (under 20 years of age), above the general proportion of the country (Maharjan *et al*., 2019). In Nepal, 17% of adolescent s aged 15 to 19 are already mothers or are pregnant with their first child. However, in a tertiary hospital located in that country, in Biratnagar, the proportion of adolescent pregnancies was much lower, at 5.3% between January and June 2018 (Subedi, Sharma and Yadav, 2019), showing the variation in the proportion in different locations within the same country. In a rural hospital in West Bengal, India, a four-month study involved hospitalized women. Among 302 pregnant women, the proportion of adolescent pregnancies (15 to 19 years old) was 24.17%. There was also a higher prevalence of anemia, premature birth, and low birth weight among pregnant adolescents compared to pregnant women aged 20 to 24 years. (Banerjee *et al*., 2009). Adolescent pregnancy is a phenomenon where complex variables cross and generally do not respond to successful actions for other health problems (Kuri-Morales *et al*., 2020).

Table 1. Proportions (percentages) of live births to adolescent mothers, Brazil and regions, 2008 to 2017

10 to 19 years										
Region	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Brazil	20.4	19.9	19.3	19.3	19.3	19.3	18.9	18.1	17.5	16.5
North	27.1	27.0	26.3	26.5	26.6	26.5	26.2	25.6	24.8	23.7
Northeast	23.2	22.6	22.0	22.1	22.2	22.2	21.8	21.3	21.1	20.0
Midwest	20.4	19.9	19.3	19.0	19.1	18.9	18.6	17.5	16.9	15.5
Southeast	17.0	16.6	16.0	15.9	16.0	16.1	15.7	15.0	14.3	13.3
South	18.4	18.1	17.5	17.1	17.1	17.0	16.4	15.4	14.4	13.1
10 to 14 years										
Region	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Brazil	1.0	1.0	0.9	1.0	1.0	1.0	0.9	0.9	0.8	0.8
North	1.6	1.6	1.6	1.6	1.7	1.7	1.6	1.6	1.6	1.4
Northeast	1.2	1.2	1.2	1.3	1.3	1.3	1.2	1.2	1.2	1.1
Midwest	10	1.0	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.7
Southeast	0.7	0.7	0.6	0.6	0.6	0.7	0.7	0.6	0.5	0.5
South	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.5
15 to 19 years										
Region	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Brazil	19.4	19.0	18.4	18.3	18.3	18.3	17.9	17.3	16.7	15.7
North	25.6	25.4	24.7	24.9	24.9	24.8	24.6	24.0	23.2	22.3
Northeast	22.0	21.4	20.8	20.9	20.9	20.9	20.6	20.1	19.9	18.9
Midwest	19.4	18.9	18.4	18.1	18.2	18.0	17.6	16.7	16.1	14.8
Southeast	16.3	15.9	15.3	15.3	15.3	15.4	15.0	14.4	13.8	12.8
South	17.6	17.4	16.8	16.4	16.4	16.3	15.7	14.8	13.8	12.7

Source: Prepared by the authors based on data from SINASC, DATASUS, 2020.

Table 2. Proportions (percentages) of live births to adolescent mothers and temporal trends, Brazil and regions, 2008 to 2017

Age and Region	Model	R^2	*p*	Trend
10 to 19 years				
Brazil	y= -0.01x3+0.09x2-0.5x+20.6	0.98	<0.001	decreasing
North	y= -0.01x3+0.08x2-0.4x+27.4	0.98	<0.001	decreasing
Northeast	y= -0.01x3+0.09x2-0.5x+23.3	0.97	<0.001	decreasing
Midwest	y= -0.01x3+0.08x2-0.6x+20.7	0.98	<0.001	decreasing
Southeast	y= -0.01x3+0.09x2-0.5x+17.2	0.98	<0.001	decreasing
South	y= -0.01x3+0.05x2-0.4x+18.6	0.99	<0.001	decreasing
10 to 14 years				
Brazil	y= -0.002x3+0.03x2-0.1x+1.1	0.96	<0.001	decreasing
North	y= -0.005x3+0.06x2-0.2x+1.8	0.93	0.001	decreasing
Northeast	y= -0.003x3+0.03x2-0.1x+1.3	0.85	<0.01	decreasing
Midwest	y= -0.002x3+0.03x2-0.1x+1.1	0.91	0.001	decreasing
Southeast	y= -0.003x3+0.04x2-0.2x+0.8	0.90	0.001	decreasing
South	y= -0.002x3+0.03x2-0.1x+0.9	0.94	<0.001	decreasing
15 to 19 years				
Brazil	y= -0.05x3+0.7x2-2.8x+21.8	0.93	0.001	decreasing
North	y= -0.07x3+0.9x2-3.7x+28.9	0.86	<0.01	decreasing
Northeast	y= -0.06x3+0.81x2-3.3x+24.7	0.90	<0.01	decreasing
Midwest	y= -0.05x3+0.6x2-2.6x+21.	0.94	<0.001	decreasing
Southeast	y = -0.04x3+0.6x2-2.4x+18.3	0.94	0.001	decreasing
South	y = -0.04x3+0.5x2-2.2x+19.6	0.96	<0.001	decreasing

Source: Prepared by the authors based on data from SINASC, DATASUS, 2020.

It is a public health problem and the proportion of adolescent mothers varies between countries and even within the same country. Similarly, in Brazil, there were variations in the proportion of adolescent pregnancies between the different regions, with higher values persisting in the North and Northeast over the years, these two regions have worse indicators of education and income compared to other Brazilian regions (Brasil, 2012). Although the analysis of factors associated with adolescent pregnancy did not occur in this study, the proportion of live births in adolescents in Brazil has a trend inversely proportional to the score of the Human Development Index (HDI). In the South, Southeast, and Midwest macroregional regions, which obtained higher HDI values, there was a lower proportion of live births to adolescent mothers, which may correlate to development level (Vaz, Monteiro, and Rodrigues, 2016). The North and Northeast regions have worse indicators of education and income in relation to the other regions of the country (Brasil, 2012).

In the State of São Paulo, the occurrence of adolescent pregnancy was higher in cities with the lowest gross domestic product (GDP) per capita, higher incidence of poverty, smaller population, lower HDI and a higher percentage of individuals characterized as vulnerable (Martinez *et al*., 2011). According to the World Health Organization, adolescent pregnancy is a global problem that can occur in high, middle, and low-income countries. However, worldwide adolescent pregnancies are more likely to occur in marginalized communities, generally driven by poverty and deficiencies in education and employment opportunities (United Nations Children's Fund, 2013). In this study, we observed that Brazil and all regions showed a decreasing trend in the proportion of live births to adolescent mothers, for all age groups (10 to 19, 10 to 14 and 15 to 19 years). One study that evaluated adolescent pregnancy between 2000 and 2011found a decrease in the percentage of live births to adolescent mothers between 10 and 19 years old in Brazil, from 23.5% in 2000 to 19.2% in 2011. The 15 to 19 age group also presented a 19.1% decline in all regions.

Despite this decreasing trend, the 10 to 14 age group showed an increase of 5% for the North and Northeast (Vaz, Monteiro, and Rodrigues, 2016). Another study that analyzed the Brazilian states separately (2006-2015) also observed a reduction trend of adolescent pregnancies, with only the state of Alagoas showing an increase (25.8% in 2006 to 26.3% in 2015). States with the greatest reduction were Rondônia (26.0% to 20.1%) and Santa Catarina (18.2% to 14.2%) (Buratto *et al*., 2019). The same study evaluated socio-economic factors that could influence the trend of adolescent pregnancy. Adolescent pregnancy proportion decreased in all skin color groups, except for indigenous adolescents since there was an increase from 27.3% in 2006 to 29.5% in 2015. The 14 to 17 years group with formal education showed an increasing trend in the period 2006-2015 (from 29.4% to 30.4%), while other groups showed a reduction. Marital status was also an influence once there was a trend of pregnancy among young women who lived with a partner (9.8% to 11.8%, 2006-2015), while adolescents that did not live with a companion showed a stable pregnancy trend (Buratto *et al*., 2019). A study in Colombia, a country in the extreme north of South America, showed a 2.6% increase in the proportion of mothers between 10 and 14 years old and 0.8% between 15 and 19 years old between 2001 and 2011. Early childbirth in adolescents is a challenge for the country. These adolescent mothers are at greater risk of losing their babies while they are and remain poor (Jaramillo-Mejía and Chernichovsky, 2019). The results of this study, which analyzed a slightly more recent historical series, suggest a decreasing trend in the proportions of Brazil and all regions, in the three age groups. According to the Brazilian Ministry of Health, change in adolescent pregnancy patterns relate to several factors, such as the expansion of the Family Health Program, and greater access to contraceptive methods. Also, the School Health Program provided an expansion of health education opportunities for adolescents (Brasil, 2020b). Despite this decrease, 95% of births to adolescent mothers occurred in developing countries (United Nations Population Fund, 2013).

Children of adolescent mothers are at greater risk of being born premature (Gravena *et al*., 2013; Goldenberg, Figueiredo, and Silva, 2005), with low weight (Goldenberg, Figueiredo, and Silva, 2005) and Apgar in the fifth minute less than seven (Gravena *et al*., 2013). This study had limitations, such as the source of secondary information systems, with the possibility of changes in the quality of the records, as well as underreporting, since deaths and abortions were not recognized. However, SINASC has high coverage, completeness, and reliability, which can reduce these limitations (Bonilha *et al*., 2011). Also, the proportion of live births in adolescents may experience influence by the age structure of the female population and fertility pattern. The proportions for a given age group of mothers may depend on the frequency of live births in other age groups (Brasil, 2020). Despite these limitations, this study contributed to a greater understanding of the proportions of live births to adolescent mothers and the temporal trend for Brazil and regions.

Conclusion

The decreasing trend in the proportion of adolescent pregnancies for Brazil and regions is a positive factor. However, the proportions remained higher in some regions. Despite the downward trend, the North and Northeast regions remained at higher proportions than Brazil, during the entire period. The Midwest showed similar proportions to Brazil, while the Southeast and South regions had values below national. Specific actions are necessary to contemplate the reproductive and social care of adolescents, according to the specificities of each region.

REFERENCES

Banerjee B. *et al*. Teenage pregnancy: a socially inflicted health hazard. Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine, 2009;34(3):227-31.

Bonilha EA *et al*. Cobertura, completude e confiabilidade das informações do Sistema de Informações sobre Nascidos Vivos de maternidades da rede pública no município de São Paulo, 2011. EpidemiolServ Saúde. 2018; 27(1):e201712811, 2018.

Brasil. Indicadores e Dados Básicos - Brasil – 2012. Indicadores socioeconômicos. 2012. [Cited 2020 May 28]. Avaiable at: http://tabnet.datasus.gov.br/cgi/idb2012/matriz.htm#socio

Brasil. Ministério da Saúde (MS). DATASUS. Sistema de Informação Sobre Nascidos Vivos.2019a. [Cited 2019 Apr 16]. Avaiable at: http://tabnet.datasus.gov.br/cgi/deftohtm.exe?sinasc/cnv/nvbr.def

Brasil. Ministério da Saúde (MS). Informações sobre Gravidez na Adolescência. 2020b. [Cited 2020 May 28]. Avaiable at: https://www.saude.gov.br/saude-para-voce/saude-do-adolescente-e-do-jovem/informacoes-sobre-gravidez-na-adolescencia2

Brasil. Ministério da Saúde (MS). Proporção de nascidos vivos por idade materna. 2019b. [Cited 2020 Feb 19]. Avaiable at: http://tabnet.datasus.gov.br/tabdata/LivroIDB/2edrev/g15.pdf

Brasil. Ministério da Saúde (MS). Rede Integrada de Informações para a Saúde. Proporção de nascidos vivos de mães adolescentes. 2020a. [Cited 2019 Apr 16]. Avaiable at: http://fichas.ripsa.org.br/2012/g-15/?l=pt_BR

Buratto J *et al*. Temporal trend of adolescent pregnancy in Brasil. AMB RevAssocMéd Bras. 2019;65(6):880-5.

Cesar JA *et al*. Características sociodemográficas e de assistência à gestação e ao parto no extremo sul do Brasil. CadSaúde Pública. 2011;27(5):985-94.

Department of Child and Adolescent health and Development, Department of Reproductive Health and Research; 2004. 84 p.

Flores-Valencia M, Nava-Chapa G, Arenas-Monreal L. Embarazo en la adolescencia em una región de México: un problema de Salud Pública. RevSalud Pública. 2017;19(3):374-8.

Fundo de População das Nações Unidas-UNFPA. Maternidade Precoce: Enfrentando o desafio da gravidez na adolescência. Situação da População Geral. Nova York: UNFPA, 2013. [Cited 2019 Apr 20]. Avaiableat: httpwww.unfpa.org.brArquivosswop2013.pdf

Goldenberg P, FIGUEIREDO MCT, SILVA RS. Gravidez na adolescência, pré-natal e resultados perinatais em Montes Claros, Minas Gerais, Brasil. Cad Saúde Pública. 2005;21(4):1077-86.

Gravena AAF *et al*. Idade materna e fatores associados a resultados perinatais. Acta Paul Enferm. 2013;26(2):130-5.

Instituto Nacional de Estadística y Geografía. Estadísticas vitales. Natalidad 2017. México: INEGI; 2018. [Cited

2020 May 28]. Avaiable at: https://www.inegi.org.mx/temas/natalidad/

Jaramillo-Mejía MC, Chernichovsky, D. Early adolescent childbearing in Colombia: time-trends and consequences. Cad SaúdePública. 2019(35):e00020918.

Kuri-Morales P *et al*. National panorama of adolescent pregnancy in Mexico: lessons learned in a six-year period. GacMédMéx. 2020;156(2):150-5.

Latorre MRDO, Cardoso MRA. Análise de séries temporais em epidemiologia: uma introdução sobre os aspectos metodológicos. Rev Bras Epidemiol. 2001;4(3):145-52.

Maharjan M. *et al*. Prevalence of Teenage Pregnancy in A Community Hospital of Rural Nepal: A Cross-sectional Study. JNMA J Nepal Med Assoc. 2019;57(271):176-80.

Martinez EZ *et al*. Taxas de prenhez na adolescência e características socioeconômicas dos municípios do Estado de São Paulo, Sudeste do Brasil: uma análise espacial. Cad Saúde Pública;2011;27(5):855-67.

Nações Unidas no Brasil. Taxa de gravidez adolescente no Brasil está acima da média latino-americana e caribenha. [Cited 2020 Mar 29]. Avaiable at: https://nacoesunidas.org/taxa-de-gravidez-adolescente-no-brasil-esta-acima-da-media-latino-americana-e-caribenha/

Subedi SS, Sharma S, Yadav M. Prevalence of Adolescent Pregnancy in A Tertiary Care Hospital. JNMA J Nepal Med Assoc. 2019;57(218):248-51.

United Nations Children's Fund. UNICEF. Fim do casamento infantil: progresso e perspectivas. New York: UNICEF, 2013.

Vaz RF, Monteiro DLM, Rodrigues NCP. Tendências da gravidez na adolescência no Brasil, 2000-2011. AMB Rev AssocMéd Bras. 2016;62(4):330-5.

World Health Organization. WHO. 2014. Adolescent Pregnancy. Department of Reproductive Health and Research. [Cited 2020 May 28]. Avaiable at: https://apps.who.int/iris/bitstream/handle/10665/112320/WHO_RHR_14.08_eng.pdf

World Health Organization. WHO. Adolescent pregnancy: issues in adolescent health and pregnancy. Geneva (Switzerland):

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